



1 Cover Pages

1.1 Program Title

Weatherizing and Insulating Two Walpole Town Buildings

1.2 Program Type

Weatherization of New Hampshire commercial building stock.

1.3 Program Summary

This program will reduce greenhouse gas emissions through the weatherization and insulation of the Walpole Town Hall and the North Walpole Municipal Building. Both buildings have already received a comprehensive energy audit, and a plan is now in place for implementing the recommendations in these energy audits. The work of retrofitting these buildings for energy efficiency can begin soon after the funds become available.

1.4 Low Income Residential Customer Qualification

This program will serve low income residential customers indirectly. Increasing the energy efficiency of these buildings will lower their operating costs, and thereby decrease the tax burden on all town citizens.

1.5 Identification of Applicant Organization

TriVillage Energy Committee
c/o Walpole Office of Selectmen
PO Box 729
Walpole, NH 03608
www.trivillageenergy.org

The TriVillage Energy Committee is a town advisory committee, with members appointed by the Walpole town selectboard. The committee was voted into existence by the town through a 2007 Warrant Article. The committee has no corporate status. It is covered under the town's "umbrella" policy for liability insurance.

Main Contact/Project Manager

Andrew Dey
PO Box 22
Walpole, NH 03608

andrew@andrewdey.com
603-313-4125

1.6 Identification of Subcontractors and Partners**Energy Auditor**

Margaret Dillon
S.E.E.D.S. (Sustainable Energy Education Demonstration Services)
PO Box 42
Peterborough, NH 03458

603-532-8979
mdillon@wildblue.net

Weatherization and Energy Retrofit Specialists

Building Energy Technologies (B.E.T.)
Andy Duncan and Don LaTourette
10 Dunklee Rd. #36
Bow, NH 03304

603-724-7849
contact@buildingenergytechnologies.com
www.buildingenergytechnologies.com

Carpenters, HVAC Subcontractors, Window Retrofit Specialists, etc.

A number of other subcontractors will be used for specialty work. Project Manager Andrew Dey has worked on many projects with a broad range of tradespeople in the Walpole area. The names of individuals and companies being considered for this specialty work will be provided upon request, as will background information about these subcontractors.

1.7 Authorized Negotiator

Andrew Dey, Project Manager
603-313-4125
andrew@andrewdey.com

1.8 Projected Energy Savings

The program saves energy directly through energy efficiency measures. The projected energy savings are as follows:

	Fuel Oil Savings	
	Annual	Cumulative (20 year)
Walpole Town Hall	1,800 gallons	36,000 gallons
N. Walpole Municipal Bldg	800 gallons	16,000 gallons
Total	2,600 gallons	52,000 gallons

1.9 Projected Greenhouse Gas Emissions Reductions

	Greenhouse Gas Emissions Reductions	
	Annual	Cumulative (20 year)
Walpole Town Hall	40,320 lbs	806,400 lbs
N. Walpole Municipal Bldg	17,920 lbs	358,400 lbs
Total	58,240 lbs	1,164,800 lbs

1.10 Length of Program

The energy efficiency measures will be implemented within four months of the funding being received. Once implemented, these improvements will continue to save energy indefinitely.

The performance of these two buildings will be monitored quarterly for at least two years to quantify the energy savings, and to facilitate the identification of additional energy saving measures.

On the basis of the successful implementation of this program, additional funds may be sought for energy audits and energy efficiency retrofits in other town buildings.

1.11 Total Program Costs

Planning and Oversight	\$ 1,550
Retrofit Walpole Town Hall	34,005
Retrofit N. Walpole Municipal Building	<u>14,165</u>
Total	\$ 49,720

1.12 GHGR Funds Requested

The applicants are requesting \$42,720 (approximately 85% of the funding) from the GHGR Fund. We anticipate that the remaining \$7,000 for this work will be approved by North Walpole voters at a village meeting in early April. Volunteers from the TriVillage Energy Committee will provide support to the program (gathering data, helping to publicize these efforts, etc.), but the bulk of the work will be done by paid professionals.

2 **Executive Summary**

Our New Hampshire towns are filled with aging buildings that are cornerstones of our architectural heritage, and are essential for the proper functioning of local governments and services. However, most of these structures were built when energy was cheap, and the true environmental costs of this energy were unidentified. We now have the opportunity – and the responsibility – to ensure that these buildings maintain their utility and relevance for many years to come. These buildings must be retrofitted to reduce their energy consumption, and ensure a healthy working environment for their occupants.

Energy retrofits of existing buildings provide immediate benefits to the townspeople, to the environment, and to future generations. A tighter, better insulated building is more comfortable to work in, particularly when an adequate, controlled supply of fresh air is provided. From the moment the retrofit measures are installed in a town building, the tax burden on townspeople is decreased because operating costs are reduced. As energy is used more efficiently, the impact on the environment is moderated – particularly with respect to the production of greenhouse gases. Future generations will benefit from reduced operational costs, from the preservation of architectural heritage, and from environmental impacts that have been reduced.

The program outlined in this proposal, to retrofit two Walpole town buildings for significantly increased energy efficiency, has been designed for optimal effectiveness. The program is expected to cost \$49,720. Of this total cost, approximately 15% is expected to be provided through a pending vote by the village of North Walpole to invest \$7,000 of budget surplus in insulating the village's municipal building. This grant proposal requests the remaining \$42,720 from the GHGER Fund. While these funds will be used to pay professionals for quality work, members of the TriVillage Energy Committee will provide additional time and energy to educate the public about these efforts, and to monitor the performance of both buildings.

The program can be initiated as soon as funds are available. The retrofitting work will be completed within four months.

