VERMONT
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

VERMONT COMMUNITY CLIMATE CHANGE GRANT PROGRAM APPLICATION

A. APPLICANT INFORMATION AND PROJECT SUMMARY

1. Project Title: "*Energy Identification, Efficiency, Education & Production at Blue Mountain Union School.*"

2. Applicant Name (include all partners): Blue Mountain Supervisory Union (BMU), Wells River, Vermont 05081

3. Primary Applicant Address: 2420 Route 302, Wells River, VT 05081

4. Authorized Contact Name, Phone and Email: Lucas Barrett, Business Manager, **(802) 757-2766**, lucas.barrett@bmuschool.org

5. Project Location: Blue Mountain Supervisory Union, Wells River, Vermont

6. Brief Project Description: This project will be a renewable energy generation/demonstration/education project that will a) identify energy consumption at the school, b) implement energy conservation measures, c) introduce energy education at the school and in the community, and d) produce an estimated 1,369 to 2,053 kWh/year of green electricity through a photovoltaic system.

B. PROJECT WORK PLAN AND BUDGET

1. Describe the project work plan. Include in the work plan, your plan for project oversight and quality assurance. Identify the number of hours dedicated to each task and identify who will complete the tasks. Provide a project timeline. If applicable, identify all permitting requirements, include permitting in your project timeline, and indicate which permits have already been obtained.

1. Description of the project work plan.
    a. Assemble grant team (completed). Paul Berlejung, advisor and John Munson, BMU Technology Coordinator.
    b. Prepare and submit grant proposal (completed). Paul Berlejung and John Munson.

c. Day 1 - Sign grant award documents (April 30, 2009). BMU Superintendent Richard M. Pike.
d. Day 2 - Contact and begin discussion of plan with Green Mountain Power Company. Daryl Sulham, facility engineer and John Munson.
e. Days 2 - 7 - Prepare/submit application for a "Certificate of Public Good For Interconnected Net Metered Power Systems" to Public Service Board (PSB). Daryl Sulham.
f. Days 2-7 - Prepare Request For Proposals (RFP) for grid-tied photovoltaic system. The system will be in accordance with Public Service Board's net metering technical and safety specifications. Procurement shall be in accordance with BMU's procurement procedures. Submit bidding process to state. Lucas Barrett, BMU business manager.
g. Day 4 - Involve Efficiency Vermont and similar organizations in the project. John Munson.
h. Day 5 - Begin energy use studies with "Kill-a-watt" meters and compile data.
i. Day 7 - Advertise RFP. Lucas Barrett.
j. Day 30 - Open Proposals and begin review. Richard Pike, Daryl Sulham, John Munson and Lucas Barrett.
k. Day 37 - Award contract to proposal most in conformance with RFP. Lucas Barrett.
l. Day 37 - Receive approval from PSB (takes about 35 days).
m. Day 59 - Begin installation of system with certified installer/electrician.
n. Days 59 - 80 - Review installation progress. Daryl Sulham.
o. Day 80 - Complete installation of system.
p. After day 80 - Pay installer. Lucas Barrett
q. After day 80 - Notify various public relations venues: *Bridge Weekly, The Journal Opinion.* John Munson
r. Day 80 and beyond - Monitor and report results. Daryl Sulham and John Munson. Work with students in various classroom projects. John Munson and other teachers

2. Provide the name, title and contact information for project implementation personnel. Describe their role and qualifications. Identify all subcontractors that will be involved in this project. Provide the name, title and contact information for primary subcontractor personnel and describe their role and qualifications.

a. Richard M. Pike, superintendent, Blue Mountain Supervisory Union, 2420 Route 302, Wells River, VT 05081, 802-757-2711. Mr. Pike is in charge of the project overall as he is the individual directly responsible to the school board for the actions of all employees of the school district.

b. John Munson, BMU Technology Coordinator, BMU School, 2420 Route 302, Wells River, VT 05081, 802-757-2711. Mr. Munson will add his technical knowledge to the project which he has gained through his experiences as a teacher at BMU and as a home owner who generates his electricity through a photovoltaic system. He will also serve as the education liaison, making sure that the project is fully integrated into the curriculum of Blue Mountain Union School.

