

**Environment and Natural Resources Trust Fund  
2010 Request for Proposals (RFP)**

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**LCCMR ID: 079-B3**

**Project Title:**

Expanding Home Energy Efficiency through On-bill Finance

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**LCCMR 2010 Funding Priority:**

B. Renewable Energy Related to Climate Change

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**Total Project Budget: \$** \$217,000

**Proposed Project Time Period for the Funding Requested:** 2 years, 2010 - 2012

**Other Non-State Funds: \$** \$0

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**Summary:**

CEF will research and demonstrate a home energy efficiency loan that is repaid on utility bills, using in-house energy monitoring, in a pilot with 10-20 homes.

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**Location:**

**Region:** Metro

**County Name:** Hennepin, Ramsey

**City / Township:**

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_____ Knowledge Base	_____ Broad App.	_____ Innovation
_____ Leverage	_____ Outcomes	
_____ Partnerships	_____ Urgency	_____ TOTAL

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# MAIN PROPOSAL

**PROJECT TITLE: Expanding home energy efficiency through on-bill finance**

## I. PROJECT STATEMENT

As Minnesota residents struggle with rising home energy costs, utilities face increasingly difficult challenges providing reliable electricity and heating fuel while increasing energy conservation and controlling carbon. We know that energy efficiency can be the profitable bedrock of a sustainable energy economy that provides local economic opportunity while protecting consumers from price volatility; yet it is almost untapped at the residential level. One of the most significant barriers to residents taking action is the upfront cost of home efficiency improvements. Cooperative Energy Futures (CEF) is proposing a pilot study to demonstrate a loan mechanism repaid on utility bills. This approach allows residents of all incomes to participate in the new green economy, by paying for efficiency work upfront and recapturing that investment through a portion of the savings residents gain on their utility bills. This will create immediate financial savings for the energy customer, verifiable energy savings, and a revolving fund that will expand to support future sustainable energy projects, such as local energy platforms.

CEF will research best practices in on-bill finance strategies and demonstrate our approach in a 10-20 home pilot study. The study will incorporate in-depth energy savings analyses (including in-house monitors that can be incorporated into smart grid technologies) and a neighbor-to-neighbor outreach approach. It will explore the potential of community financing for the loan through a cooperative capital pool. Upon completion, the project will provide the demonstrated results necessary to develop a permanent structure in partnership with utility companies and replicate this model throughout the state.

This proposal specifically responds to energy recommendations from the Statewide Conservation and Preservation Plan by promoting carbon-neutral homes and communities (E17), reducing the energy use of housing stock (E18), and creating a mechanism to support community-based energy platforms (E15). Additionally, this project will generate continued work for the expanding weatherization workforce, just at the time when federal stimulus funding will be exhausted.

## II. DESCRIPTION OF PROJECT RESULTS

**Result 1: Demonstrate on-bill financing with 10-20 homes                      Budget: \$ 195,000**

This funding will support research and development of the on-bill financing mechanism and energy analyses, and pay a 50% of the upfront cost of capital improvements on homes participating in this pilot study. CEF is seeking matching funds from private investors such as University Bank to amplify seed funding for the loan fund.

This pilot project will fund weatherization and energy efficiency improvements in the range of \$6000 per home (such as insulation, air-sealing, and HVAC system replacement) in one neighborhood. Residents will repay the investment they receive (plus some interest, varying based on income) through monthly installments, each a fraction of their home's predicted monthly savings in energy-cost. CEF will calculate predicted energy savings based on an analysis of each home's past 18-month of energy use, comparison with statewide and neighborhood data, energy audits before and after the work is done, and in-house energy monitoring technologies. CEF will determine individualized repayment timelines for participating homes (at a maximum of 10 years), varying based on the cost of improvements and residents' income levels. Billing accounts will be attached to the home addresses rather than the residents, who are sometimes transient. CEF (with support from the LCCMR) will seek partnership with utilities to run this pilot using actual utility bills, but without cooperation from energy companies will simulate the model

and use the results for further negotiation. If in partnership with utilities, energy reductions measured through this project may be negotiated to count toward utilities' CIP requirements.