The success of a program such as this is determined most directly by the quality of the team that undertakes it. The team retrofitting the two Walpole buildings is led by Walpole resident Andrew Dey, a professional project manager, teacher and consultant with thirty years experience in the construction trades. Mr. Dey's skills and experience will be complemented by those of other key personnel, including Energy Auditor Margaret Dillon, and Energy Retrofit Specialists Andy Duncan and Don LaTourette of Building Energy Technologies. Mr. Dey, Ms. Dillon, Mr. Duncan and Mr. LaTourette share a dedication to energy efficiency, sustainability, and high quality work, and they have demonstrated the ability to work well and efficiently together.

3 **Proposed Work Scope and Schedule**

The project will have the following five phases:

- I. Pre-construction Planning
- II. Retrofitting Walpole Town Hall
- III. Retrofitting North Walpole Municipal Building
- IV. Measuring and Monitoring Performance
- V. Education and Outreach

I. Pre-construction Planning (April, 2009)

Once funds have been committed to this project, the Project Manager, Energy Auditor, and Retrofit Specialist will meet in Walpole at the two buildings to review the project plan and schedule. This meeting will help to ensure that the information and resources are in place to execute the work efficiently and with optimum results.

Following this initial project planning meeting, the Project Manager will review the project plan and schedule with the relevant individuals in the town, including the occupants of both buildings. Because these buildings will be in use during much of the retrofit period, careful coordination will be required to minimize the impact of this work on the building occupants.

The Project Manager will be responsible for financial management of the project. Prior to the commencement of the retrofit work, the Project Manager will review with the Walpole Selectboard and the key team members the anticipated schedule for draw applications and disbursements.

II. Retrofitting Walpole Town Hall (May through July, 2009)

The plan for retrofitting the Walpole Town Hall consists of the following elements:

Air-sealing

The IR thermographic images reveal many significant gaps in the air barrier. While achieving an uninterrupted barrier in a historic building such as this is challenging at best, careful attention will be paid to the areas of air infiltration and exfiltration. Caulk, expanding foam, and rigid insulation will be used as appropriate to fill gaps. Certain areas such as the rim joist will be sprayed with closed cell polyurethane foam.

Insulation

Because the walls are only partially insulated, and the quality of that insulation is suspect, cellulose insulation will be blown into the wall cavities. Two approaches will be used: from the interior, and the exterior. In some areas, such as the large expanse of uninsulated wall behind the stage on the second floor, insulation can easily be blown into the walls from the interior. In other areas that are less easily accessible from the interior, cellulose insulation will be blown from the outside. Select clapboards will be carefully removed and then reinstalled or replaced as necessary.

The ceilings of the original structure and the newer addition in the back will both benefit from increased insulation, once these spaces have been air-sealed. Cellulose insulation will be blown into both ceiling areas to achieve approximately R-48.

Window Retrofit

The dramatic historic windows of this building are a source of great charm, and tremendous heat loss. The Energy Auditor has stated that as much as 45% of the total wall's heat loss may be occurring through the windows.

We will refurbish all of the existing single-glazed wood windows, including weather-stripping them and tuning them so they operate properly. The large lower windows have aluminum storm-screen combinations installed. We will have high performance storm windows custom made for all of the other existing single-glazed wood windows, including the arched-top windows in the main hall of the second floor.

Door Retrofit

All of the existing historic entry doors allow a tremendous amount of warm air to leave the building. The two historic doors that are used most frequently will be weather-stripped and tuned so that they seal well. The doors that are no longer used will be sealed from the inside with rigid foam, and sheetrock will be installed over the foam.

In order to create a better thermal separation between the first floor offices and the second floor assembly space, a new insulated double door will be installed at the bottom of the stairs on the first floor. This door will make it much easier for town administrators to keep heat in their offices and the adjacent public hallway.

HVAC Upgrades

Because the existing forced air system is inefficient and difficult to properly zone, we anticipate that it will be replaced within the next three to five years. In the meantime, the thermal upgrades described in this proposal should result in significantly reduced heating loads on the building. Pending eventual replacement of the heating system with a more efficient and easily zoned hydronic system, we will air seal and insulate the ductwork, and balance the distribution of air to heat the spaces more effectively.

The air sealing and insulation that will be done in and around the basement meeting room will increase the already high likelihood of poor indoor air quality in this windowless basement room. A compact heat recovery ventilator will be installed in this room to provide fresh air for occupants, and to recover heat from the interior air that is exhausted.

III. Retrofitting North Walpole Municipal Building (May through July, 2009)

Retrofitting the North Walpole Municipal Building will involve the following steps:

Air-sealing

The thermographic images suggest that uncontrolled air leakage may account for as much as 50% of the heat loss in this building. Caulk, weather-stripping, expanding foam, and rigid insulation will be used to establish a continuous and identifiable air barrier at all walls, ceilings, and penetrations, and at the "hose drying tower."

Insulation

Cellulose insulation will be blown into the 2nd floor framed walls and all ceilings to upgrade those areas from approximately R-9 (walls) and R-18 (ceilings) to R-19 (walls) and R-38 (ceilings).

Door Replacements

The single overhead garage door will be replaced with an energy efficient model such as Clopay's Model 3602 foamed-in-place polyurethane door. This door will be installed to air-seal against walls and floor.

The exterior egress door at the second floor will be replaced with a more energy-efficient door, installed with spray-foam air sealing at the rough opening.

HVAC Upgrades

All hot and cold water pipes will be insulated. The joints in ventilation duct for the boiler will be sealed, as will the thimble connection to chimney.

The existing boiler is operating at less than 77% efficiency. The TriVillage Energy Committee intends to seek funds to replace this boiler once the air sealing and insulation upgrades have been made.

IV. Measuring and Monitoring Performance (Ongoing)

The Project Manager will make daily site visits to ensure that the Retrofit Specialists have the information and access needed to do their work efficiently. These daily site visits will allow the Project Manager to help monitor and minimize the impact of the work on the building occupants, provide another set of eyes for quality control, and track progress according to the agreed-upon schedule.