c. H. Paul Berlejung, project advisor, P.O. Box 265, Groton, VT 05046, 802-584-4977. Mr. Berlejung manages Green Works Solar Store in Groton. The store has sold and installed hundreds of thousands of dollars worth of grid-tied photovoltaic systems. Mr. Berlejung's home generates its electricity through photovoltaics.

d. Lucas Barrett, BMU business manager, 2420 Route 302, Wells River, VT 05081, 802-757-2711. Mr. Barrett will be in charge of contracting and the funds.

e. Daryl Sulham, facility engineer, BMU School, 2420 Route 302, Wells River, VT 05081, 802-757-2711. Mr. Sulham will add to the project his technical knowledge of the various systems and buildings at the school so that the installation and use of the photovoltaic system is optimal.

f. Other members of the school's administration, faculty, and staff are and will continue to be involved in the project as it progresses.

g. There are no subcontractors or others involved in this project.

3. Complete the project budget table and provide a narrative description of the project budget. The budget must include a minimum 10% cash match. Cash spent before the start of the contractual grant period cannot be used as a cash match. Cash matches of greater than 10% are encouraged. In-kind services are not eligible as a match.

a. Budget Table:

	Grant Share	**BMU Match Share**	**Total Cost**
Personnel	0.00	0.00	0.00
Materials, Equipment & Labor	$12,000.00 (solar array & installation)	$1,200.00 (kWh meter, power strips, timers, light meter, books, remainder to solar array)	$13,200.00
Total Budget	**$12,000.00**	**$1,200.00**	**$13,200.00**

b. Budget Narrative:

Personnel: There will be no personnel, administrative or other costs to implement the project.

Materials, Equipment & Labor: We propose to purchase and have installed a grid-tied photovoltaic system of a size between 1 to 1.5 kWh. A grid-tied system takes advantage of Vermont's net metering regulations. Presently, the school's electric utility, Green Mountain Power, has a program that will buy back solar generated electricity at the premium rate of 18 cents/kWh. A typical grid-tied system of this cost/size will consist of PV panels, a DP&W ground mount, a grid-tied 4000 watt inverter, array wiring, copper clad grounding rod and cable, DC disconnect, AC disconnect, PV to DC disconnect wiring, AC disconnect to main panel wiring, conduit, meter, and a visible exterior lockable disconnect switch.

Other. We will also purchase a Kill-A-Watt electric wattage use meter ($35.00), power strips, surge protectors, and automatic timers as needed, one light meter ($75.00) and books pertaining to solar, energy efficiency and renewal energy ($300.00) for the school library.

C. PROJECT REVIEW CRITERIA

Describe how your project addresses the following criteria. Note that the five criteria applied to an application are described only generally below. Please refer to the Climate Change Grant Program guidance for a more detailed discussion of these criteria.

1. Measurable reductions in energy consumption and/or greenhouse gas emissions (30 points).

a. The US electric grid is an incredible network. Its downside is that electrical generation is responsible for almost half of all carbon emissions. Every kWh of electricity that is produced by non-renewable methods creates huge amounts of greenhouse gases; some of those gases will be in the atmosphere for the next 500 years! Our project will help abate this problem.

b. The Vermont Superintendents Association's "School Energy Management Program" completed a site "walk-through" assessment report of the school's buildings in September 2008. The assessment identified some energy use patterns, made recommendations for changes in the way the buildings are operated and described cost effective ways to save energy. Part of the funds from this grant will go toward addressing these recommendations.

c. Energy conservation is the easiest, most affordable, and environmentally sound place to begin when approaching energy use. Electrical consumption is decreased by 60% by doing something as simple as exchanging an incandescent light bulb with a compact fluorescents light bulb. This principle applies to all choices as we use energy. Focusing on the demand side first is always the best bet. Cut down on demand and you can cut down on the supply side.

d. We will purchase another "Kill-A-Watt" (we already have one) electric usage monitor to help us determine precise present usage. Users will be made aware of the electricity they are using (real usage is almost always greater than what we believe we are using). Next, we will purchase and install power strips (as suggested by the site assessment report) on those electrical devices with 'phantom loads' to reduce consumption when the device is not in use. Next, we will purchase and install timers that shut off power to electrical loads during certain times of the day on those loads where timers will help (the site assessment report suggested that a likely place for a timer were the range hoods in the kitchen so that they are not inadvertently left on when not in use.) As suggested by the site assessment report we will buy one light meter to show the staff, faculty and students when proper light levels are achieved throughout the buildings. Lastly, we will take action to reduce electrical usage in any other way that we determine is necessary from our study.

e. Based upon EPA estimates, the project will reduce green house gasses by a minimum of at least 14,287 lbs and by as much as 19,837 lbs through the production of 1,533 kWh/year of electricity by the photovoltaic system. In addition, reduction of green house gasses will occur based upon the amount of energy we do not use in the future. That amount we do not know now; however, it will be easy to verify by comparing energy consumption in the past and energy consumption after the project's conservation element is implemented.

