CERTs 2008 Funded Projects — Round 2

helping Minnesota communities determine their energy future

JULY 23, 2008 – We are excited to announce the projects recently awarded CERTs mini-grants in each of the six Greater Minnesota CERTs regions. There were 91 proposals, 37 of which received funding. We hope that these grants help projects garner further funding and bring communities together in identifying and implementing energy efficiency and renewable energy projects. Read on to learn more, and thanks to everyone who submitted a proposal! If you are interested in our proposal process or want to prepare for our next round, visit our Web site (Community Projects > RFPs).

CENTRAL REGION

There were 17 proposals submitted for the Central region, and the following 8 proposals were funded:

- **Rechargeable Electric Car:** In partnership with the UofM's Applied Environmental Solutions and Wildrose Farm, Chuck Knierim plans to revamp an old 1976 electric car to be more efficient and last longer. This car will be used as transportation for delivering food grown in a year-round greenhouse to local restaurants and CSA shares. The analog controls in the car will be switched to digital and the old battery will be replaced with a super efficient battery. The purpose of this project was two fold. The first is to simply reduce the amount of carbon dioxide emitted by eliminating the need to burn fuel for energy. The second is to give people at the AES experience working with an electric car, so they will be able to spread the knowledge they have learned and get more electric cars out on the road. ($5,000)

- **Solar Air Heat Installation on Cass County Transfer Station:** This project is a partnership between Cass County Environmental Services and the Rural Renewable Energy Alliance (RREAL). By installing a solar space heating system in a service building at the Cass County Transfer Station, RREAL is demonstrating to the public how this kind of renewable energy system works to because it is on a government building. Some benefits for the Transfer Station is they will save money on heating costs in the winter, because the sun is providing heat rather than propane, and they estimate the project will also reduce CO2 emissions by 7000 pounds per year. With rising heating costs, this installaion will is in the public interest, because much of the operation costs for Cass County Transfer Station is provided by tax payers. ($5,000)

- **Leech Lake Solar Heater Demonstration:** The Planning Division of the Leech Lake Band of Ojibwe is working to acquire a demonstration model of a solar heater to be used in a residential setting. Students at the Leech Lake Tribal College will work on designing the model and will install it on campus building. The purpose is to demonstrate how solar technologies can reduce residential heating costs for low income families and businesses on the reservation, and to promote its use in the region. This will be a working model showcasing the technology and the benefits it can provide. The Rural Renewable Energy Alliance will work with the Leech Lake Band of Ojibwe to install the solar heaters and serve as the technical services provider for the project. Monitoring and displays will be available as an educational resource for the public. ($5,000)

- **HUG Residential Greenhouse Development:** The Hunt Utilities Group is working on a project to build a greenhouse that would be incorporated into the energy system of a residential unit. The greenhouse would operate year-round and thus provide local, healthy food for the residents. The heat generated by the greenhouse (via the sun) could also be utilized by the house by simply opening a door and letting air flow. This project aims to figure out the best way to control temperatures, humidity, and bugs while producing great crops year-round. These folks also hope

CERTs PARTNERS

University of Minnesota Regional Sustainable Development Partnerships

The Minnesota Project

Southwest Regional Development Commission

The Green Institute

Office of Energy Security, Minnesota Department of Commerce

CERTs FUNDERS

Office of Energy Security, Minnesota Department of Commerce

Blandin Foundation

Minnesota Pollution Control Agency

University of Minnesota Institute for Renewable Energy and the Environment

University of Minnesota Regional Sustainable Development Partnerships

U.S. Department of Energy

that the project will "Demonstrate to the public that energy isn't all about hardware and dollars. And open minds to the possibility that we can also get emotional, aesthetic and culinary benefits from using energy well." ($5,000)

- **Green Park Rapids:** The Green Park Rapids Initiative is working towards getting more environmentally friendly building developments on the ground in Park Rapids. The team is currently working with a grocery developer to asses the costs and benefits of implementing many green building designs such as LEED certification, green roof installation, pervious asphalt and alternative energy options. The main goal of the project is to "encourage the city to adopt sustainable development guidelines so the intent will be to use this research to assist the City of Park Rapids and Hubbard County in that effort by understanding the short and long-term payback of implementing sustainable guidelines, available funding sources to offset increased costs, and having a project on the ground to act as a showcase." ($5,000)