Measuring and monitoring the effectiveness of the retrofit measures will begin once the insulation and weatherization elements have been installed, but before finishes are applied. The Energy Auditor will repeat the initial energy assessment of both buildings using a blower door and infrared thermography. This evaluation will help to pinpoint any areas in which the weatherization or insulation may need additional work to achieve the desired performance.

Once the retrofit work has been completed, the best indication of performance will be building energy use as reflected in utility bills. The Project Manager and members of the TriVillage Energy Committee will collect these bills quarterly and compare them to previous years' bills. The results will be measured against the project goals for reductions in energy use and greenhouse gas emissions. This analysis will be shared with the Walpole Selectboard and townspeople, and it will be used to inform the development of weatherization and energy efficiency programs for other town buildings.

V. Education and Outreach (Ongoing)

The TriVillage Energy Committee will use the retrofitting of these two buildings to build awareness in the community about the importance and cost-effectiveness of energy retrofitting. The committee will create a display board for each of the buildings. The committee will also submit press releases to local media outlets, and write articles as appropriate. The committee envisions that the retrofitting of these two buildings will serve as the cornerstone of a subsequent, more ambitious program to retrofit all town buildings to ever-increasing levels of energy efficiency.

4 Project Benefits**4.1 Reduce greenhouse gas emissions from all fuels used to provide electricity, heating and cooling in New Hampshire.**

The retrofit measures installed by this program will directly and significantly reduce the fuel use by these two buildings, and hence reduce the greenhouse gas emissions from the buildings.

4.2 Be cost-effective.

The cost-effectiveness of this program is based on the timeliness of the funding – the initial energy audits have already been completed – and on the capabilities of the assembled team. By bringing together seasoned professionals with a commitment to doing high quality work efficiently, this program will make the most of every dollar invested.

4.3 Reduce New Hampshire's peak electrical load.

The thermal upgrades to these two buildings will directly lower New Hampshire's peak electrical load. The tighter, more highly insulated shells of these buildings will retain conditioned air considerably longer, while also reducing the warming impact of insolation through roofs and walls.

4.4 Promote market transformation.

A significant element of market transformation is raising public awareness about the viability and effectiveness of these simple energy retrofit strategies. As the public becomes increasingly educated about the importance of energy efficiency methods and technologies, initiatives such as "deep energy retrofits" which may now be at the fringe will be gradually accepted as not only feasible but necessary.

4.5 Promote innovative technologies.

The two building types represented in this program, a historic wood-framed town hall, and a concrete block municipal building, are commonplace throughout New England towns and beyond. In order to preserve these buildings and facilitate their continued utility, techniques and methods must be developed to dramatically

increase their energy efficiency. Several elements of this program, including the high-performance storm windows for the historic town hall, and the steps that will be taken to insulate and air seal the “hose drying tower” in the municipal building, will have relevance to buildings in many other towns.

4.6 Promote economic development.

The funds invested in these two buildings will end up in the local economy, because the labor and materials will all be sourced in New Hampshire. Once these retrofits are in place, a significant portion of the money that taxpayers were paying to heat and cool these two buildings will be released for more productive uses.

4.7 Promote energy cost savings.

These retrofits will result in dramatic increases in energy efficiency, and therefore in energy savings.

4.8 Promote collaboration and provide useful information for future program evaluation and improvement.

The TriVillage Energy Committee expects that the collaboration between the committee, professional advisors, tradespeople, the Walpole Selectboard and townspeople will serve as a model for future programs to increase the energy efficiency of other town buildings. The information resulting from the ongoing analysis of energy usage in these buildings will help to inform subsequent improvements to these buildings, as well as similar efforts on other buildings.

4.9 Otherwise be consistent with the public interest and the purposes of RSA 125-O:19.

The applicants believe that this program is clearly aligned with the public interest and the purposes of RSA 125-O:19.

5 Measurement and Verification

The measurement and verification of this program will have two components: quality assurance monitoring during the retrofit process, and ongoing measurement of energy savings.

Quality Assurance

During the implementation of the energy efficiency measures, the Project Manager will make daily site visits to monitor the installation work. As the efficiency measures are nearing completion, both buildings will be tested by the Energy Auditor using a blower door and IR thermography to ensure the quality and completeness of the retrofit measures. The weatherization and insulation work will be adjusted as needed to ensure optimal performance.

Measurement of Energy Savings

Once the retrofit measures have been implemented, the Project Manager and other members of the TriVillage Energy Committee will work with town administrators to monitor the energy use of these two buildings. The actual savings will be compared against the projected savings and stated goals. The ongoing measurements will aid in identifying additional opportunities for energy savings in both buildings. The analysis of projected versus actual savings will also help to inform energy retrofit plans for other town buildings.

6 Budget

(See the attached spreadsheets.)

The project as outlined is expected to cost \$49,720. The TriVillage Energy Committee anticipates that approximately 15% of this amount will come from the village of North Walpole. In early April, townspeople will vote on whether to invest \$7,000 of budget surplus from last year on energy efficiency upgrades to the North Walpole Municipal Building. The TriVillage Energy Committee is applying for the remaining \$42,720 to come from the GHGER Fund.

In addition to the anticipated monetary contribution from the Village of North Walpole, members of the TriVillage Energy Committee will donate time to raise public awareness about the retrofit work, and to monitor building performance over time.

The attached spreadsheet detailing the Project Budget should be self-explanatory. What may not be readily apparent from the Project Budget is the ease with which this program can be scaled up or down to accommodate the available funding. The elements of the retrofit program represent a clear hierarchy of cost-effectiveness. Air-sealing and insulating the attic and basement spaces are the most cost-effective upgrades, because they are relatively affordable, and result in significant energy savings. Upgrading doors and windows is the next priority, followed by improvements to the mechanical systems, and adding insulation to the walls.