2. Transferability (20 points).

a. Blue Mountain Union is the focal point of this very rural three-town setting in the Northeast Kingdom of Vermont. Community members, churches, organizations, and the owners of buildings are examples of those who will want to look at how we are approaching energy conservation, education, and production. We would like BMU to be a place where the entire community can come and learn from our project. Further, we will facilitate the high visibility of this project by publishing in the local press.

b. Selectboards will be invited to come and look at this renewable energy demonstration project. They will see that the use of renewable energy sources increases energy self-sufficiency and independence and fosters national security by lessening the dependence on fossil fuels and imported oil.

c. The system will also be a great teaching tool for the community in general by showing how PV systems work.

3. Viability of project approach (30 points).

a. Blue Mountain Union (BMU) is a K-12 school that serves the towns of Groton, Ryegate, and the village of Wells River. Each of these three political units has its own governments, police, fire, and other services. BMU is the only institution that brings together these three separate entities as no other institution does. Because BMU is the focal point of several communities, it is a logical place to showcase the benefits of energy conservation and renewable energy.

b. With a building of 78,000 sq. ft., a faculty and staff of 90, and a student body of 410, the opportunities for improving energy efficiency should be immense as has already been pointed out by the site assessment report. There is no question that the use of the Kill-A-Watt devices will turn up dozens of places where electrical energy can be saved. The education of the end users of the electricity and the installation of power strips will then cut down the use of energy. The same will be true for the use of timers.

c. The photovoltaic system will be a great teaching tool, and at the same time it will produce between 1,369 and 2,053 kWh of pollution free electricity each year. The system will begin as a demonstration project/teaching tool as the school uses about 485,000 kWh of electricity per year. It is hoped that the photovoltaic system will be

expanded in the future to put a real dent in the energy consumption from the grid that is non-renewable.

4. Cost-effectiveness (10 points).

a. With no moving parts to break down, PV systems are quiet, reliable, durable, and almost maintenance free. PV systems are modular so they may be expanded with ease in the future. The first PV panels sent into space on satellites in the late sixties are still producing power! How about that for cost effectiveness and long term payback?

b. Feeding power into the electric grid makes the grid "greener". At the 18 cents/kWh rate that GMP purchases solar-generated electricity, BMU will save between $246 and $369 annually.

5. Public Education and Involvement (10 points).

a. Education goes beyond the school itself. As an example, in October, 2008 BMU was the site of a 'Button Up Vermont' presentation for the towns of Groton, Ryegate, Newbury, and the village of Wells River. The facilities and staff were made available to the local organizer at no cost as a way of showing the school's commitment to energy conservation. The school also switched some years ago to wood chips as its main heating fuel enabling it to reduce its use of fuel oil to about 6,700 gallons each year. The community will be made aware that grid-tied PV systems are an increasingly popular option for generating clean, sustainable electricity that is not interrupted by power outages. The public will be made aware that photovoltaic systems without batteries are simple, economical, maintenance free, and highly efficient.

b. One teaching tool will be the monitoring of usage and reduction in usage of electricity by keeping track of energy with the "Kill-A-Watts" units. Also, students will monitor, track, and compare the production of electricity by the photovoltaic panels on sunny, partly sunny, and sunless days. BMU offers a high school class entitled "*Living with Technology*" that Mr. Munson teaches. In this class photovoltaic systems and renewable energy are explored in depth. Having a renewable energy project on-site will be excellent for the purposes of teaching about the subject first-hand.

c. Education about the photovoltaic system will not stop with the students at the school. Every day more than 600 people enter and leave the school. Each will see the photovoltaic panels. During social or athletic events even more family members from this and other schools will see them. Visitors will ask about the panels and everyone in the school will be able to say "On sunny days they produce electricity which we use and any excess goes into the power grid!"

d. We will purchase $300.00 of books/materials for the library on energy related topics that students will be able to use. They will also be available to the community.

