

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

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**LCCMR ID: 068-B2**

**Project Title:**

Alternative Energy: Implementing and Educating

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**LCCMR 2010 Funding Priority:**

B. Renewable Energy Related to Climate Change

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**Total Project Budget: \$** \$754,900

**Proposed Project Time Period for the Funding Requested:** 3 years, 2010 - 2013

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

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**Summary:**

Shattuck and five Faribault public institutions will develop distributed generation capacity (wind, solar, geothermal), then educate/train Minnesota community leaders and officials, school children and others on alternative energy assessment and implementation.

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**Sponsoring Organization:** Shattuck-St. Mary's School

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**Location:**

**Region:** Regional

**County Name:** Statewide

**City / Township:** Faribault

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

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# MAIN PROPOSAL

**PROJECT TITLE: Alternative Energy: Implementing and Educating**

## I. PROJECT STATEMENT

Energy issues have become the focus of discussion throughout Minnesota. Yet our citizenry is not positioned for effective action. From a pragmatic perspective, we are asking our community leaders – mayors, city councils, county commissioners, etc. – to make decisions on wind, solar and geothermal when they have little understanding of the issues or opportunities. And from a long-term perspective, we need to give our schoolchildren and other citizens a better working knowledge of society's use of energy and what alternatives there are.

Shattuck-St. Mary's School ("Shattuck") is forming a community consortium of energy users, primarily public sector: the Minnesota State Academies (MSA), District One Hospital, Faribault Correctional Facility and Faribault Public Schools, to evaluate and implement a multi-turbine wind farm. Shattuck will also evaluate a solar farm as well as bring a geothermal field online.

More importantly, Shattuck's educational mission and a culture of outreach will translate the partners' experience with alternative energy into a demonstration site that will serve a variety of audiences: schoolchildren, college students and community leaders and decision-makers.

## II. DESCRIPTION OF PROJECT RESULTS

**Result 1: Assess, Construct, Integrate Total Budget: \$18.4 million LCCMR Budget: \$420,000 Completion Date: 9/31/11**

Solar project feasibility, planning, construction and integration into operations, for a 300 kilowatt farm on 2-3 acres will cost approximately \$3.2 million. By the start of the grant period, wind feasibility and planning will be complete. Cost of wind farm construction and integration into operations (during the grant period) will be approximately \$15.2 million (3-4 1.5 megawatt turbines). Geothermal system will be complete before commencement of grant period – no cost assessed. Partners and investors will cover all capital costs.

### Deliverable

1. Operational wind, solar and geothermal systems. Five public institutions will move to a distributed generation model, using renewable resources.
2. Use of three 1.5 megawatt wind turbine will displace 936 tons of CO<sub>2</sub> emissions; use of a 300 kilowatt solar farm will displace 60 tons of CO<sub>2</sub> emissions
3. Data and intellectual property regarding feasibility testing, planning and implementation will be publicly and proactively available to other organizations exploring similar options.
4. Multi-partner "intellectual infrastructure" on adopting alternative energies

**Result 2: Curriculum Devel/Delivery LCCMR Budget: \$ 334,900 Completion Date: 6/30/13**

As a result of the curriculum and training programming:

- a) Schoolchildren will visit the campus to see how energy is generated and converted to use on the Shattuck campus. Curriculum will also be developed for distribution throughout the Minnesota public school system.
- b) College students from South Central Technical College, St. Olaf, Carleton and State University at Mankato will be able to study the engineering and servicing of the systems for power generation and distribution.

- c) Community leaders and decision-makers will come to campus for one to three day training sessions on the pragmatic and policy implications of adopting alternative energy strategies. A newly acquired adjacent campus will have been converted to an executive conference center, including residential and dining facilities.

