RFA 200909521

REQUEST FOR APPLICATIONS
ENERGY EFFICIENCY AND CONSERVATION BLOCK GRANTS
TO UNITS OF LOCAL AND COUNTY GOVERNMENT

EECBG CUSTOM PROJECT APPLICATION

Prime Applicant: City of Waterville		
Co-Applicants (for Regional Projects):		
Town of Winslow		
Sustain Mid-Maine		
Total Population: 23,348 *(2000 Census)*		
Total Requested Grant Amount: $170,000	Total Matching Funds Amount: $711,000	
Estimated Timeline for proposed project (*i.e.,* 6 months, 1 – 3 years): 2 years		
Activities (please check all that apply): ☐ Development of an Energy Efficiency and Conservation Strategy ✓ Technical Consultation Services ✓ Residential and Commercial Building Energy Audits ☐ Financial Incentive Programs ☐ Energy Efficiency Retrofits ✓ Energy Efficiency and Conservation Programs for Buildings and Facilities ☐ Development and Implementation of Transportation Programs ☐ Building Codes and Inspections ☐ Energy Distribution ☐ Material Conservation Programs ☐ Reduction and Capture of Methane and Greenhouse Gases ☐ Traffic Signals and Street Lighting ☐ Renewable Energy Technologies on Government Buildings ☐ Any other appropriate Activity		
Estimated Energy Savings: 5,126 MMBtu annual; 91,904 MMBtu lifetime		
Estimated Greenhouse Gas Emissions Reductions: 386 mtCO_2e annual; 6,940 mtCO_2e lifetime		
Primary Contact Name: Michael J. Roy		
Title: City Manager	E-mail: mroy@waterville-me.gov	
Organization: City of Waterville	Phone: 207-680-4204	
Address: 1 Common Street	Fax: 207-680-4207	
	Web Site: www.waterville-me.gov	
City/Town: Waterville	State: ME	Zip: 04901
Alternate Contact Name: Dr. John Joseph		
Title: Team Leader, Energy Committee	E-mail: john.joseph21@myfairpoint.com	
Organization: Sustain Mid-Maine	Phone: 207-859-1308	
Address: 1 Common Street	Fax: 207-680-4207	
	Web Site: www.sustainmidmaine.org	
City/Town: Waterville	State: ME	Zip: 04901

I understand that my application and any associated materials will be available for public view following the grant award.

Project Narrative

Background

The EECBG Custom Project Application for the City of Waterville and the Town of Winslow aims to implement a regional, community-based strategy to conserve energy use and costs, reduce greenhouse gas emissions, and create/retain jobs for the Mid-Maine area. This project takes a comprehensive, systematic, community-wide approach to energy conservation and renewable energy. The project will generate meaningful short and long-term benefits; serve as a model for community based efforts in Maine; and position Mid-Maine to provide local support for forthcoming state and federal efforts to implement residential and other innovative energy efficiency and renewable energy programs. The project application was prepared by Sustain Mid-Maine in close consultation with municipal administrators in Waterville and Winslow.

Sustain Mid-Maine www.sustainmidmaine.org was established in January 2009 during a three-day community-wide strategic sustainability planning process including diverse representative members from greater-Waterville area municipalities, businesses, citizen groups, non-profits, academic institutions, legislators, and sustainability professionals. Sustain Mid-Maine is a municipal-community collaboration created to conserve our resources, sustain a healthy environment, and promote economic prosperity for the Mid-Maine region.

Sustain Mid-Maine Energy Committee Plan

The following energy goals were established during the participatory community visioning process that created Sustain Mid-Maine. These goal and proposed projects developed in January of 2009 guided the Sustain Mid-Maine Energy Committee[1] in formulating this EECGB project plan. Over the past ten months the Energy Committee has further developed and built capacity around this action plan through research, outreach to community organizations and businesses, and meetings with state and local officials. The results of these discussions can be found in further refined project charters for the Residential Energy Conservation and District Energy Project.[2]

[1] A full copy of the 2020 Plan for Energy Conservation and Sustainability can be found at www.sustianmidmaine.org
[2] Copies of the Residential Energy Conservation and District Energy Project charters are available at www.sustinamidmaine.org

Sustain Mid-Maine January 2009	Energy Goals Generate Renewable Energy and Promote Conservation
Expected Results By 2020	• We have reduced our reliance on fossil fuels by 50% • People of modest means can afford to live in the Kennebec Region through the winter months • We have made 50% improvement in residential energy efficiency in 90% of our housing stock • We have reduced commercial/nongovernmental institutional building non-renewable energy consumption by 50% compared to 2009 • We have expanded local usable, renewable energy production by 100% annually, compared to 2008, in a sustainable manner • We have reduced our carbon footprint by 50% compared to 2009

PROJECT 2 – Improve Energy Efficiency of Residential Buildings

1. insulate every home
2. use solar thermal hot water for all hot water needs
3. clean and tune every existing heating system
4. install high efficiency lighting everywhere
5. create neighborhood groups to help elderly close windows, etc.
6. expand the light brigade to distribute the best available lighting technologies
7. use "Kill a Watt" devices that show how much energy is being used
8. find ways to help people heat their homes short-run while developing longer-term green projects
9. utilize existing state-wise weatherization programs for low-income people or housing
10. support weatherization programs

PROJECT 3 – Develop Community Alternative Energy Infrastructure

1. evaluate co-generation district heating
2. take advantage of net metering rules for renewable energy generation in homes and institutions

Sustain Mid-Maine Consultation

The Sustain Mid-Maine Energy Committee has held over twenty meetings over the last 10 months, including private and public meetings and presentations with Efficiency Maine, MaineHousing, Governor's Office of Energy Independence and Security, Maine Department of Conservation, USDA Natural Resource Conservation Service (NRCS), KVCAP, and local banks. Sustain Mid-Maine will continue its close working relationship with the City of Waterville and Town of Winslow. Collaborators in this project will be KVCAP, MSHA, KVCOG, USDA-NRCS, Efficiency Maine, Colby College, Thomas College, Kennebec Valley Community College, bankers, energy auditors, and K-12 schools, among other partners, to implement the proposed programs.