D. ATTACHMENTS

1. Letter from BMU Superintendent and the minutes of BMU School Board meeting of January 21, 2009 in which a resolution in support of this application was approved by unanimous vote.

2. Letter of support from the Newbury Energy Committee.

3. Letter of support from the Groton Town Select Board.

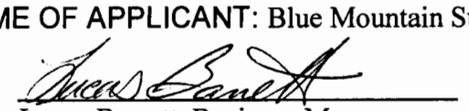
4. Letter of support from the Ryegate Town Select Board.

E. APPLICANT REPRESENTATIONS AND SIGNATURE

The applicant(s), by signing and submitting this application, make(s) the following representations with the understanding that the Department of Environmental Conservation will rely on these representations for the purpose of evaluating this application. The applicant(s) understand(s) and acknowledge(s) that should any of these representations be untrue, the Department may rescind any award of assistance and, in the Department's sole discretion, pursue any other appropriate remedy or relief:

1. All information contained in this application, including attachments, is true and complete to the best of the applicant's knowledge and belief;
2. The applicant(s) has read and understands the grant background and guidance and grant terms and conditions and agrees to comply with them;
3. The primary applicant is a Vermont municipal entity or a non-profit organization, and if a non-profit, is in compliance with all requirements for maintaining its non-profit status; and
4. The applicant(s) will be ready to proceed with the project within 60 days of notification of the award.

NAME OF APPLICANT: Blue Mountain Supervisory Union

BY: 

Lucas Barrett, Business Manager

BLUE MOUNTAIN SUPERVISORY UNION

2420 Route 302
Wells River, VT 05081
(802) 757-2766; FAX (802) 757-2790

Richard Pike, Superintendent

1-27-2009

To Whom It May Concern:

The Blue Mountain Union School Board at its meeting of January 21, 2009 voted in unanimous approval of a resolution to support the school's application for a Vermont Community Climate Change Grant. The attached minutes from the meeting document the board's approval.

Thank you for your consideration of Blue Mountain Union School, we believe that we are an excellent site for the objectives of this grant. If there are any questions in regards to this matter please feel free to call me at the above telephone number.

Respectfully,

Richard M. Pike
Superintendent

BLUE MOUNTAIN UNION SCHOOL
School Board Meeting
January 21, 2009
BMU Garvin Library

Present:
School Board Members: Chip Conquest, Hank Eaton, Tom Page, Brenda Powers, Dr. Harry Rowe, Bruce Stevens
Administration: Richard Pike, Carol Curtis, Lucas Barrett
Staff: John Munson
Public: None

I. Meeting called to order at 7:04 PM by Chairman Tom Page.
II. Consent Agenda
  a. Moved by Bruce Stevens, seconded by Hank Eaton to accept the minutes of January 14, 2009. Motion voted on and approved with one abstention (Chip Conquest).
  b. Orders were approved by committee
III. Technology Updates—John Munson
  a. John presented details of Blue Mountain Union's proposal for a Vermont Community Climate Change Grant
    i. Paul Berlejung of Groton had shared information about this program and had met with Supt. Pike, Lucas Barrett, Daryl Sulham, and John Munson
    ii. Proposal includes the installation of a pole-mounted solar array (roughly 10' x 15') at a suitable location at BMU, which would generate 1 to 1.5 KwH of electricity
  b. Discussed educational merits of producing green energy
  c. Moved by Hank Eaton, seconded by Chip Conquest to approve this grant application. Motion voted on and approved unanimously.
  d. John reported that the BMU Technology Plan will lapse June 30, 2009. A new three-year plan will be written and submitted to the VT Dept. of Education. Community input will be solicited in putting the plan together.
IV. Correspondence
  a. Supt. Pike shared correspondence from John Nelson, Executive Director of the VT School Boards Association
    i. Certificate from VSBA presented to Tom Page, honoring him for 15 years of service on the BMU School Board
V. Reports
  a. Superintendent Richard Pike—Had prepared the Warning for the Annual Meeting and circulated it to the Board members. Moved by Bruce Stevens, seconded by Chip Conquest to authorize the Warning as printed. Motion voted on and approved unanimously
    i. Public School Choice Agreement has been previously approved
  b. Lucas Barrett—Non Resident Tuition Rate