In addition to detailing the basic Project Budget, the attached spreadsheets model “minimum” and “maximum” scenarios. Although any money invested in energy improvements will be helpful, the minimum scenario represents a modest effort that nonetheless leverages the team that has been assembled and the momentum that exists. Whereas the basic Project Budget projects savings on the order of 30-40%, the minimum scenario would likely result in savings of 15-20%.

The maximum scenario is somewhat arbitrary, but represents the applicants’ best approximation of a truly deep energy retrofit. The additional upgrades include installing rigid insulation on the concrete walls of the North Walpole Municipal Building, and replacing the heating systems in both buildings with high-efficiency modulating boilers serving hydronic baseboard radiation. The energy savings resulting from such a deep energy retrofit would likely be on the order of 70-80%.

7 Applicant Qualifications

(See also Background Documents attached)

Andrew Dey, Project Manager

Mr. Dey is an independent construction consultant whose area of specialization is retrofitting existing buildings for energy efficiency. Mr. Dey's previous experience includes six years running his own contracting company in the greater Boston area, and twelve years leading the project management department at Bensonwood Homes, a company specializing in building super-insulated custom timberframe homes.

For the past two years, Mr. Dey has been working as a consultant on energy efficiency initiatives and deep energy retrofit projects. He has also been retained as a consultant by The Jordan Institute, and by the Massachusetts Department of Housing and Community Development (DHCD). Mr. Dey is an adjunct professor at Keene State College, where he teaches a course in Construction Management. This spring he will be working with the staff at The Jordan Institute to teach a course about Green/High Performance Building to construction superintendents.

Mr. Dey's work combines extensive knowledge of construction management and building science with a dedication to quality and a practical, "can-do" attitude.

Margaret Dillon, Energy Auditor

Ms. Dillon is one of the most experienced and highly-regarded energy auditors in New Hampshire. She brings a whole-systems perspective to analyzing energy issues. Ms. Dillon's depth of experience and long-standing commitment to sustainable building make her a key member of this team.

Andy Duncan and Don LaTourette, Energy Retrofit Specialists

Mr. Duncan and Mr. LaTourette, through their company Building Energy Technologies, bring to their work over 45 years of experience in the fields of construction and environmental science. In a field that has been developing rapidly over the past few years, Building Energy Technologies is distinguished by its professionalism, quality, and attention to detail.

8 Additional Information

Although the TriVillage Energy Committee believes that the program described in this proposal is an efficient and appropriate investment of funds from the GHGER Fund, the committee is open to suggestions for modifying the proposed program, if necessary, to better fit the intended uses of the funds.

9 Letters of Interest or Commitment

The following background documents are included for review:

Name	Position	Documents
Andrew Dey	Project Manager	Resume
Margaret Dillon	Energy Auditor	CV Letter of Interest
Andy Duncan Don LaTourette	Energy Retrofit Specialists	Company Background
Walpole Selectmen	Stewards of Town Buildings	Letter of Support

This Proposal is Respectfully Submitted on Behalf of the TriVillage Energy Committee,

Andrew Dey
Project Manager

NH PUC Greenhouse Gas Emissions Reduction Fund

PROJECT BUDGET

Program:

Weatherizing and Insulating Two Walpole Town Buildings

Applicant:

TriVillage Energy Committee

Pre-construction Planning							
	Task	Who	Hours	Rate	Ext	Sub	Total
	Project Planning	Project Manager	10	\$ 65	\$ 650		\$ 650
	Project Planning	Energy Auditor	6	\$ 75	\$ 450		\$ 450
	Project Planning	Retrofit Specialist	6	\$ 75	\$ 450		\$ 450
							\$ 1,550

Retrofitting Walpole Town Hall							
	Task	Who	Hours	Rate	Ext	Sub	Total
	Coordination/Oversight	Project Manager	12	\$ 65	\$ 780		\$ 780
	Airsealing	Retrofit Specialist				\$ 3,800	\$ 3,800
	Insulation	Retrofit Specialist				\$ 9,450	\$ 9,450
	Window Retrofit	Window Master				\$ 10,500	\$ 10,500
	Door Retrofit	Local Carpenter				\$ 4,900	\$ 4,900
	HVAC Upgrades; HRV	HVAC Sub				\$ 3,625	\$ 3,625
	Performance Testing	Energy Auditor				\$ 950	\$ 950
							\$ 34,005

Retrofitting N. Walpole Fire Station Building							
	Task	Who	Hours	Rate	Ext	Sub	Total
	Coordination/Oversight	Project Manager	8	\$ 65	\$ 520		\$ 520
	Airsealing	Retrofit Specialist				\$ 610	\$ 610
	Insulation	Retrofit Specialist				\$ 9,200	\$ 9,200
	Door Replacements	Local Carpenter				\$ 2,225	\$ 2,225
	HVAC Upgrades	Retrofit Specialist				\$ 860	\$ 860
	Performance Testing	Energy Auditor				\$ 750	\$ 750
							\$ 14,165

Ongoing Measuring and Monitoring		
	Project Manager	Volunteer Labor
	TriVillage Energy Committee	Volunteer Labor

Education Component		
Display Boards	TriVillage Energy Committee	Volunteer Labor
Local Media Exposure	TriVillage Energy Committee	Volunteer Labor

Summary of Costs	
Pre-Construction Planning	\$ 1,550
Retrofitting Walpole Town Hall	\$ 34,005
Retrofitting North Walpole Fire Station Building	\$ 14,165
Total Project Cost	\$ 49,720
Less North Walpole Town Contribution	\$ (7,000)
Total Requested Funds from GHGER Fund	\$ 42,720