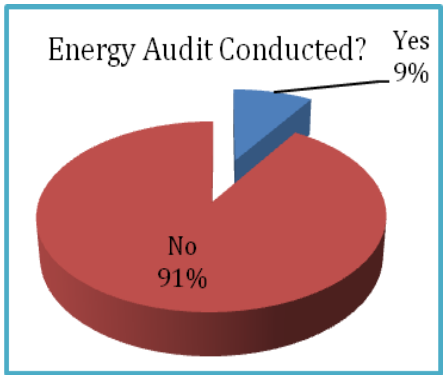
Community Energy Efficiency and Renewable Energy Marketing Survey Data

In the summer of 2009, Sustain Mid-Maine distributed 1000 community surveys to residents in Waterville, Winslow, and two other regional towns. Over 100 completed surveys were returned and analyzed. Analysis revealed a representative and unbiased group of respondents who overwhelmingly support of the goals and aspirations expressed

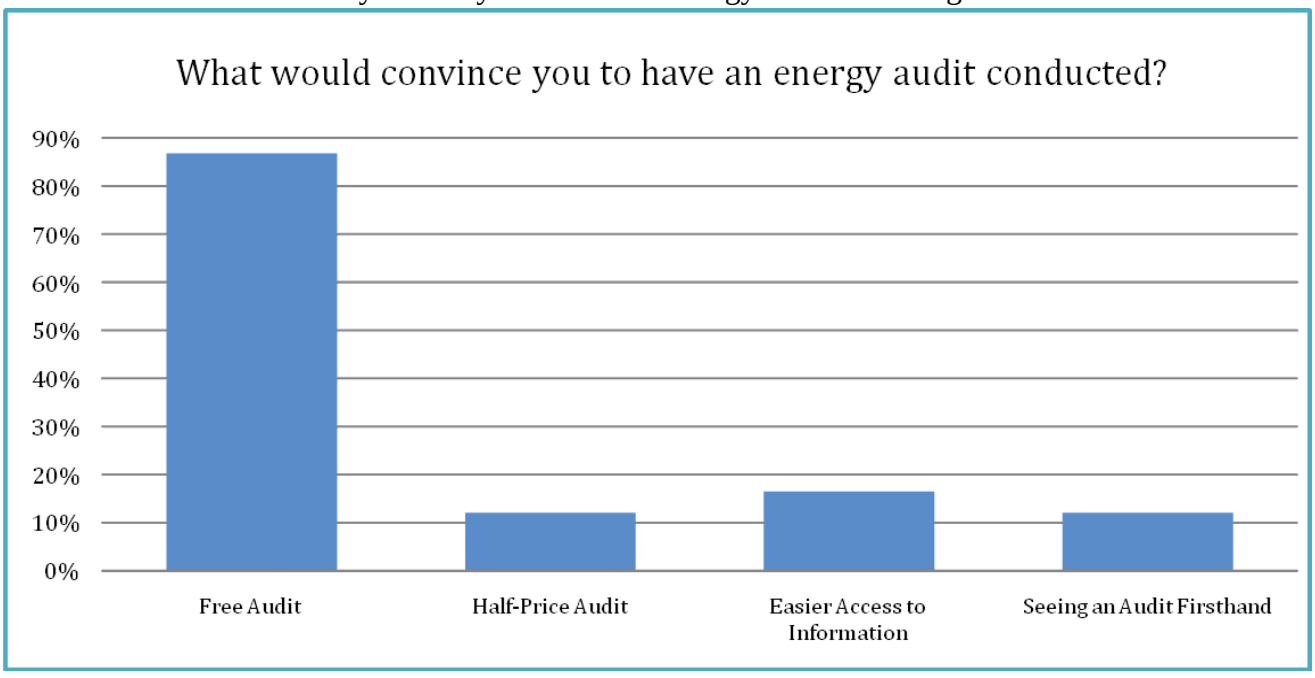
in the 2020 Plan for Energy Conservation and Sustainability—of which the above Energy Plan excerpt is part. The survey examined key marketing data relating to residential energy efficiency improvements. This residential energy efficiency improvement survey data was compared to the October 2008 Critical Insights survey of 3200 Maine residents for consistency. The full survey can be found at www.sustainmidmaine.org. The following is an excerpt of survey questions, response data, and analysis. The findings of this research informed the design of this project and the resulting Plan of Action.

Would you be interested in learning more about how to improve the efficiency of your home to conserve energy and money?
Eight in ten respondents indicated interest in learning more about energy efficiency to conserve energy and money. There seems to be a high demand for information related to energy conservation in the community.

An energy audit is a detailed study of how much energy your house uses, and costs about $400. Have you had an energy audit conducted for your home?
Less than one in ten respondents indicated they had an energy audit conducted on their household. This indicates that the vast majority of homes in the greater Waterville area have not had an audit completed. The audit is the first step in choosing cost effective options to reduce home energy use.



A follow up question asked those who had not previously had an energy audit for their home: **What would convince you to have an audit conducted: *a free audit; a half-price audit; easier access to information; or seeing an audit done firsthand*?**
Eight in ten residents would have an energy audit performed on their home if they could receive one for free. About one in ten residents would be convinced to have an audit conducted if it was half-price, if there was easier access to information, or if they could first see an audit performed on a house. While each strategy has an important role to play in increasing homeowner energy efficiency and savings, subsidizing the audit seems to be the most effective way to catalyze residential energy and cost savings.



Plan of Action

This proposal allocates resources in a three-part action plan, addressing energy conservation and job creation in the residential, commercial, and industrial sectors. The project will achieve goals through a combination of education, on-stop-shopping, financial incentives, student service, and technical research.

1. Residential Energy Efficiency (Residential Sector)
2. Residential Renewable Energy (Residential Sector)
3. Community District Energy (All Sectors)

This comprehensive project is designed to create and retain technical, craftsperson, professional, and industrial jobs. The proposal will save significant energy in the short- and long-run.

Residential Goals	
Direct Service Activities	**# of Units**
Initial Consultations	300
Winterizations	100
Weatherization Audits	120
Weatherization Jobs	100
Weatherization Inspections	100
Solar HW Assessments	40
Solar HW Installations	20

Residential Efficiency (Removing Barriers and Motivating Action)

The Residential Efficiency project is an innovative program to reduce residential energy use through education, winterization, and weatherization. Presently, the State's Weatherization Program is available only for low-income residences and provides a 100% subsidy of weatherization costs to eligible households. The proposed project is designed to fill a gap and provide encouragement and support to all residences, including those that do not meet the State income eligibility guidelines for low income weatherization programs. We will collaborate closely with KVCAP resources and offer services to all residences, whether or not they are income eligible for KVCAP services.