<b>Deliverable</b>	<b>Completion Date</b>
1. Recommendations of Strategic Approaches to Residential Efficiency Finance This will include research around 1. on-bill payment loan financing (loan through a utility bill), 2. third-party bill management (finance and bill-payment by a third-party), and 3. community financing through a cooperative capital pool.	Reported 10/10
2. Measured energy savings in 10-20 homes and projected future use	Reported 7/11

**Result 2:** Exploratory research on energy savings from energy-use feedback **Budget: \$22,000**

We will examine energy savings in homes with The Energy Detective (TED), an in-home feedback device. A small group of homes will be randomly selected to receive a TED. These homeowners will be interviewed about their interactions with TED and their responses to the feedback. In addition, their electricity usage will be analyzed separately, comparing it to their own use before TED as well to electricity usage in other non-TED homes also participating in the project.

<b>Deliverable</b>	<b>Completion Date</b>
1. Report that details analytical results and summarizes interview findings	Reported 4/12

### **III. PROJECT STRATEGY**

#### **A. Project Partners**

Cooperative Energy Futures is a start-up cooperative that aims to provide communities easy access to residential energy efficiency by empowering local leaders with support in bulk buying and group-contracting of services and the tools to engage their neighbors – harnessing cooperative entrepreneurship to help communities save money, energy, and reduce carbon emissions. A core of 7 leaders coordinates CEF operations, supported by volunteers and a Board of Directors. The Minnesota Project works with CEF to catalyze partnerships with existing local community initiatives around energy efficiency and clean energy and help establish new models for community energy solutions. We demonstrated a pilot project in Merriam Park, St. Paul in October 2008 and are currently building partnerships with several Twin Cities neighborhoods for future work, including Longfellow, Macalester-Groveland, Phillips, Seward, Union Park, and the West Side of St. Paul.

#### **B. Time**

CEF will complete research and preparation for the pilot program by October 2010. Choosing participant homes, implementing improvements and performing follow-up assessments will occur through June 2011. CEF will report on compiled findings from the pilot study in July 2011 and on TED monitoring in April 2012. At that point, we will be ideally suited to start testing our model in a broader range of communities, and with more extensive support and coverage of each neighborhood.

#### **C. Long-Term Strategy**

CEF's long-term role will be as a self-sustaining community efficiency and sustainability cooperative. As we identify the most effective ways to engage communities in harnessing the efficiency assets of their own homes, we intend to generate revenue through bulk-purchasing, group-contracting, savings-based financing, and community sustainability consulting for our members and the general public. LCCMR funding will allow us to demonstrate innovative approaches while generating the base of participation needed to sustain this business model and spread our ideas to areas we cannot serve.

## Project Budget

### IV. TOTAL PROJECT REQUEST BUDGET

<u>BUDGET ITEM</u>	<u>AMOUNT</u>	<u>% FTE</u>
<b>Personnel:</b> Project Coordinator	\$ 40,000	50%
Field Coordinator	\$ 60,000	100%
2 Team Member Stipends (\$2500/year x 2 years)	\$ 10,000	10%
<b>Contracts:</b> Energy efficiency service providers such as insulation and air-sealing contractors, and HVAC system technicians. 10 homes x \$6,000 (plus matching funds from private investors).	\$ 60,000	
<b>Equipment/Tools:</b> Office space, communications, web and database support, printing and postage, laptop, database software	\$ 35,000	
The Energy Detective (20 x \$150)	\$ 3,000	
<b>Other:</b> Insurance and bonding to facilitate bulk residential contracting	\$ 4,000	
Development and publishing costs for toolkit materials, and travel to train local organizers in other areas.	\$ 5,000	
<b>TOTAL PROJECT BUDGET REQUEST TO LCCMR</b>	<b>\$ 217,000</b>	