NH PUC Greenhouse Gas Emissions Reduction Fund

PROJECT BUDGET -- MINIMUM SCENARIO

Program: Weatherizing and Insulating Two Walpole Town Buildings

Applicant: TriVillage Energy Committee

Pre-construction Planning							
	Task	Who	Hours	Rate	Ext	Sub	Total
	Project Planning	Project Manager	6	\$ 65	\$ 390		\$ 390
	Project Planning	Energy Auditor	4	\$ 75	\$ 300		\$ 300
	Project Planning	Retrofit Specialist	4	\$ 75	\$ 300		\$ 300
							\$ 990

Retrofitting Walpole Town Hall							
	Task	Who	Hours	Rate	Ext	Sub	Total
	Coordination/Oversight	Project Manager	8	\$ 65	\$ 520		\$ 520
	Airsealing	Retrofit Specialist				\$ 2,600	\$ 2,600
	Insulation	Retrofit Specialist				\$ 9,450	\$ 9,450
	Window Retrofit	Window Master				\$ 5,250	\$ 5,250
	Door Retrofit	Local Carpenter				\$ 1,000	\$ 1,000
	HVAC Upgrades	HVAC Sub				\$ 1,325	\$ 1,325
	Performance Testing	Energy Auditor				\$ 950	\$ 950
							\$ 21,095

Retrofitting N. Walpole Fire Station Building							
	Task	Who	Hours	Rate	Ext	Sub	Total
	Coordination/Oversight	Project Manager	6	\$ 65	\$ 390		\$ 390
	Airsealing	Retrofit Specialist				\$ 610	\$ 610
	Insulation	Retrofit Specialist				\$ 7,000	\$ 7,000
	Door Replacement	Local Carpenter				\$ 1,725	\$ 1,725
	HVAC Upgrades	Retrofit Specialist				\$ 480	\$ 480
	Performance Testing	Energy Auditor				\$ 750	\$ 750
							\$ 10,955

Ongoing Measuring and Monitoring		
	Project Manager	Volunteer Labor
	TriVillage Energy Committee	Volunteer Labor

Education Component		
	Display Boards	Volunteer Labor
	Local Media Exposure	Volunteer Labor

Summary of Costs	
Pre-Construction Planning	\$ 990
Retrofitting Walpole Town Hall	\$ 21,095
Retrofitting North Walpole Fire Station Building	\$ 10,955
Total Project Cost	\$ 33,040
Less North Walpole Town Contribution	\$ (7,000)
Total Funds Required	\$ 26,040

NH PUC Greenhouse Gas Emissions Reduction Fund

PROJECT BUDGET -- MAXIMUM SCENARIO

Program: Weatherizing and Insulating Two Walpole Town Buildings

Applicant: TriVillage Energy Committee

Pre-construction Planning							
	Task	Who	Hours	Rate	Ext	Sub	Total
	Project Planning	Project Manager	16	\$ 65	\$ 1,040		\$ 1,040
	Project Planning	Energy Auditor	12	\$ 75	\$ 900		\$ 900
	Project Planning	Retrofit Specialist	12	\$ 75	\$ 900		\$ 900
							\$ 2,840

Retrofitting Walpole Town Hall							
	Task	Who	Hours	Rate	Ext	Sub	Total
	Coordination/Oversight	Project Manager	24	\$ 65	\$ 1,560		\$ 1,560
	Airsealing	Retrofit Specialist				\$ 4,400	\$ 4,400
	Insulation	Retrofit Specialist				\$ 15,000	\$ 15,000
	Window Retrofit	Window Master				\$ 14,700	\$ 14,700
	Door Retrofit	Local Carpenter				\$ 6,000	\$ 6,000
	HVAC Upgrades; HRV	HVAC Sub				\$ 43,625	\$ 43,625
	Performance Testing	Energy Auditor				\$ 2,000	\$ 2,000
							\$ 87,285

Retrofitting N. Walpole Fire Station Building							
	Task	Who	Hours	Rate	Ext	Sub	Total
	Coordination/Oversight	Project Manager	8	\$ 65	\$ 520		\$ 520
	Airsealing	Retrofit Specialist				\$ 1,000	\$ 1,000
	Insulation	Retrofit Specialist				\$ 29,200	\$ 29,200
	Door Replacements	Local Carpenter				\$ 3,000	\$ 3,000
	HVAC Upgrades	Retrofit Specialist				\$ 20,000	\$ 20,000
	Performance Testing	Energy Auditor				\$ 1,500	\$ 1,500
							\$ 55,220

Ongoing Measuring and Monitoring		
	Project Manager	Volunteer Labor
	TriVillage Energy Committee	Volunteer Labor

Education Component		
	Display Boards	Volunteer Labor
	Local Media Exposure	Volunteer Labor

Summary of Costs	
Pre-Construction Planning	\$ 2,840
Retrofitting Walpole Town Hall	\$ 87,285
Retrofitting North Walpole Fire Station Building	\$ 55,220
Total Project Cost	\$ 145,345
Less North Walpole Town Contribution	\$ (7,000)
Total Funds Required	\$ 138,345