This education/training will be marketed extensively through Shattuck education connections, the Project Manager's network (see bio) and various associations serving cities and counties (see Budget – promotion)

#### **Deliverable**

1. Both on-site programming/curriculum and curriculum for distribution to other schools.
2. Leverage the status of Shattuck as a private sector organization to market executive-level training in a conference center setting that will draw leaders who might not gravitate to public sector outlets.
3. In the second year after curriculum development, train 400 community leaders, host visits from 750 school children, train 80 teachers and serve 2,000 children through schools adopting curriculum.

### **III. PROJECT STRATEGY**

#### **A. Project Team/Partners**

In addition to Shattuck, partners on the wind energy project include the Minnesota State Academies for the Deaf and for the Blind (“MSA”), District One Hospital, Faribault Correctional Facility and the Faribault Public Schools. Technical advice on the solar and wind projects: KFI and Ulteig, both Minneapolis engineering firms with expertise in alternative energy. The Cannon River STEM School, a public Science, Technology, Engineering and Math charter school located on a Shattuck satellite campus, will assist in the development of the K-8 curriculum, along with selected science and environmental teachers from around the state. Geothermal energy partners include I&S Engineering and KFI.

#### **B. Timeline Requirements**

The master plan and design for both the wind and solar farms will commence in the summer of 2010, based on preliminary feasibility study completed prior to grant commencement. Construction of both solar and wind farms will occur in 2011. The geothermal system will be nearly complete by the beginning of the grant period in the summer 2010 (funded separately).

Curriculum development: A) Development of elementary and secondary school curriculum distributed to schools: formulate curriculum team late 2010, develop curriculum through Jan 2112, field test through June 2012, redraft summer 2012, retest, redraft as necessary, deploy in fall 2012. B) Development of elementary and secondary school program curriculum for demonstration site: Jan. 2012 through Sept. 2012; C) training of community decision-makers and other adults – develop training to allow some communities to monitor our own experience as the project progresses: 7/2010 – 7/2013, concurrently develop ongoing training extending beyond actual installation of Shattuck-MSA-District One-Correctional Facility-Public School projects.

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

Shattuck and its public sector partners are committed to leadership and demonstration of how community institutions can adopt distributed generation strategies. Additional wind farms will be explored, as well as other sources that decrease carbon emissions and greenhouse gases. Those strategies will be included in Shattuck's community leader training, further enhancing the executive conference training center approach that both public and private sector leaders seek.