This project will address a major impediment to the State's goal of weatherizing all of the residences in Maine during the next 20 years: the lack of motivation and follow-through by home owners to improve their home's energy efficiency. Our investigations to date suggest that even amongst people who have the funds and the interest in energy efficiency, very few people will seek a home energy audit, and fewer still will follow through on implementing the recommendation of such an audit. According to the October 2008 Critical Insights survey, homeowners that have no plans to perform an energy audit explain their feelings about audits in the following ways: it is unnecessary (they do not see a need); the cost is prohibitive, they cannot afford it, or it is a waste of money; or they are uncertainty about the benefits of an audit (lack of knowledge), among other responses. Other factors explaining why homeowners do not perform an energy

audit include homeowner forgetfulness, procrastination, distrust, busyness (aversion to extra organizational work), lack of knowledge on which energy auditor and contractor to employ, and lack of knowledge on tax and other financial incentives. Educating clients and directly assisting them through each step of the process will therefore be the first priority in the proposed program.

Our goal will be to overcome many of these barriers in order to achieve an optimal compliance rate of about half of home owners weatherizing homes and half to winterize their homes. We will collect statistics regarding what percentage of homeowners participate at each step of the process, how much they spend on home energy improvements, and how much their energy usage by source is reduced during the following winter or year. We use this data in order fine-tune the program during implementation and to develop bi-monthly reports to the EECBG reporting entity.

We will provide one-stop service, with a staff member leading homeowners through the entire process of both winterizing (inexpensive, easy steps to decrease air infiltration) and weatherizing their home (more involved energy efficiency improvements). The staff member will outline the proposed program's direct incentives as well as guidance regarding how to access existing governmental subsidies and tax breaks to overcome financial constraints. The "one-stop-shop" service will be provided through a telephone number and web-site and support by our staff member. Contractors, auditors, and home improvement lenders will be contacted and invited to participate, and our staff member will assist home owners as needed in contacting and working with these approved professionals.

Our survey revealed that one key to getting more than a minimal level of follow-through by home owners may involve simply getting them to take a first, easy step to improve energy efficiency. An initial approach to facilitating this first step by home owners would involve having our staff member inspect the home with the homeowner, choosing what initial steps to take to winterize their home. This staff person would schedule and return with local volunteers and high school students who have been trained in energy efficiency remediation and make minor, high impact energy improvements on the spot (an adaptation of the Keep ME Warm and the Unity Barnraisers approach).

This winterization step resembles the Rapid Development Energy Efficiency Toolkit (RDEE) R2 model energy efficiency option: Residential Energy Audit and Direct Installation. Our proposed program differs in that only the staff and students performing the winterization would be paid while citizen volunteers would also be involved. We anticipate that after gaining experience as a volunteer, we would train many of these community members to become team leaders. These team leaders could help organize winterization service funded by minimal corporate sponsorship, private donations, or other nominal support for materials costs. The paid students assisting in winterizations would include those currently training to work in the energy efficiency and construction fields, specifically those students attending Kennebec Valley Community College (Fairfield) and the Mid-Maine Technical Center (Waterville).

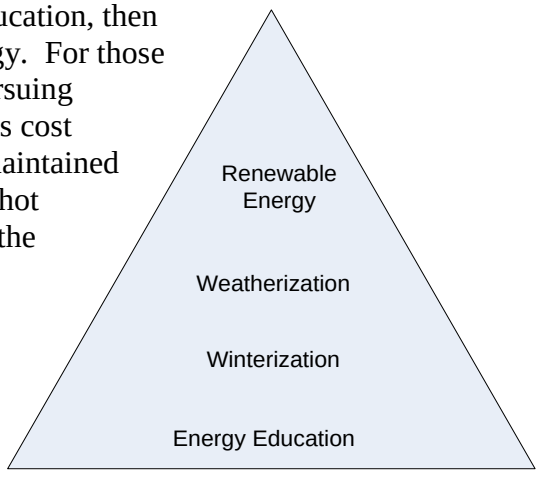
After working together, the staff member would sit down with the home owner, describe the incentives and economic benefits of a true weatherization program and invite them to schedule a subsidized energy audit. The home owner would be expected to provide or permit collection of data on their yearly oil usage and the size of their home, and data would then be given to them, comparing their usage and the average energy usage in a well weatherized home of comparable size. Using survey data we estimate that subsidizing 75% of the audit costs in combination with our other motivational efforts would achieve this rate. The project will pay $300 of the $400 dollar audit as an incentive to action. This 'weatherization', or energy audit and retrofit, closely resembles the RDEE R3 model energy efficiency option: Home Performance with Energy Star. Furthermore, we will encourage program participants to use a low-interest loan for home energy improvements developed in collaboration with local bankers and credit unions. The Sustain Mid-Maine Energy Committee has had meetings with selected local banking leaders and will expand these discussions with all local lending institutions.

State certified auditors will conduct all energy audits. The audits will provide a plan for energy efficiency retrofits on each home. In the final audit the homeowner will be provided guidance on financing, tax credits, and a list of certified contractors. All outcomes will be documented and homes will be inspected providing a high quality service.

All marketing efforts will focus simultaneously on 2 goals: eliciting home owner interest to participate in our program and educating the public about the need to winterize and how to do it. We would seek to present this program at local churches and community organizations. We will set up and advertise winterization workshops in each of our local hardware stores. We are considering a contest in local schools that would increase public awareness of the project, with the winners earning free home energy audits. Marketing approaches would involve TV, radio and newspaper stories, door hangers and our staff person speaking to home-owners and community leaders.

Renewable Energy (Reducing Costs through Aggregation)

The project offers a pyramid of services prioritizing energy education, then winterization, then weatherization, and finally renewable energy. For those having completed the first steps, we will offer assistance in pursuing renewable home energy options. Solar hot water was chosen as cost effective renewable energy strategy that can be installed and maintained by local contractors. The savings from the installation of solar hot water heaters is estimated to be 200-400 gallons per year[3] and the technology is proven to be reliable.