Requested

NH PUC Greenhouse Gas Emissions Reduction Fund		2/23/09 RFP Proposed Budget Worksheet						REQUESTED AMOUNTS FOR TARGETED PROGRAM SIZE					
Program Title:		Weatherizing and Insulating Two Walpole Town Buildings											
Applicant Name:		TriVillage Energy Committee											
USE OF FUNDS	2009							2010					2011
	April	May	June	Q2	Q3	Q4	Total CY09	Q1	Q2	Q3	Q4	Total CY10	Total CY11
EXPENSES													
Salaries & Wages				\$0			\$0	\$1	\$2	\$3	\$4	\$10	
Benefits/Fringe				\$0			\$0					\$0	
Contracted Labor & Services	\$1,550	\$780	\$520	\$2,850			\$2,850					\$0	
Rent & Utilities				\$0			\$0					\$0	
Advertising & Marketing				\$0			\$0					\$0	
Travel & Mileage Reimbursement				\$0			\$0					\$0	
Tools, Supplies, Subscriptions				\$0			\$0					\$0	
Other Current Expenses (such as office expense, insurance, maintenance, repairs, taxes, legal, etc.)				\$0			\$0					\$0	
Cost of Goods Installed				\$0			\$0					\$0	
General Overhead & Profit*				\$0			\$0					\$0	
TOTAL EXPENSES	\$1,550	\$780	\$520	\$2,850	\$0	\$0	\$2,850	\$1	\$2	\$3	\$4	\$10	\$0
Capital Invested in Building Improvements		\$33,225	\$13,645				\$0					\$0	
Funds used for Loan Fund capital							\$0					\$0	
Loan Fund credit enhancement (such as interest rate buy-down)							\$0					\$0	
TOTAL USE OF FUNDS	\$1,550	\$34,005	\$14,165	\$2,850	\$0	\$0	\$2,850	\$1	\$2	\$3	\$4	\$10	\$0
SOURCES OF FUNDS	2009							2010					2011
	April	May	June	Q2	Q3	Q4	Total CY09	Q1	Q2	Q3	Q4	Total CY10	Total CY11
Applicant Cash Contribution				\$0			\$0					\$0	
Applicant In-kind Contribution				\$0			\$0					\$0	
Program Participant Contribution			\$7,000	\$7,000			\$7,000					\$0	
Loans & Other Financing				\$0			\$0					\$0	
Forward Capacity Market Payments				\$0			\$0					\$0	
Other Grants				\$0			\$0					\$0	
GHGER Fund (this proposal)	\$1,550	\$34,005	\$7,165	\$42,720			\$42,720					\$0	
TOTAL SOURCES OF FUNDS	\$1,550	\$34,005	\$14,165	\$49,720	\$0	\$0	\$49,720	\$0	\$0	\$0	\$0	\$0	\$0
GHGER Funds as a % of TOTAL							86%					#DIV/0!	#DIV/0!

Note: for General Overhead & Profit, please indicate to what extent any amounts are proposed to be contingent on program performance.

Minimum

NH PUC Greenhouse Gas Emissions Reduction Fund		2/23/09 RFP Proposed Budget Worksheet						MINIMUM FEASIBLE PROGRAM SIZE					
Program Title:		Weatherizing and Insulating Two Walpole Town Buildings											
Applicant Name:		TriVillage Energy Committee											
	2009							2010					2011
USE OF FUNDS	April	May	June	Q2	Q3	Q4	Total CY09	Q1	Q2	Q3	Q4	Total CY10	Total CY11
EXPENSES													
Salaries & Wages				\$0			\$0	\$1	\$2	\$3	\$4	\$10	
Benefits/Fringe				\$0			\$0					\$0	
Contracted Labor & Services	\$990	\$520	\$390	\$1,900			\$1,900					\$0	
Rent & Utilities				\$0			\$0					\$0	
Advertising & Marketing				\$0			\$0					\$0	
Travel & Mileage Reimbursement				\$0			\$0					\$0	
Tools, Supplies, Subscriptions				\$0			\$0					\$0	
Other Current Expenses (such as office expense, insurance, maintenance, repairs, taxes, legal, etc.)				\$0			\$0					\$0	
Cost of Goods Installed				\$0			\$0					\$0	
General Overhead & Profit*				\$0			\$0					\$0	
TOTAL EXPENSES	\$990	\$520	\$390	\$1,900	\$0	\$0	\$1,900	\$1	\$2	\$3	\$4	\$10	\$0
Capital Invested in Building Improvements		\$20,575	\$10,565				\$0					\$0	
Funds used for Loan Fund capital							\$0					\$0	
Loan Fund credit enhancement (such as interest rate buy-down)							\$0					\$0	
TOTAL USE OF FUNDS	\$990	\$21,095	\$10,955	\$1,900	\$0	\$0	\$1,900	\$1	\$2	\$3	\$4	\$10	\$0
	2009							2010					2011
SOURCES OF FUNDS	April	May	June	Q2	Q3	Q4	Total CY09	Q1	Q2	Q3	Q4	Total CY10	Total CY11
Applicant Cash Contribution				\$0			\$0					\$0	
Applicant In-kind Contribution				\$0			\$0					\$0	
Program Participant Contribution			\$7,000	\$7,000			\$7,000					\$0	
Loans & Other Financing				\$0			\$0					\$0	
Forward Capacity Market Payments				\$0			\$0					\$0	
Other Grants				\$0			\$0					\$0	
GHGER Fund (this proposal)	\$990	\$21,095	\$3,955	\$26,040			\$26,040					\$0	
TOTAL SOURCES OF FUNDS	\$990	\$21,095	\$10,955	\$33,040	\$0	\$0	\$33,040	\$0	\$0	\$0	\$0	\$0	\$0
GHGER Funds as a % of TOTAL							79%					#DIV/0!	#DIV/0!

Note: for General Overhead & Profit, please indicate to what extent any amounts are proposed to be contingent on program performance.