## Project Budget

### IV. TOTAL PROJECT REQUEST BUDGET (threeyears)


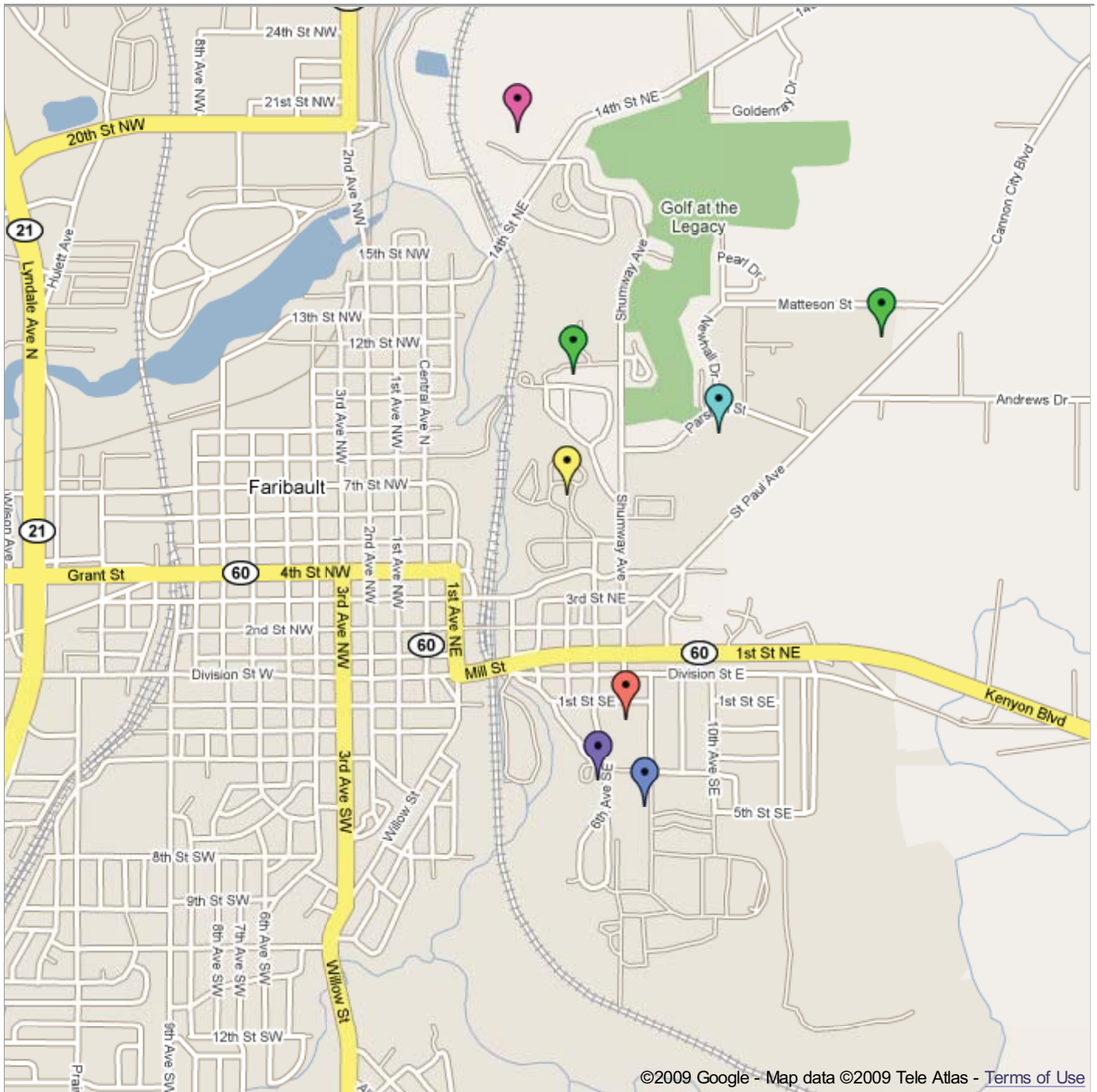
BUDGET ITEM	AMOUNT
<b>Personnel:</b> Alternative Energy Project Coord'r 100% (75/25, 3 years, 1)	\$ 180,000
Curriculum Development & Program Coord'r 100% (75/25, 2.8 years, 1)	\$ 140,000
Teacher Stipends 10% (90/10, 2.5 years, 4) (4@2000 x 1.1 x 2.5 years)	\$ 26,400
Trainer/educator 50% (75/25, 2 years, 1)	\$ 30,000
<b>Contracts:</b> Alternative Energy Consultant for <b>both solar and wind</b> systems: master plan and design of system, devel. finan'l proforma, system selection and plan for integration, off grid power lines, negotiations with power company, property owner easements, permitting, community meetings-all work before construction (\$700m)	\$ 200,000
Non-Shattuck Teacher Stipends (6 @ \$2000 x 2.5 years)	\$ 36,000
Video production to record and create video of planning, construction and integration of wind and solar systems	\$ 7,500
Graphic Designer - design & layout of all site tour signage, curriculum materials	\$ 5,000
Promotion of executive training for MN community leaders - will largely leverage connections through Ass/n of MN Counties, League of MN Cities, Coalition of Greater MN Cities, participation in conferences, website dissemination, mailings, etc.	\$ 25,000
<b>Equipment/Tools/Supplies:</b> Site tour signage, curriculum materials for exec. training, field test curriculum, final curriculum	\$ 35,000
Construction of wind and solar farms, integration into customer systems (\$18M)	\$ -
<b>Acquisition:</b> Wind farm land is already owned by MN State Academies; solar farm land will be acquired by Shattuck in 2009; acquisition of easements for power distribution will be shared among the partners, est. cost	\$ 40,000
<b>In-state Travel:</b> six teachers from other communities, multiple curriculum development meetings at Shattuck, field testing,	\$ 5,000
<b>Additional Budget Items:</b> Subsidy for food, lodging, and meeting expenses for community training	\$ 25,000
<b>TOTAL PROJECT BUDGET REQUEST TO LCCMR</b>	<b>\$ 754,900</b>