- **New Presentation Software for HUGnet Energy Performance Monitoring System:** HUGnet is a monitoring system for buildings that monitors temperature, humidity, heat flow, light, and air quality. This system was developed because performance monitoring is a great way to see if energy is being used wisely in a building. This project plans to develop ways to make the data it produces easier for people with no background knowledge of the system to understand. HUG also plans to "publish the entire software hardware design under a public license, so any interested party can use it." ($5,000)

- **HUG Practical/Energy Efficient Residential Heat Storage System:** Heat storage is one of the most challenging issues faced by anyone hoping to use a large percentage of solar energy for winter heating. This project would aimed at researching, developing, and installing a practical and energy efficient heat storage system for solar heated homes in Minnesota. One idea is to use large amounts of earth as a medium for storage, along with insulated hot water tanks. This system is intended to store heat for a home for around 3 days without additional solar insolation. ($5,000)

- **Eco-Domes CoGeneration Set for Greenhouse:** This project would provide the Eco-Domes campus diesel generator with renewable biofuel for heat and electricity. This biofuel co-generation system energy would heat an existing four season greenhouse, which would stimulate a local four season food market and serve as an educational tool for local community members. The system will be grid-tied to Crow Wing Power Cooperative grid and to the Eco-Domes electrical system. ($3,200)

NORTHEAST REGION

There were 22 proposals submitted for the Northeast region, and the following 8 proposals were funded:

- **Hartley Nature Center Energy Education Trailer:** The Harley Nature Center's project will provide energy-focused environmental education throughout Northeastern Minnesota. By purchasing a mobile trailer, the Center hopes to serve schools by building environmental literacy in regards to energy production and conservation, protecting air and water quality, as well as overall sustainability, by presenting educational points and graphic elements to students in various schools. The trailer will also be present at the September 2008 Harvestfest celebration in Duluth's Bayfront Park as an educational resource. The Energy Education Trailer will travel throughout most of the year, doing full-day rotations of science classes, in addition to teacher conferences and energy education workshops. ($5,000)

- **North House Folk School:** Milling Shop Solar Hot Water System: The North House Folk School seeks funding to install an 8-10 panel solar hot water system to The Milling Shop, which is part of a broader campus enhancement entitled "Raise the Roof." Raise the Roof focuses on expanding the educational potential of North House by creating classrooms for hand and power tool coursework, increasing their internship program, and addressing dust collection issues. The system will reduce the operating costs of the facility and allow the school to become a model for hands-on educational institutions in terms of energy independence and environmental initiative. ($5,000)

- **UofM Extension: Energize a Youth—Energize a Community:** This project will create in-school/after-school programs to teach 3rd–6th graders energy related curriculum, while having older students mentor and teach the elementary school students. The project will develop adult leader training kits for 4-H club and project leaders, and the program hopes to have fifty percent of all 4-H clubs conducting at least one energy focused club project training within the next year. An energy fair will also be organized to feature guest speakers that would include energy technology experts, in addition to learning stations and youth presentations. ($5,000)

- **A Laundry Room Inc: Solar Thermal Hot Water Installation:** A Laundry Room Inc. seeks funding to offset the propane consumption of its laundromat by installing solar thermal hot water panels. The panels will reduce fuel consumption, particularly in the summer months, and will help local and visiting consumers that depend on coin laundry. This will be a tangible way for low to middle income consumers to learn and participate in alternative energy usage as well as serve as a resource for the community. ($2,640)

- **Aitkin Co: Grass/Wood Pellet Feasibility Study:** Aitkin County will develop a feasibility study to allow for further planning of a pellet/biomass plant. They seek funding for their study in order to understand the availability of Native Prairie grass/Brushland

biomass, agricultural residue and forest biomass. They will also conduct a market analysis and biomass fuel analysis to compile conclusions and recommendations for the area. Native grass and wood based biomass are an attractive energy option for the region; thus, the creation of a pellet industry will be beneficial to local communities and landowners in the future. Upon completion of the study, the information will be discussed and future actions will be taken with provided study information. ($2,640)