Up-front costs and lack of knowledge are often the barriers to the homeowner's making the solar hot water investment. Even after state and federal government subsidies, these barriers can still remain. This project will attempt to further lower the cost barriers through a process of pre-screening clients and aggregating installations

[3] Estimate provided by Jennifer Hatch, Revision Energy, November 2009

into a package to be bid out for a discounted price. We will encourage participants to take advantage of low-interest energy loan packages arranged with local banks.

Solar assessments will be subsidized for selected homes. Homeowners will have to pay a minimal fee of $50 indicating their commitment. Homeowners will agree that documentation of saving data will be shared with the project team. The solar hot water assessment will include construction specification which can be used by an installer to price out the job. Homeowners receiving solar assessment will be asked to participate in a joint purchasing agreement with the objective to reduce initial cost of installation through economies of scale. Projects specifications will be combined into one bid package and provided to local contractors as a package deal. The expectation is that the cost of equipment and installation can be significantly reduced through the following economies of scale achieved through aggregation:

1. Pre Selected Customers eliminate direct marketing costs
2. Cluster sites in one central area reduces logistical costs
3. Installations can be schedules improving planning efficiencies
4. Volume discounts for equipment purchases and shipping

Community District Energy (Technical & Economic Feasibility)

Mid-Maine offers an ideal combination natural resources (wood and water), industrial infrastructure, and community capacity to develop a highly-efficient, industrial co-generation and district energy project. The strategic plan is focused on the development of a facility to provide competitively priced renewable energy. This will be accomplished by combining available local assets: sustainably harvested biomass, concentrated industrial land, closely spaced energy using facilities, rail yard for biomass delivery, land for expanded development, and a closely-knit community of strong local institutions.

The project will be developed in phases, with the first phase to serve the major energy users clustered within a defined geographic distance from the location of the co-generation facility. Sustain Mid-Maine representatives have met with key stakeholders including: PanAM Rail Road, Huhtamaki Corp., Colby College, Maine Medical Center, and municipal officials. There is strong support from all parties to participate in a preliminary feasibility analysis of the Community District Energy project.

The first phase of feasibility will likely use the Huhtamaki energy load as a simple yet accurate starting point to begin the feasibility analysis—additional facilities and community district projects can be incorporated on top of this baseline analysis. The initial analysis will position Huhtamaki—and its 350 employees—along with other industrial users to be more cost-competitive and retain quality Maine jobs. With the regulatory environment changing in support of distributed energy systems both in Maine and nationally, the concept of a RECHP facility is becoming increasing more economically attractive. Our preliminary analysis suggests cost savings and long term security based on the following:

The price of industrial wood fuel is about 1/3 the cost of oil, this can vary from year to year. A cogeneration facility can be twice as efficient as a condensing facility. These two

factors combined can provide a significant economic advantage to a community that can put these two advantages together. A key planning and development challenge is to balance the load between electrical usage and thermal steam or hot water load so as to maximize the benefits of combined heat and power.

The Community District Energy project is an economic development as well as an energy project. This project has very significant long term potential for job retention and new job creation. The renewable energy combined-heat and power facility (RECHP) will provide energy to an adjacent eco-business park for future development. In future phases, the low-cost electricity, steam, and hot water from the facility will be used to attract new business to the eco-park on the Kennebec and provide for new jobs.

Long Term Vision of Sustain Mid-Maine District Energy Committee

The Mid-Maine Community District Energy Project envisions a renewable-energy generation complex located in Mid-Maine along the Kennebec River. This complex will provide electricity, hot water for heating buildings, and steam for industrial, commercial, or agricultural uses. This renewable energy will be provided at very competitive prices to users within the Community Energy District (CED), or energy zone. The community energy district or ECO-Park will be anchored by a combined heat and power facility fueled with renewable energy and operating at high thermal efficiencies.

The community energy district provides important economic development infrastructure to the area. It will help secure existing industrial jobs and create new job and investment opportunities. Reliable, renewable, and local energy at below market rates combine to provide a competitive economic advantage.

The purchase of local biomass will put energy dollars in the hands of landowner, wood harvesting, and transportation sectors in Maine resulting in economic multiplier effect as those energy dollars are circulated locally.

The project will address climate-change objectives by using a gasification process, which dramatically reduces particulate emissions. Further, gasification enhances complete combustion, resulting in a reduction in chemical pollutant emissions, thus creating a model environmental facility. Wood chips will be procured from lots which are sustainable managed. Wood will be transported by rail, reducing wear and tear on roads; increasing transportation efficiency and thereby decreasing fossil fuel use, costs, and emissions: and creating expanded markets for rail service.

Role of EECGB Funding in District Energy Project

The EECBG project will include funds to engage technical consultants to assist in a preliminary evaluation of the feasibility of a community district centered on a RECHP. The preliminary feasibility study will evaluate the technical and economic feasibility a combined heat and power facility providing energy to major users within an economically feasible area. Various fuels and technological options will be evaluated including wood gasification and fluidized bed combustion. The study will evaluate the economics and availability of fuels including the potential cost and availability of natural gas.

The feasibility analysis will be overseen by the Sustain Mid-Maine subcommittee on Community District Energy will be expanded to create a stakeholders group.. The stakeholders group will include energy management staff from Colby, Huhtamaki, Waterville City Engineer, Kennebec Water District, Maine Medical Center, and others as appropriate. The group will create a work plan for the consultant and will closely oversee the research. Technical consultants will be asked to focus on engineering and regulatory analysis. The Stakeholders group will collect needed baseline data to reduce costs for technical consultancy staff.

We understand that the $10,000 budgeted for the district energy preliminary feasibility study is not nearly enough to determine feasibility, however it will answer key questions determining next steps. A positive outcome of the preliminary evaluation will lead to funding requests for other resources to undertake a detailed feasibility evaluation. Specific outcomes of the preliminary feasibility project include:

1. Community leaders will be in a position to assess whether or not the project should be taken to the next phase, which would begin with a detailed feasibility evaluation. Community leaders will then in a position to apply for a grant to undertake detailed engineering and cost estimation.
2. The results will attract new partners and stakeholders to the project.
3. The results will provide an understanding of the scope of the project and will help attract the resources required, and prevent further planning for a project that is not feasible due to economic or regulatory constraints.
4. Information will be available to other communities in Maine and New England with similar assets, of which there are many.