### V. OTHER FUNDS




SOURCE OF FUNDS	AMOUNT	Status
<b>Other Non-State \$ Being Applied to Project During Project Period:</b> Investors will share in the capital costs as well as some operating costs. Allocation has not been finalized. Project partners will also share in feasibility/pre-investment planning costs.	\$ 18,450,000	<i>Pending</i>
<b>Other State \$ Being Applied to Project During Project Period:</b> Public sector project partners will share in feasibility pre-investment planning costs. Allocation has not been finalized.	\$ 50,000	<i>Pending</i>
<b>In-kind Services During Project Period:</b> Staff time of project partners	\$ 150,000	Secured
<b>Funding History:</b> Installation of geothermal field on Shattuck campus, feasibility testing and pre-planning for wind farm	\$ 400,000	Secured



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### Alternative Energy Partners

-  [Cannon River STEM School](#)
-  [FPS Roosevelt Elementary School](#)
-  [Minnesota State Academy for the Deaf](#)

-  [District One Hospital](#)
-  [Minnesota Correctional Facility](#)
-  [Minnesota State Academy for the Blind](#)
-  [Shattuck-St. Mary's](#)
-  [Cannon City Road Wind Farm Site](#)

## **Alternative Energy: Implementing and Educating For Now, For the Future**

### **John Blackmer**

John Blackmer is chair of Shattuck-St. Mary's Science Department and teaches Biology, Environmental Science and AP Environmental Science. He coordinates the campus recycling program, serves as campus naturalist, and coordinates the school's experiential outdoor activities. His AP Environmental Science class intensively explores the science and societal considerations of alternative energy sources and he oversees student projects on alternative energy.

Prior to joining Shattuck-St. Mary's in 2007, Mr. Blackmer was the Chief Naturalist at the River Bend Nature Center in Faribault, MN. He coordinated all school programs for all ages and many other programs. He created an exciting comprehensive science curriculum to meet the needs of area schools. Mr. Blackmer delivered thousands of educational programs in outdoor, indoor, and school settings, and worked extensively with dozens of area schools to help them achieve district and state educational goals in an experiential learning and project based setting. He also recruited and led staff and volunteers to be effective educators as well. His responsibilities also included the management of 700+ acres of forest, prairie, wetland and nature center facilities.

River Bend is well known regionally for the high quality programming it offers to all ages, particularly school students. In his seventeen years at River Bend, Mr. Blackmer's garnered extensive experience in developing these hands-on, experiential learning programs, learning how to engage students no matter their level of interest in the topic at hand.

Mr. Blackmer has served on a variety of boards, including the Minnesota Environmental Education Advisory Board (Congressional District 1 representative), the Minnesota Naturalists' Association (board member) and Rice County's Big Woods Project, for which he chaired the Wildlife Committee.

He is a graduate of Mankato State University, where he majored in Environmental Studies and Natural Resource Management. He has a minor in Biology. He has also attended the Walt Disney World University, taking an intensive six month training program on tourist destination management.

### **Shattuck-St. Mary's School**

Shattuck-St. Mary's School is a 6-12 independent school located in Faribault, Minnesota. The school has a diverse student body of 434, most of whom receive financial assistance that enables them to attend. Our commitment to science and the environment is manifested in a new STEM Center under construction, with a heavy emphasis on environment and alternative energies. The school is recognized in the community for its heavy emphasis on outreach, community involvement, leadership and the ability to partner.

In May 2009, the school was in final negotiations to acquire the abandoned St. James campus in Faribault, which is slated to house a new STEM charter school and a conference center.