- **Cohasset Elementary: Teaching a Community Through the Efforts of Our Children:** Cohasset Elementary School seeks funding for its Cohasset School's Cans for Kids Project. They will be adding solar panels to their additional efforts to reduce waste and energy consumption. They will have a display showing the energy created by the panels at the entrance of the school, as a demonstration of their efforts. The workforce of the school's 4th grade students and teachers will be working on their current efforts and utilize the funds to add to their already growing list of successful waste and energy projects. ($2,640)

- **Cook County Whole Foods Co-op: Watts Happening at the Co-op?** The Cook County Whole Foods Co-op seeks funding to implement their plan of becoming energy independent by 2013. They will hire a consultant/engineering firm to assess the present building, discuss the best approach based on operational and economic standings, and take steps to decide which alternative energy source is best suited to complete their goal. Once completed, the Co-op will serve as an educational resource, a place for the community to gather around issues related to food politics and the environment, and an example for other businesses in the community. ($2,640)

- **City of Hill City & Hill City High School: Hill City Wind Renewable Energy Project:** The City of Hill City and Hill City High School will be monitoring the wind speeds on top of Quadna Mountain and use the data to determine the economic feasibility of installing a wind turbine at the site. The data will also be an educational tool for the school and community in regards to wind power as a renewable energy source. In order to ensure the success of their ultimate renewable energy project, the Hill City School must first collect the data to show that a wind turbine is a feasible resource. This project will allow the city to learn about reducing its carbon footprint through alternative energy sources. ($2,640)

NORTHWEST REGION

There were 5 proposals submitted for the Northwest region, and the following 4 proposals were funded:

- **LEEDing Crookston to a Sustainable Future:** Students from the Natural Resources Club at the University of Minnesota – Crookston have developed a plan to get a new dormitory building LEED certified. This certification means that the construction of the building took environmental concerns into account. These buildings must be very energy efficient and the materials used must be sustainably harvested. The project at UM Crookston would educate students and staff about the benefits of LEED certification and also other possibilities the campus could take in the way of sustainability such as wind power and rain gardens. ($8,000)

- **Straight Vegetable Oil as a Fuel Source in Agricultural Production:** This research project by the U of M Crookston Agricultural Department is an ongoing search to find the best way to use straight oil from soybeans, sunflowers, or canola in agricultural equipment. Currently, these oils are often blended with diesel fuel to run the engines because straight vegetable oil can have long term effects on the engine. To be able to run a diesel engine completely on straight vegetable oil, this team aims to "determine the mechanical and operational constraints and efficiencies of using straight vegetable oil (SVO) as a fuel. The purpose of this project is to provide funding to help support a research ream consisting of students and faculty to assess current technology for dual fuel systems, test improvements, and provide economic and operational guidelines for farmers interested in using SVO." ($5,000)

- **Geothermal Projects for Marshall County Group Home Building & Warren Professional Building:** A group home for physically disabled adults in Marshall County is seeking funds to update and renovate their building to include a geothermal heat pump to reduce the amount of energy used at the facility, and therefore reduce energy costs for the residents. The Warren Economic Development Authority is also constructing a professional building to house an eye doctor, dentist and insurance office and will install geothermal heating and cooling to keep the operating costs of the building down after construction. Both projects are working with Dovetail partners to design the building to be green and energy efficient and to work with local contractors to educate them about energy efficient building techniques. ($5,000 each = $10,000 total)

SOUTHEAST REGION

There were 17 proposals submitted for the Southeast region, and the following 5 proposals were funded:

- **Whitewater Gardens Farm – Alternative Energy Possibilities for Local Food Systems:** This project aims to explore multiple ways renewable energy can be utilized to extend the growing season of crops. This will allow local food to be available throughout the year in Minnesota. The team plans to find the best technologies in the areas of ground source heat pumps, solar thermal heaters, wood boiler

systems, wind turbines, photo cells with a battery pack. With a year-round greenhouse and a cold storage cellar, the farm will be able to provide local food to farmers markets and CSAs for a longer period of time. ($4,000)

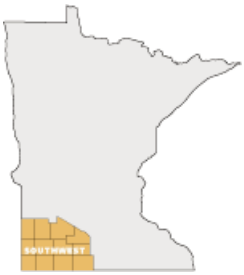
- **Eagle Bluff Environmental Learning Center – Green Markets:** Testing Distributed, Perennial Biomass Energy Systems in SE MN: One of Eagle Bluff ELC's goals is to become carbon neutral in terms of electricity and heat use. One step in getting there is their plan to study the feasibility of using local perennial grasses in the campus's combine heat and power (CHP) system. The study will also evaluate how harvesting the perennial crops will impact the watersheds, soil, area farmers, and other factors. The project will analyze the economics necessary to make this profitable to farmers, feasible to Eagle Bluff and a replicable model for others to adopt. ($5,000)

- **Wind Mapping, Wind Resource Mapping for the City of St. Charles:** The City of St. Charles is in the planning stages of building 1-3 large wind turbines in the area. The first step is to find the best locations for the turbines. This project will fund a Wind Logics study to scout the hills and plains for prime locations. Through Minnesota Municipal Power Agency (MMPA) a Clean Renewable Energy Bond (CREBs) grant would be utilized for the project. The City of St. Charles is also considering the option of a fourth citizen-owned turbine that could possibly be achieved with the help of the Southwest Initiative Foundation (SWIF). ($5,000)

- **Olmsted County Solar Initiative:** This student-led project aims to install a 4kW solar PV system on the local high school to reduce energy costs, educate students on alternative energy solutions, and also to "act as a pilot project to show that students can lead the way and work with school districts and power companies for sensible energy solutions." The team is working with Innovative Power Systems for the design and installation of the system. It is estimated that over 30 years their system will offset "over 30,000 pounds of carbon dioxide, 1,800 pounds of sulfur dioxide, and 1,440 pounds of nitrous oxide. The system will save the school district at least 5000 kWh annually in energy bills." ($5,000)

- **Sun's Warmth Farm: Biogas Fueled Genset and Solar Thermal:** The Sun's Warmth Farm is an innovative organic farm operation that is off the electric grid via the use of 1.3 kW of photovoltaic panels and a 1.0 kW wind generator. We have converted our back up gas generators to use E85. Another generator runs on a bio-diesel blend." Their goal is to demonstrate a 100% renewable energy electrical system. To do this, they will need to replace 5 old solar collectors and convert the other back up generator to use pipeline quality biogas from the Haubenschild Dairy Farm. These projects will hopefully be completed before the 2008 National Solar Home Tour in October. ($5,000)

SOUTHWEST REGION



There were 14 proposals submitted for the Southwest region, and the following 6 proposals were funded:

- **Prairie Ecology Bus (PEBC) Energy Efficiency Outreach:** PEBC will be pairing with a local utility and will develop and offer 10 energy efficiency programs for energy efficiency outreach. Outreach is offered to community groups and materials developed will focus on products people use in their daily activities. A webpage devoted to energy efficiency activities will be posted on the PEBC website: www.ecologybus.org ($5,000)

- **RTR, Lynd, Hendricks School Districts Geothermal Feasibility Studies:** The three school districts will work together to hire a consultant to conduct a geothermal feasibility studies for five buildings in the districts that have different fuel sources. If feasible, installation will proceed and annual monitoring of the project will be incorporated into the student curriculum. ($10,000)

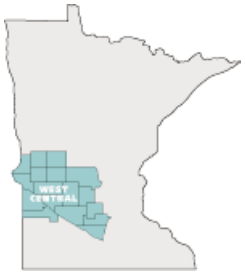
- **Madelia Model Community Based Anaerobic Digestion Project:** The funds requested are specifically related to the feasibility study for the anaerobic digestion piece of the overall Madelia Project. They look at their work as being public and the results would be available publicly. The project should be replicable, especially the anaerobic digestion piece, in small rural communities across MN. ($5,000)