Statement on Potential Energy and Cost Savings

The following calculations are NOT included in the immediate cost savings estimates of this application because they are long term. The District Energy Project represents what the EECBG application determines to be "the initial stage of projects promising long-term energy savings and emissions reductions."

Colby College, Mid-Maine General, and Huhtamaki are three large steam users within economical steam distribution proximity. These three of many stakeholders conservatively use 3.7 million gallons of #6 fuel and 440,000 gallons of #2 fuel annually. A RECHP facility designed for these three stakeholders would amount to 4.2 million gallons of fuel oil savings per year, or approximately $10,000,000 a year in annual fuel oil savings. Excluding other large and interested stakeholders, a 2 MW back pressure turbine could run economically generating 10,000,000 kWh electricity per year. At a very conservative $2 per gallon and $0.08 per kWh, this limited stakeholder group could save $20.8 million in energy costs per year, or approximately $416 million over a 20 year project lifetime. Roughly, this would require 70,000 tons of 50% moisture content wood chip equivalents, well within a sustainably harvestable range according to the Maine Natural Resource Conservation Service.

Calculations

Calculations for Project Specifications

The following calculations use conservative figures based in empirical data. Figures listed in bold include savings from 100 winterized homes, 100 weatherized homes, and 20 solar hot water installations. Potential savings from a district energy project are NOT included in calculations.

List of Assumptions

Home Energy Use

We assume the average Waterville or Winslow residential building unit uses 850 gallons of #2 fuel oil annually. This figure is halfway between the Waterville inventory estimate of 966 gallons of #2 fuel per total building per year and the MaineHousing LIHEAP individual housing unit average of 739 gallons of #2 fuel per year. We assume the average Waterville or Winslow residential building uses 9,821 kWh of electricity annually. This estimate comes from grid residential energy use from Central Maine Power (CMP) and analysis performed in the 2006 Waterville Greenhouse Gas (GHG) emissions inventory.

Energy Savings Estimates

Winterization projects are estimated to save 5% annually on home heating oil use, or 42.5 gallons per home annually. This is significantly more conservative than the 20% annual winterization savings estimate provided by the Unity Barnraisers winterization project.

Weatherization projects are estimated to save 30% annually on home heating oil use, or 255 gallons per home annually. This estimate is based on a 2006 Maine Weatherization Program Evaluation of 31 LIHEAP weatherized homes with a direct weatherization cost of $2044. We anticipate a 10% higher rate, or 30% overall improvement, due to higher investment ($5000), homeowner education, and project co-management. Weatherization is conservatively estimated to save 5% annually on electricity bills, or 491 kWh annually.

Solar hot water projects are estimated to save 300 gallons per home annually, based on a conservative estimate provided by Revision Energy, a reputable company with years of experience in solar hot water installations.

Duration of Benefits

Winterization benefits will last for 2 years according to a conservative estimate provided by the Unity Barnraisers project, based on their previous winterization experience. Weatherization benefits will last for 20 years according to KVCAP Energy Services. Solar Hot Water benefits will last for 20 years according to Revision Energy.

Electricity and Fuel Oil Costs

Home heating oil costs are assumed to be $3 per gallon of #2 heating fuel according to the EIA November 2009 Short-Term Energy Outlook for Retail Diesel. Electricity costs are assumed to be $0.156 per kWh according to estimates for CMP Residential Standard Offer rate average provided by CMP Customer Representatives on November 16, 2009.

Waterville and Winslow Greenhouse Gas Inventories

A 2006 GHG Inventory for the City of Waterville[4] estimates that residential building emissions account for 62,703 tCO_2e, 22.1% of total community GHG emissions. "Total community GHG emissions" include emissions from the residential, commercial, industrial, transportation, and waste sectors. 62,703 tCO_2e residential GHG emissions were generated by 712,086 MMBtu of energy use. 19.3% (137,203 MMBtu) of use was from electricity use, and 80.7% (574,865 MMBtu) of use was from heating fuel use. Heating fuel use by energy content was mostly from #2 distillate fuel (90.2%).

Waterville has 4250 household units. Therefore, an average of 167.55 MMBtu/year/household and create 14.75 tCO2e emissions/year/household. Due to similar climates and housing stocks, we assume that Winslow household units have the same energy use characteristics.

A 2007 GHG Inventory for the Town of Winslow[5] suggests that residential building emissions account for 45,110 tCO_2e, 33.7% of total community GHG emissions.

Project Specifications

1. **Annual energy savings: 5,216 MMBtu or 1,502,000 kWh**

Includes annual savings of 35,750 gallons of # 2 fuel oil and 49,105 kWh electricity

Lifetime energy savings: 91,904 MMBtu or 26,936,000 kWh

Includes lifetime savings of 638,500 gallons of #2 fuel oil and 982,100 kWh electricity

2. **Impact on electric load of local utilities:** According to CMP, Waterville and Winslow residential customers draw about 64,000,000 kWh of electricity from the grid annually. The proposed project would reduce annual electricity use by 49,105 kWh. This represents about 0.1% of the annual residential grid demand.

3. **Annual greenhouse gas savings: 386 $mtCO_2e$**
   Lifetime greenhouse gas savings: 6,940 $mtCO_2e$

4. **Annual economic benefits: Annual cost savings: $114,910**
   Lifetime cost savings: $2,068,708
   Jobs created: 13.5

The RDEE suggests that every $1,000,000 of spending on home energy audit and retrofit programs will create 18 to 25 jobs. Including the homeowner match, the proposed project will result in approximately $750,000 in spending on a similarly modeled home energy audit and retrofit program. Assuming a conservative 18 jobs created per $1mn

[4] Erario, Stephen. *A Sustainable Waterville: Greenhouse Gas Emissions Inventory and Analysis Report—and Pursuing a Sustainable Future for Waterville, Maine*. 2007. The ICLEI-Local Governments for Sustainability methodologies for greenhouse gas reporting were followed for this and subsequent reports. **Electricity emissions were obtained from Central Maine Power; heating emissions estimated from using EIA and Mass Oil Heat Council figure of .432 gallons of # 2 oil per square foot of residential building space and building square footage data provided by the Waterville Community Assessor**; transportation emissions from the Department of Transportation. Census data and other studies, as advised by ICLEI, were used to supplement this data.