### V. OTHER FUNDS

<u>SOURCE OF FUNDS</u>	<u>AMOUNT</u>	<u>Status</u>
<b>Other Non-State \$ Being Leveraged During Project Period:</b> We are in the process of identifying further funding opportunities for our broader work - specific grants not identified to date.	\$ -	<i>Secured or Pending</i>
<b>In-kind Services During Project Period:</b> Volunteer support from students and community members engaged in the process. Valued at \$12/hr with an estimated 3000 volunteer hrs/year (conservative estimate based on current participation) for 2 years	\$ 72,000	expected to grow or be sustained.
<b>Past Spending:</b> In-kind volunteer work - students and community members, in-kind legal support from Dorsey and Whitney, in-kind research from Hubert H. Humphrey graduate students, travel costs to conferences, flyer printing, energy efficiency kits, and incorporation fees. Actual cash = \$2700	\$ 79,200	

## Management Team Qualifications and Organization Description

Dr. Christie Manning has a Bachelor's degree in Human Factors Engineering from Tufts University and a Ph.D. in Cognitive and Biological Psychology from the University of Minnesota. She is a Visiting Assistant Professor of Environmental Studies at Macalester College in St. Paul, Minnesota. Dr. Manning has conducted numerous research projects to examine the cognitive and other psychological factors that influence environmentally-responsible behavior. She has been awarded several grants, most recently a 2007-2008 Environmental Assistance grant from the Minnesota Pollution Control Agency to create a handbook for environmental professionals that describes psychological research on sustainability in practical, useful terms. Together with her colleagues she has completed several projects for government agencies as well as environmental non-profits to reduce the barriers to sustainable behavior.

Timothy DenHerder-Thomas will be a senior at Macalester College in 2009. His research in residential energy efficiency was the driving force behind forming Cooperative Energy Futures, and he has facilitated the formation and operations of the cooperative, its volunteers, and a variety of different strategic directions throughout 2008. He is the chair of Cooperative Energy Futures' Board of Directors. Timothy was a founder and initial Board Member of the Clean Energy Revolving Fund, which supports self-financing sustainability projects at Macalester College. Timothy serves on the Steering Committee of the national Energy Action Coalition and on the Executive Committee of the Sierra Student coalition, among various other roles leading youth innovation in climate and energy solutions at the campus, state, and national level. Timothy is a Young People For Fellow, a Morris K. Udall Scholar, a Goldman Sachs Global Leader, and a recent recipient of the 2008 Brower Youth Award.

Kristen Eide-Tollefson has been an energy advocate and organizer for over a decade. She has served on agency and legislative stakeholder and advisory groups in the areas of environment and energy policy. She is involved in local government planning and holds a Master's degree in Public Engagement in Energy Policy Planning and Infrastructure Development from the Humphrey Institute, University of Minnesota. In 2007, she helped to put together the collaboration between NGO's, CURA (UMN), and state initiative foundations that became the statewide "Local Energy Initiatives" meetings, co-sponsored by the Department of Commerce. She has a special interest in local economies and the potential of community based energy and energy efficiency.

## Organization Description

Cooperative Energy Futures is a dynamic team of young innovators and experienced professionals that links cutting edge approaches with program expertise from a wide range of fields. We incorporated as a 308B cooperative in January 2009. Formed in December 2008, the Cooperative Energy Futures team has spent a year defining and testing its models for community-based sustainability entrepreneurship, using energy efficiency at the neighborhood level as a key starting point. Starting as a volunteer team advised by a Steering Committee, we have attracted pro-bono legal support from Dorsey and Whitney to help us incorporate as a 308B co-op, research support from a team of students at the Hubert H. Humphrey Institute, and a partnership with the Minnesota Project. The Cooperative Energy Futures team focuses on cost-effective approaches to sustainability that provide community-based economic opportunity, building off the success of its student leaders in establishing and running the \$100,000 Clean Energy Revolving Fund at Macalester College and spreading the campus revolving fund model nationwide. We combine expertise in approaches to sustainability through behavioral psychology, a key ingredient in socially-motivated sustainability action, as well as research into community-based finance and smart-grid approaches that allow efficient collaborative demand management, efficiency financing, and distributed generation. We seek to act as a catalyst for a cooperative energy future, one that links energy-users, utilities, regulators, and local innovators in a framework of mutual support and shared incentives to create a reliable, community-supported, and post-carbon energy infrastructure to under-write a sustainable economy.