- **Rural Minnesota Energy Board (RMEB) Wind Site Selection and Assessment of Feasibility Study:** The site selection and assessment of technical feasibility of 5-30 MW of community wind within the 17 county joint powers board. ($5,000)

- **Minnesota Crumb Rubber, LLC:** Environmental permitting and engineering for recycling tires through a new technology to produce a high end rubber for reuse, which will displace oil in the automotive and plastics industry. The tires will be directed away from current disposal – tire derived fuel. As a whole the project will decrease the dependence on foreign oil and remove air quality issues related to burning on tires. ($7,500)

- **Milroy Green Restaurant:** A pilot model demonstration project for other retail businesses, using geothermal and energy efficiency in a historic building in Miroy, Minnesota. ($7500)

WEST CENTRAL REGION



There were 16 proposals submitted for the West Central, and the following 7 proposals were funded:

- **USDA–ARS Solar Thermal:** The goal of this project will be to install and instrument a solar thermal solar collector located at the USDA-ARS "Soils" lab in Morris, MN. There are many homes, businesses, and farms in the West Central CERTs region that could benefit from the application of solar thermal technology, and this project will provide an example of how this renewable energy system works. Students from the University of Minnesota, Morris will be hired to instrument the solar unit with sensors; record the data, create a database, and create graphs to summarize the performance. Data will be summarized in a format suitable for display on the web. The positive environmental benefits and economics for the collector will be calculated from data collected. ($4600)

- **City of Gaylord Anaerobic Digester:** This project is looking to find the best design for building a joint anaerobic digester that will treat waste water from the city and surrounding agricultural businesses "as well as generate marketable methane biogas that could be used profitable in a variety of local applications." This study will determine the feasibility of the project, and if the project is implemented, waste reduction, water conservation and production of an environmentally friendly biogas to generate power are the expected outcomes. ($7550)

- **Melva Linda Interpretive Center Solar Thermal (Gustavus):** This project seeks to reduce fossil fuel use and greenhouse gas emissions from air heating and hot water heating by installing a solar thermal system at the MLIC. They will use every step of the project including planning, design, installation, and monitoring as learning tools for community members by holding workshops at each phase in the process. This will also be a visible resource to students and the community because they plant to hold information sessions explaining how the renewable energy system works. ($5000)

- **Willmar Community Greenhouse:** The Youth Energy Summit team in Willmar has built a community green house to reduce the amount of miles food has to travel. This project will supply the existing greenhouse with renewable energy for heat by installing a solar thermal system in conjunction with a biomass burner. These heating systems will allow food to be grown locally all year round. The produce will most likely be purchased by the local school district and will be donated to the local food shelf. ($5000)

- **MN West Sustainable Energy Symposium:** The Sustainable Energy Symposium is designed to draw attention to the rapidly growing energy industries and the career opportunities they provide, especially for young people in Southwest/West Central Minnesota. The event will highlight quality educational and professional career options. Concurrent sessions will focus on educating attendees of the different areas within Sustainable Energy, including Wind Energy, Biofuels, Biotechnology, Solar Power, and Conservation. ($2500)

- **Kerkoven School Facility Energy Study:** A local engineer will do a thorough study of the school's energy systems and determine the best ways to improve efficiency. He will provide a list of Energy Conservation Measures and evaluate the payback of each measure. They will also work with the local electric utility to investigate the Conservation Improvement Program(CIP) rebate options and implement the ones that are most promising. ($1500)

- **Milan Village Arts School:** The Milar Arts Village plans to use CERT funds in two ways to better improve energy use in their rural schoolhouse. The first project is to install an on-demand water heater to reduce electricity use for hot water heating. The other project is to replace the original windows from 1915 with energy efficient windows to reduce heating and cooling losses. ($3850)

Interested in our proposal process or want to prepare for our next round of funding? Visit www.cleanenergyresourceteams.org/community-projects/request-for-proposals.