[5] Dillon, Robert and Whittaker, Kerry. *A Sustainable Winslow: Greenhouse Gas Emissions Inventory and Analysis Report—and Pursuing a Sustainable future for Winslow, Maine.* 2008.

spending, we assume 13.5 jobs will be created as a direct result of project spending. Jobs created include direct jobs associated with implementing the program, contractor jobs created through spending, as well as jobs created through economic effects resulting from homeowner spending of those dollars that would otherwise go towards utility bills.

5. Expected improvements in energy efficiency: The proposed project will reduce the residential housing stock's electricity demand in Waterville and Winslow by 49,105kWh, or about 0.1% of total grid load. The proposed project will reduce the residential housing stock's heating oil demand in Waterville and Winslow by an equivalent of 35,750 gallons of #2 oil annually, about 0.6% of residential heating oil demand.

6. Grant amount requested: $170,000

Program Cost and Homeowner Investment			
Direct Service Activities	**Direct Program Costs (Incentives)**	**Homeowner Direct Investment**	**Total Direct Investment**
Initial Consultation	$30,000	$0	$30,000
Winterization	$24,400	$0	$24,400
Weatherization Audit	$24,000	$6,000	$30,000
Weatherization Job	$0	$500,000	$500,000
Weatherization Inspect.	$10,000	$5,000	$15,000
Solar HW Assessments	$12,000	$2,000	$14,000
Solar HW Installations	$0	$140,000	$140,000
District Energy	$10,000	n/a	$10,000
Total Direct Program Cost	**$110,400**	**$653,000**	**$763,400**
Support and Coordination	**Indirect Program Costs**		
Marketing, Insurance, and Other	$15,600		
Other Project Administration Pay	$44,000		
Total Indirect Program Cost	**$59,600**		
Total Program Cost	**$170,000**		

Initial Consultation: The budget includes project administrator time for 300 consultations for an average of four hours per home. The initial consultations will be provided free of charge and will be educative for the homeowner and the program administrator. The initial consultation will include a walk through audit by the program administrator to prioritize three projects for winterization (if necessary) and to recommend next steps for the home (winterization, weatherization, or solar hot water assessment). Financial incentives will be outlined, including low-interest energy improvement loan packages, tax credits, cash rebates, and government programs.

Winterization: One hundred (100) homes that do not qualify for an energy audit or solar hot water assessment will be eligible to receive free "winterization" services on their home. The winterization component of this project is modeled after the Unity Barnraisers model, which performs three simple but home specific projects to seal major air leaks in a home. Projects typically include: spray foam insulation, foundation plastic wrap, weather-stripping, window sealing, and other simple retrofits. Each home will be eligible for up to $75 in materials, four additional hours of project administrator time for project retrofit oversight, and eight hours of supervised winterization work completed by Mid-Maine Technical Center high school vocational students.

Weatherization

Audit One hundred twenty (120) homeowners that opt to perform a weatherization audit will be eligible for a $200 subsidy on the initial $250 audit after proving their commitment and ability to implement approximately $5,000 in energy efficiency retrofits (before subsidies and rebates). The project administrator will help the homeowner interpret results of the energy audit.

Job One hundred (100) home energy efficiency projects will be co-managed by the project administrator, who will help the homeowner: apply for cash rebates and tax incentives (up to $3,500); apply for a pre-arranged low interest home energy improvement loan (packaged by local banks and credit unions); and select certified professionals to implement audit recommendations.

Inspection One hundred (100) homeowners who implement energy improvements will be eligible for a $100 subsidy on the $150 inspection and follow-up audit, which will be a required of project participants. The inspection is the "second half", quality assurance stage of the audit and will help ensure participant satisfaction and verify energy savings.

Solar Hot Water

Solar Assessment Forty (40) energy efficient homes with substantial solar potential will be eligible for a $150 subsidy on the $200 solar assessment after proving their commitment and ability to implement the approximately $7,000 solar hot water installation. The project administrator will help the homeowner interpret results of the solar assessment.

Solar Hot Water Installation We anticipate that twenty (20) homes will have proven solar sighting capacity and will install a solar hot water system. The project administrator will help the home: combine projects into a joint-project bid to lower costs; apply for cash rebates and tax incentives; apply for a pre-arranged low interest home energy improvement loan (packaged by local banks and credit unions); and select certified professionals to install the hot water system.

District Energy: Funds will be used for a pre-feasibility study as stated above.

Marketing, Insurance, and Other: $15,600 will be used to purchase insurance for winterization students and volunteers, to create and implement marketing campaigns, and to cover small expenses within DOE spending guidelines that facilitate project goals.

Program Administrator: A program administrator will be hired for two years with an annual salary of $45,000 for the two year project implementation period. The $44,000 "Other Project Administrator Pay" represents time spent in the office, i.e. time not spend directly consulting or administering projects.

7. Source of matching funds:

KVCAP: has agreed to provide state-certified energy audits with follow up verification for a total cost of $400 for 120 units; this is a discounted price of $150 less than the cost of the average $550 market value of a certified energy audit, the value of this discount is $18,000. Not counted in this match is the KVCAP commitment to focus LIHEAP Weatherizations units in a potential "targeted neighborhood" to complement the EECBG units in that neighborhood.

Matching Funds	
Matching Organization	**Amount**
KVCAP	$18,000
SMM Prof. Volunteers	$30,000
City of Waterville Support	$10,000
Total Direct Match	$58,000
Homeowner Direct Investment	$653,000
Total Expected Match	**$711,000**

SMM Professional Volunteers: Sustain Mid-Maine draws on the expertise of a broad base of professional volunteers who have committed 400 hours of specialized consulting to the project over the two year period. This is a conservative estimate, considering that the Energy Committee, which is comprised mainly of these professional volunteers, has already committed over 1500 hours of service since January of 2009. Please see Sustain Mid-Maine's attached letter of support for professional volunteer biographies.

City of Waterville Support: The City of Waterville has committed to providing physical space, technology, and administrative support for the EECBG funds as the lead applying municipality. Please see the attached letter of support.

Homeowner Direct Investment: We anticipate homeowner investment of $653,000 in response to the subsidies and assistance offered by the proposed project. In addition to subsidies and other assistance, pre-packaged low-interest energy improvement loans will encourage high homeowner investment rates.