Maximum

NH PUC Greenhouse Gas Emissions Reduction Fund		2/23/09 RFP Proposed Budget Worksheet						MAXIMUM FEASIBLE PROGRAM SIZE					
Program Title:		Weatherizing and Insulating Two Walpole Town Buildings											
Applicant Name:		TriVillage Energy Committee											
	2009							2010					2011
USE OF FUNDS	April	May	June	Q2	Q3	Q4	Total CY09	Q1	Q2	Q3	Q4	Total CY10	Total CY11
EXPENSES													
Salaries & Wages				\$0			\$0	\$1	\$2	\$3	\$4	\$10	
Benefits/Fringe				\$0			\$0					\$0	
Contracted Labor & Services	\$2,840	\$1,560	\$520	\$4,920			\$4,920					\$0	
Rent & Utilities				\$0			\$0					\$0	
Advertising & Marketing				\$0			\$0					\$0	
Travel & Mileage Reimbursement				\$0			\$0					\$0	
Tools, Supplies, Subscriptions				\$0			\$0					\$0	
Other Current Expenses (such as office expense, insurance, maintenance, repairs, taxes, legal, etc.)				\$0			\$0					\$0	
Cost of Goods Installed				\$0			\$0					\$0	
General Overhead & Profit*				\$0			\$0					\$0	
TOTAL EXPENSES	\$2,840	\$1,560	\$520	\$4,920	\$0	\$0	\$4,920	\$1	\$2	\$3	\$4	\$10	\$0
Capital Invested in Building Improvements		\$85,725	\$54,700				\$0					\$0	
Funds used for Loan Fund capital							\$0					\$0	
Loan Fund credit enhancement (such as interest rate buy-down)							\$0					\$0	
TOTAL USE OF FUNDS	\$2,840	\$87,285	\$55,220	\$4,920	\$0	\$0	\$4,920	\$1	\$2	\$3	\$4	\$10	\$0
	2009							2010					2011
SOURCES OF FUNDS	April	May	June	Q2	Q3	Q4	Total CY09	Q1	Q2	Q3	Q4	Total CY10	Total CY11
Applicant Cash Contribution				\$0			\$0					\$0	
Applicant In-kind Contribution				\$0			\$0					\$0	
Program Participant Contribution			\$7,000	\$7,000			\$7,000					\$0	
Loans & Other Financing				\$0			\$0					\$0	
Forward Capacity Market Payments				\$0			\$0					\$0	
Other Grants				\$0			\$0					\$0	
GHGER Fund (this proposal)	\$2,840	\$87,285	\$48,220	\$138,345			\$138,345					\$0	
TOTAL SOURCES OF FUNDS	\$2,840	\$87,285	\$55,220	\$145,345	\$0	\$0	\$145,345	\$0	\$0	\$0	\$0	\$0	\$0
GHGER Funds as a % of TOTAL							95%					#DIV/0!	#DIV/0!

Note: for General Overhead & Profit, please indicate to what extent any amounts are proposed to be contingent on program performance.

NH PUC Greenhouse Gas Emissions Reduction Fund 2/23/09 RFP Proposed Budget Worksheet

DEFAULT VALUES FOR ESTIMATING GHG EMISSIONS REDUCTIONS BASED ON ENERGY SAVINGS

Program Title: **Weatherizing and Insulating Two Walpole Town Buildings**
 Applicant Name: **TriVillage Energy Committee**

Method # 1, using MWH (Megawatt Hours), Cubic Feet (natural gas), & Gallons of fuel					
Reductions from	Enter Reductions in Units shown in next Column	Units	CO ₂ Emission Factors in lbs/unit	Estimated CO ₂ Emission Reductions in pounds (lbs.)	Estimated CO ₂ Emission Reductions in Metric Tons
Electricity		MWH	1,087	0	0.00
Natural Gas		Cubic Feet	120.6	0	0.00
Distillate Fuel Oil (#1, 2 & 4)	2600	Gallons/Year	22.4	58,240	26.41
Residual Fuel Oil (#5 & 6)		Gallons	26	0	0.00
Kerosene		Gallons	21.5	0	0.00
LPG		Gallons	12.8	0	0.00
Propane		Gallons	12.7	0	0.00
TOTAL					26.41

Method # 2, using MWH & MMBtu (million Btus)					
Reductions from	Enter Reductions in Units shown in next Column	Units	CO ₂ Emission Factors in lbs/unit	Estimated CO ₂ Emission Reductions in pounds (lbs.)	Estimated CO ₂ Emission Reductions in Metric Tons
Electricity		MWH	1,087	0	0.00
Natural Gas		MMBtu	117.1	0	0.00
Distillate Fuel Oil (#1, 2 & 4)		MMBtu	161.4	0	0.00
Residual Fuel Oil (#5 & 6)		MMBtu	173	0	0.00
Kerosene		MMBtu	159.5	0	0.00
LPG		MMBtu	139	0	0.00
Propane		MMBtu	139.2	0	0.00
TOTAL					0.00

Andrew Dey

603-313-4125

andrew@andrewdey.com

PO Box 22, Walpole, NH 03608

www.andrewdey.com

Summary Construction manager with decades of experience building high-end residential and light commercial projects, specializing in innovative methods, energy retrofits, and green, sustainable practices.

Skills

- Broad knowledge of construction
- Strong interpersonal skills
- Excellent writer

Professional Experience

- 2007-current *Construction Consultant*, Walpole, NH
- Implementing energy efficient strategies on a variety of residential and commercial construction projects
 - Providing consulting services to homeowners, organizations, and companies, including The Jordan Institute and the Massachusetts Department of Housing and Community Development
 - Adjunct professor of Construction Management at Keene State College, Keene, NH
- 1994-2006 *Project Management Team Leader*, Bensonwood Homes, Walpole, NH
- Developed project management team and systems
 - Managed construction of dozens of energy efficient homes and commercial structures
 - Participated in corporate governance as *Company Steward*
- 1987-1993 *General Contractor*, Arlington, MA
- Additions, renovations, and new homes in Greater Boston

Volunteer

- 2001-2006 Monadnock Habitat for Humanity project leader
- 2005 Tsunami relief work in Sri Lanka (3 months)
- 1993-2005 Board member, Insight Meditation Society in Barre, MA; served as president of the board for 3 years

Education B.A., Harvard University 1985; *cum laude* with major in Biology

Other Interests

- Running, biking, cross-country skiing
- Languages (Spanish, German) and travel
- Woodworking, boatbuilding