i. Moved by Bruce Stevens, seconded by Dr. Rowe to set Tuition Rate for Grades 7-12 at $12,022 and the Elementary rate at $10,675. Motion voted on and approved unanimously

c. Principal Carol Curtis
   i. School Report—Carol suggested sending a post card to families to inform them that they can request that a copy of the School Report be sent to them, or they may access it on line. Agreed by consensus
   ii. 8th Grade Exit Projects—to be completed and shared March 26th.
      1. Two choices for project this year—careers or issues.
      2. Carol shared plans and structure the students will be using
   iii. Certification—Working to ensure that each teacher is teaching in his/her certification area. Administration is in conversation with DOE about certifications and will be adjusting next year's schedule to accommodate this.

VI. Policy Committee Report
   a. The following policies are warned for adoption on Feb. 4th:
      i. Policy 2454
      ii. Policy 2440
      iii. Policy 2050
      iv. Policy 3020
      v. Policy 4100
      vi. Policy 4310

VII. Setting the Next Agenda
   a. Next regular Board meeting scheduled for February 4th at 7:00 PM
   b. Executive Session—Personnel/Student Records at 7:00 PM
   c. Agenda items to include
      i. Budget items for remainder of year

VIII. Committee Meeting Schedule
   a. Pre-Board Tuesday, February 10th at 12:30 PM
   b. Policy Committee February 4th at 6:00 PM
   c. Executive Committee January 28th at 12:30 PM

Voted to adjourn at 8:16 PM

Respectfully submitted,

Nancy N. Perkins

January 30, 2009

John Munson
Technology Coordinator
Blue Mountain Union School
2420 Route 302
Wells River, VT 05081

Dear John,

We enthusiastically support your goal of installing a grid-tied photo-voltaic system at Blue Mountain Union School to help increase energy efficiency and reduce greenhouse gas emissions.

The goal of the Newbury Energy Committee is to help the Town and area residents learn about energy alternatives in order to become energy independent, thus saving money, and reducing greenhouse gas emissions. If you are successful in your application for the Vermont Community Climate Change Grant, we anticipate that Blue Mountain Union's photovoltaic system will help us meet many of these goals by saving money for the school and taxpayers, and offering great teaching opportunities as we engage the public on energy issues.

The grid-tied photovoltaic system you are planning at the school will be an excellent, public, and accessible example of how a group or individual can make changes that will benefit themselves, AND also strengthen a community resource: the electric utility grid. I anticipate it will have tremendous educational value and community visibility.

Thank you for pursuing this project, and please let me know if our committee can be of any help as you move forward.

Sincerely,

Linda Ide,
Chair of the Newbury Energy Committee, for
Garnett Hebb
Liane Allen
Royce Thompson
Tom Williams
Peggy Hewes (Secretary).

Town of Groton
1476 Scott Highway
Groton, Vermont 05046

1/16/2009

To Whom it May Concern:

The Groton Town Selectboard supports Blue Mountain Union School's application for a *Vermont Community Climate Change Grant.* Groton is one of the sending towns to Blue Mountain Union School and we are pleased that the school is pursuing this grant.

This grant seems particularly appropriate for Blue Mountain Union School in that not only does it help in making progress towards the creation of more sources of environmentally-friendly energy, but it will involve our students in learning about renewable energy and conservation, which will be important – if not essential – to their future.

Thank you for your consideration of Blue Mountain Union School, we believe that they are an excellent site for the objectives of this grant.

Respectfully,

Groton Select Board

TOWN OF RYEGATE
PO BOX 332
RYEGATE, VERMONT 05042

January 19, 2009

John Munson
Technology Coordinator
Blue Mountain Union School
2420 Route 302
Wells River, Vermont 05081

Dear John:

The Select board was very interested to hear of your intention to apply for a grant from the "Vermont Community Climate Change Grant" Program. Energy seems to be on everyone's minds these days and any initiative to conserve energy should be applauded.

This project seems particularly worth pursuing as it not only includes school energy consumption studies, the implementation of energy conservation based on these studies, but most importantly provides energy education for our young people.

The board is definitely supportive of your efforts and wishes you all the best in securing the grant. Please let us know if we can be of service.

Sincerely,

Andrew Smith, Chair

Grant Nelson

Paul Keenan
Ryegate Select board