Please see below project specification #8 (project timeline)

9. Performance targets:

We will seek to achieve the above listed energy and greenhouse gas savings. Savings will be documented using energy bills obtained before and after winterization, weatherization, and solar hot water installation projects. This verification will be performed jointly by the project administrator (using before and after energy bills) and verification work (budgeted below) to be performed by energy auditors after contracted home efficiency retrofits have been performed.

Please see below project specifications #10 (work plan) and #11 (letters of support)

12. List of permits required:

No permits are required at the current moment. Solar hot water installations will require that homeowners secure permits to allow an electrician to wire a water pump into a home's circuit breaker.

13. Explanation of how financial savings will benefit the community:

The estimated $2.07 million in lifetime financial savings from winterizations, weatherizations, and solar hot water installations will go directly to residences that participate in the proposed project.

8. Project timeline and 10. Work plan

Activity	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Responsibility
														ns in Year 2												
Task 1: Conceptual Project Design																										
Prepare EECBG Application																										SMM
Meet with Bankers to Design Loan Program																										SMM
Meet with Mid-Maine Technical Center for HS Student Participation																										SMM
Task 2: Issuing RFP and Choosing Contractor for Energy Audits, Solar Assessments, and District Energy Contractors																										
Develop and Issue RFPs																										SMM/WTVL/WIN
Contractors Intent to Issue Bid Statements and Pre-Bid Question Periods																										SMM
Receive and Evaluate Proposals																										SMM/Staff
Select and Negotiate with Preferred Contractors																										SMM/Staff/WTVL/WIN
Task 3: Hire EECBG Project Administrator																										
Develop Job Description																										SMM
Advertise, Evaluate, and Select Implementation Staff Person																										SMM/WTVL
Task 4: Marketing Program Design and Creative Development																										
Develop Marketing Plan																										Staff
Develop Program Web Site																										Staff
Task 5: Market Materials Execution and Delivery																										
Launch Marketing Campaign																										Staff
Task 6: Student/Volunteer Recruiting, Training, and Support																										
Identify/develop training																										Staff
Identify/recruit volunteers and students																										SMM/Staff
Train/equip/certify volunteers and students																										Staff
Task 7: Participant Identification and Selection																										
Identify area resident audit/assessment and retrofit households																										SMM/Staff
Task 8: Incentive Application Validation and Processing																										
Develop consumer incentive and financing plan																										SMM
Task 9: Tracking Database Design and Set Up																										
Develop results tracking system																										Staff
Implement results tracking system																										Staff
Task 10: Quality Assurance & Quality Control (QA/QC)																										
Develop quality assurance plan																										Staff
Implement quality assurance protocols																										Staff
Task 11: Customer Support Activities																										
Develop customer support plan (web-based AND call center)																										SMM
Implement customer support plan																										Staff
Task 12: Program Implementation																										
First walk-through completed																										Staff
First full scale audit and first solar assessment completed																										Contractor
District Energy study conducted																										Contractor
Task 13: Evaluation, Measurement, & Verification (EM&V)																										
Develop EM&V Protocols																										SMM/Staff
Implement EM&V Protocols																										SMM/Staff
Task 14: Quarterly Reports																										
Submit Quarterly reports to EECBG Grant Administrator																										SMM/Staff/WTVL/WIN

11 Supporting statements

TOWN OF WINSLOW, MAINE

(207) 872-2776 Phone
(207) 872-1999 Fax

114 Benton Avenue
Winslow, ME 04901

November 12, 2009

Jennifer Paul, Administrative Assistant
Maine Public Utilities Commission
242 State Street
18 State House Station
Augusta, Maine 04333-0018

RFA#200909521
Request for Applications
Energy Efficiency and Conservation Block Grants to Units of Local Government

Please be advised that the Town of Winslow fully supports the enclosed Energy Efficiency and Conservation Block Grant proposal. This application was developed collaboratively by the City of Waterville, the Town of Winslow, and the Sustain Mid-Maine Energy Committee. We feel the enclosed programs will serve to best benefit our community and future energy conservation goals as consistent with the Energy Action Plan of the Sustain Mid-Maine Energy Committee.

If you have further questions, please contact me at (207) 872-2776.

Respectfully,

Michael W. Heavener
Winslow Town Manager

CITY OF WATERVILLE

Office of the City Manager

November 12, 2009

Jennifer Paul, Administrative Assistant
Maine Public Utilities Commission
242 State Street
18 State House Station
Augusta, Maine 04333-0018

RE: RFA#200909521

Dear Jennifer:

Please be advised that the City of Waterville fully supports the enclosed Energy Efficiency and Conservation Block Grant proposal. This application was developed collaboratively by the City of Waterville, the Town of Winslow, and the Sustain Mid-Maine Energy Committee. We believe the proposed activities will benefit our communities and support the energy conservation goals as developed by the Sustain Mid-Maine Energy Committee.

The City of Waterville commits itself to serving as the lead community in this grant application. In addition to administering the grant funds, the City will provide the physical work space and all other administrative and technological support to the staff person chosen to administer the grant.

If you have further questions, please contact Mike Roy 207-680-4204.

Sincerely,

Michael Roy
City Manager

www.sustainmidmaine.org

1 Common Street, Waterville, Maine 04901

November 12, 2009
Jennifer Paul, Administrative Assistant
Maine Public Utilities Commission

RFA#200909521 Request for Applications

Community volunteers from the Sustain Mid-Maine Energy Committee have worked closely with Waterville, Winslow, and a long list of state and local government agencies, businesses, institutions, community groups, non-profits, and other stakeholders in the development of their Energy Action Plan and the enclosed EECBG application. Sustain Mid-Maine members volunteered over 1,250 hours of their time in January of 2009 alone. Since then we estimate that we have volunteered over 500 hours of our becoming educated and developing plans for the three proposed projects. We enthusiastically support the proposed projects and plan to continue our volunteer work with the Sustain Mid-Maine Energy Committee on these projects over the next two years—and have firm commitment to continue the project after the official project implementation end date. We commit ourselves to a minimum of 400 hours of service over the next two years of project development and implementation.

John Joseph, Chair, Sustain Mid-Maine Energy Committee

Chris Bryan has consulted the electric power industry for 30 years. As Principal of CBX Energy Engineering in Waterville, he is currently working on projects including biomass, hydroelectric, and wind, including the 454 MW Nantucket Sound *Cape Wind* offshore development.