Margaret Dillon

Education and Professional Accreditations

MS, Environmental Science

BPI Certified Professional

Building Analyst and Envelope Specialist, Building Performance Institute

MS Certificate Sustainable Design, Boston Architectural College

LEED AP

Certified HERS Rater GDS #005

Building Science Thermographer

120+ hours AIA qualified continuing education

Building Performance Assessment, Testing, and Consulting References

Municipalities

Joe Byk, Peterborough Selectman

Contact: 924-2190; joebyk@gmail.com

Dick Ames, Jaffrey Energy Committee

RAmes14779@aol.com

Other NH Towns or Energy Committees I've worked with
Hanover, Temple, Walpole, Wolfeboro

Construction and Design

Dan Sculley Architects

Keene, NH

Trumbull Nelson Construction

Hanover, NH

Bruss Construction

Bradford, NH

Kohler & Lewis Engineers

Keene, NH

Doug Wait, Engineer

New Ipswich, NH

Other Clients

Mark Toussaint

Energy Efficiency Services, PSNH

Phone: 634-2301; toussmd@nu.com

Dick Henry

Executive Director, The Jordan Institute

Contact: 226-1009; dhenry@thejordaninstitute.org

Nancy Hirschberg

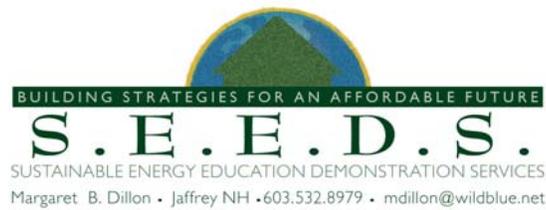
Vice President of Natural Resources, Stoneyfield

Contact: NHirschberg@stoneyfield.com

Cotton Cleveland

President, Mather Associates

Contact: 526-2795; mather@tds.net



March 20, 2009

To Whom It May Concern:

In the spring of 2008, I completed energy performance assessments for the Walpole Town Hall and North Walpole Fire Station Building. The assessments focused on the building's envelopes and included recommendations for substantial reductions in energy use and carbon emissions. Results of the assessments, including thermographic images, were part of a public educational display set up for the Energy Fair that the Walpole Energy Committee held that year.

As retrofit plans proceed, I anticipate continuing as a commissioning agent on the project, including conducting blower door testing and Infrared imaging at relevant stages to ensure that the work is completed to achieve the desired performance goals.

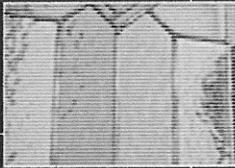
I have completed assessments on a number of town owned buildings in New Hampshire and look forward to completing more. Every building is a unique system, and yet as we grow an inventory of assessments and strategies for energy retrofits, we can begin to establish certain standard approaches based on building type, age, construction details and use.

As someone who has been committed to the pursuit of sustainable building for over thirty years, I am convinced that demonstrating 'deep' energy retrofits in a variety of building types and uses is a critical step towards retrofitting the existing building inventory in a meaningful way. We are need of a kind of 'paradigm shift' in the way we design, construct, maintain, and operate buildings and S.E.E.D.S. exists to foster education and demonstration towards that end.

The Walpole Town Hall and the North Walpole Fire Station Building are representative of many historic frame town halls and concrete block fire stations in our rural towns. Each has their unique challenges for managing air, moisture, and heat transfer – including communities desire to preserve historic features and, in the case of fire stations, managing high levels of moisture and other air quality issues in garage bays while also conserving energy. These are not simple issues to resolve – and will require, I believe, a systems approach and education throughout the construction trades. And the best education will come from on the ground demonstrations within every region.

Respectfully,

Margaret Dillon



Building Energy Technologies, LLC



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About B.E.T.



Don and Andy bring a rich past to their energy performance work.

Don LaTourette founded Building Energy Technologies in 2006 after working in the energy and construction fields for many years. At the NH Dept. of Environmental Services he developed New Hampshire's first Greenhouse Gas Mitigation Plan in the late 1990s. He also brings over 15 years of experience in the building and remodeling field. Don has a Masters of Science degree in Environmental Engineering from University of Massachusetts, Lowell.

Andy Duncan joined BET in late 2006 after working in the energy efficiency field since 2003. Before then he was a professor of Environmental Science at New England College. Andy has been involved with efficiency and waste prevention initiatives for several decades. His Ph.D. from the University of Michigan focused on waste prevention behavior. Andy, Don and their families are active members of the Concord, NH community.

Both Don and Andy bring their scientific background to help understand how buildings operate as energy systems. And both Andy and Don are certified Building Analysts by the Building Performance Institute. While energy education and training are very important for us, we are very practically minded. Andy, Don and the entire team at BET are willing to crawl into those hidden corners of your building -- hot attics, musty basements, tight kneewalls -- to improve the energy performance of your building. We are proud of the difference we make in lowering energy costs, improving comfort, and reducing carbon footprints.

*Building Energy Technologies, LLC -- Solving your building energy problems
Concord, NH -- contact@buildingenergytechnologies.com*



TOWN OF WALPOLE

Office of Selectmen
P.O. Box 729
Walpole, New Hampshire 03608
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Telephone: (603)756-3672
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March 19, 2009

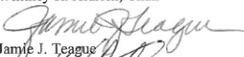
To Whom It May Concern:

We the Select Board of the Town of Walpole, NH, support the efforts of the Tri-Village Energy Committee to increase the energy efficiency of town-owned buildings, and thereby reduce the town's greenhouse gas emissions.

Specifically, we support the committee's efforts to obtain funds from the State's Greenhouse Gas Emissions Reduction Fund. If such funds are granted for implementing energy efficiency measures in town buildings they will be administered by the Select Board of Walpole.

Sincerely,
Walpole Select Board


Whitney K. Aldrich, Chair


Jamie J. Teague


Sheldon S. Sawyer

Cc: Andrew Dey
Tara Sad - Tri Village Energy Committee

TDY ACCESS: Relay NH 1-800-735-2964