Ken Fletcher is the State Representative from District 54-Winslow and SW Benton. He has been on the Joint Standing Committee on Utilities and Energy Committee for seven years. Ken worked in the Pulp and Paper industry for 30 years in various technical and managerial roles.

David Gilpatrick is Energy and Housing Director at at Kennebec Valley Community Action Program (KVCAP), where he has worked for 21 years. David oversees Weatherization Programs at KVCAP, working with Maine State Housing Authority (MSHA) and other local and state agencies to deliver energy and related programs to the KVCAP clients.

Bob Hussey is a licensed engineer with over 24 years of experience currently employed as an engineer for Huhtamaki Inc. Bob is creator and owner of SolarTech Inc. in Waterville, where he has gained 10 years experience designing and installing photovoltaic and wind energy systems.

Elery Keene was the Executive Director of the Kennebec Valley Council of Governments (KVCOG) for 32 years. He has a B.A. and M.A. Civil Engineering and a M.A. in Urban and Regional Planning. Elery also serves on Sustain Mid-Maine's Executive Committee.

Gus Libby is the Assistant Director for Operations and Maintenance at Colby College. He has managed Colby's Central Steam Plant and campus mechanical/electrical systems for 16 years. Gus holds a BS MET and an MBA. He is LEED-AP certified and is a Certified Energy Manager.

Richard Thomas is a clinical psychologist working with Sustain Mid-Maine to explore motivational factors that influence home owner's willingness to weatherize their home. He has a ten year history of volunteerism and is researching ways to reduce substance abuse in children.

John Joseph is Professor of Economics at Thomas College. He manages JAI Software, which is developing energy audit and energy management software. John is the former director of the Maine Office of Energy Resources.

Peter Wintle is Assistant Director of Energy & Housing Programs for KVCAP. For ten years he managed MSHA's Weatherization, Home Repair & Fuel Assistance Programs.

P: 207.680.4200 ◉ F: 207.680.4207 ◉ E: coordinator@sustainmidmaine.org

KV CAP
Supporting Solutions that Build Stronger Individuals, Families, and Communities
Kennebec Valley Community Action Program

November 12, 2009

To Whom It May Concern;

Please accept this letter of support for the Sustain Mid-Maine Coalition in their application for an Energy Efficiency Conservation Block Grant. KVCAP will be collaborating with Sustain Mid-Maine in an effort to provide quality services to residents in the communities of Waterville and Winslow. We will be providing energy audits to homes and will provide a plan for energy efficiency improvements on each home, involving weatherization, and for interested home owners, renewable energy options. Where feasible under federal regulations, we will allocate weatherization projects to supplement Sustain Mid-Maine residential projects so as to provide high coverage rates in specific areas or neighborhoods.

We believe this will be an invaluable service to our community and fully support the efforts of the Sustain Mid-Maine Coalition (SMMC) in their endeavor. We have provided advice and outreach assistance to the SMM and will continue to do so as needed.

Sincerely,

Pat Kosma
KVCAP, CEO

United Way
97 Water Street, Waterville, Maine 04901 – 859-1500 / Fax 873-0158
26 Mary Street, Skowhegan, Maine 04976 – 474-8487 / Fax 474-6614
219 Cony Road, Augusta, Maine 04330 – 622-4761 / Fax 623-2391
All locations toll free: 1-800-542-8227; Homepage: www.kvcap.org
NeighborWorks® CHARTERED MEMBER

PROJECT SUMMARY

ENERGY & ECONOMIC BENEFITS

The proposed project will generate quantifiable emissions reduction savings of 386 $mtCO_2e$ annually and save 6,940 $mtCO_2e$ over the project lifetime. The proposed project will reduce energy use by 5,126 MMBtu or 1,502,000 kWh annually and 91,904 MMBtu or 26,936,000 kWh over the project lifetime. Energy efficiency in the Waterville-Winslow residential building stock will lead to a 0.1% reduction in electricity demand and a 0.6% reduction in residential heating demands. The proposed project will create 13.5 jobs over the two year implementation period. The proposed project will generate energy cost savings of $114,910 annually and $2,068,708 over the project lifetime. The RECHP District Energy Project is positioned to save three of many potential regional industrial users over $20 million in energy costs per year.

According to the RDEE, winterization and weatherization programs "provide more new job opportunities than any other programs." In addition, "bill savings by residences tend to re-circulate in the economy to a greater degree than do savings by commercial or industrial customers, and therefore have a greater multiplier effect on jobs and economic activities." The "broad outreach and education components [of winterization and weatherization] creates a more educated and aware public on the benefits of importance of energy efficiency," resulting in spillover benefits to other energy investments or behavior changes in the future. Program benefits in this program are therefore both short-and long-term in nature, even after the official end of the two year project implementation period.

PROJECT FEASIBILITY

The proposed project has been developed in consultation with local, regional, and state governments, non-profits, institutions, businesses, financial institutions, energy professionals, legislators, and others. The project has been spearheaded by the active Energy Committee, who estimate they devoted 200 hours of volunteer hours to developing this grant and 1,750 hours of volunteer hours since January 2009 developing the three different projects components included in the proposed plan. The Sustain Mid-Maine team has considerable momentum and will ensure the short-and long-term success of this project. The Town Manager of Winslow and City Manager of Waterville, who serve on the Steering Committee of Sustain Mid-Maine and who helped provide input into this plan, have also offered their continued support to ensure the feasibility of this project. In order to ensure maximum project feasibility and consistency with community commitment, this project is deeply rooted in relevant surveys at the local and state level, extensive consultation with local experts, and other resources based on extensive project implementation experience.

COST EFFECTIVENESS

The proposed project will conservatively generate 5,126 MMBtu of energy savings per year from the first two project components, residential weatherization and residential solar hot water. With grant funding appropriated at $170,000, this equates to over **30 MMBtu of annual energy savings per $1,000 spent.** This rate is three times as cost effective as the recommended guidelines provided by the State Energy Program Funding Opportunity Announcement (SEP FOA) that recommends 10 MMBtu of annual energy savings per $1,000 spent.

Additionally, the program will leverage over $653,000 in homeowner spending to help spur economic development, job creation, and energy savings. The program will leverage $58,000 in professional volunteer consulting through the Sustain Mid-Maine Energy Committee and in contributions from the City of Waterville and KVCAP. The program will leverage state and financial incentives and tax rebates to reduce project implementation costs.