

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

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**LCCMR ID: 069-B2**

**Project Title:**

Community Wind Development Pilot Project, Silver Bay, MN

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**LCCMR 2010 Funding Priority:**

B. Renewable Energy Related to Climate Change

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**Total Project Budget: \$** \$227,500

**Proposed Project Time Period for the Funding Requested:** 2 years, 2010 - 2012

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

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**Summary:**

Assess potential 5-10 MW community owned wind development project in Silver Bay to examine the local capacity required to conduct similar development projects throughout NE MN Region.

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**Location:**

**Region:** NE

**County Name:** Lake

**City / Township:** SILVER BAY

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

# MAIN PROPOSAL

**PROJECT TITLE: Community Wind Development Pilot Project in Silver Bay, MN**

## I. PROJECT STATEMENT

For the past two years Dr. Mageau has been monitoring and mapping the wind resource along the North Shore of Lake Superior from Duluth to Grand Portage. The results indicate that our region may be the windiest in the State. Community owned wind development projects have been successful for many communities in the US. The development process is long and detailed, requiring many specific areas of expertise that are largely new to our region. The overall project goal is the successful completion of a community owned small-scale (5-10 MW) wind development in Silver Bay, MN. Project impacts include the local economic and environmental benefits associated with the proposed development, and, more importantly, the overall process will build the critical local capacity for implementing these developments throughout the region in a manner that maximizes the potential local economic benefits. The entire experience will be used to educate the many communities in NE MN with similar development goals, and provide the local expertise required to carry them out.

## II. DESCRIPTION OF PROJECT RESULTS

### Result 1: Site Selection and Detailed Monitoring

**Budget: \$77,000**

Several criteria are key to selecting the optimal wind development site. The wind resource, transmission proximity and capacity, land ownership, environmental and aesthetic considerations, site accessibility. We will analyze all these factors using the NE region wind resource map developed by Mageau et al., along with numerous GIS map overlays (land use, wetlands, viewsheds, migratory bird flyways, land ownership, power lines, roads etc.) to determine the best wind development site(s). Permission will then be obtained to conduct a detailed monitoring program at the site. This will include wind speed and direction measurements at 30, 60, and 90 m heights for at least one year.

#### Deliverables

#### Completion Date

- |  |          |
|--|----------|
| 1. GIS map depicting key site-selection criteria           | 11/1/10  |
| 2. Select 1-3 optimal development sites for monitoring     | 11/15/10 |
| 3. 1 year of wind speed/direction monitoring data per site | 12/30/11 |

### Result 2: Business structure, Finance Options and Incentives

**Budget: \$40,000**

We will analyze the many options for structuring/financing a community owned wind development business, and select the best fit for Silver Bay. We will simultaneously investigate the numerous state/federal economic incentives applicable to wind development in our region. We will then attempt to structure and finance the development in a manner that maximizes our use of these incentives.

#### Deliverables

#### Completion Date

- |   |          |
|---|----------|
| 1. Establish business structure                       | 12/15/10 |
| 2. Determine and secure best finance options          | 6/30/11  |
| 3. Determine and secure available economic incentives | 12/30/11 |

### Result 3: Obtain Necessary Agreement from Local Utility

**Budget: \$50,000**

We will work closely with the local utility to complete the necessary interconnect and transmission agreements, obtain permitting and negotiate a power purchase agreement (PPA). Silver Bay has already established a healthy working relationship with their utility, and the utility has indicated a willingness to purchase wind-generated electricity.

<b>Deliverables</b>	<b>Completion Date</b>
1. Obtain PPA from local utility	6/15/11
2. Complete interconnect and transmission agreements	12/15/11
3. Obtain all necessary project permits	3/15/12

**Result 4: Economic Feasibility and Local Economic Impacts** **Budget: \$60,500**

The wind speed and direction data will be used to estimate electricity production from several potential project scales using the WAsP wind development simulation model. Production data in combination with PPA plus state and federal incentives will be used to determine annual project revenues. These revenues will be compared with project costs (capital, financing, insurance, permitting, O&M etc..) to determine overall project economic feasibility. In addition, the direct, indirect and induced economic impacts will be estimated at the county level using the MN IMPLAN I/O economic modeling system.

<b>Deliverables</b>	<b>Completion Date</b>
1. Economic Feasibility Report	5/30/12
2. Local Economic Impacts Report	5/30/12

**III. PROJECT STRATEGY**

**A. Project Team/Partners**

The overall project manager will be Bruce Carmen working on behalf of the City of Silver Bay. Bruce will be responsible for securing land, development permits, financing, interconnect agreements and a PPA contract with utility. Bruce will also be coordinating the following project partners. Dr. Michael Mageau, Director of UMD’s Center for Sustainable Community Development, will assist with the site-selection process, detailed wind speed and direction monitoring, wind farm design and layout, wind production estimates and project revenues. James Skurla, Director of UMD’s Bureau of Business and Economic Research, will assist with choosing an appropriate business structure and financing options, analyzing/securing potential economic incentives and estimating the regional economic impacts of local wind production. Stacey Stark, Director of UMD’s GIS Laboratory will assist with all project components by producing numerous GIS maps related to ongoing study (ie., overlays of wind resource, transmission lines, roads and critical environmental land uses such as wetlands or migratory bird flyways), and working with WAsP. In addition to the UMD team described above, Bruce Carmen and the City of Silver Bay will have numerous consultants conducting critical project tasks ( ie., legal help with interconnect, transmission and PPA agreements, engineers/contractors to assist with site design and turbine selection.

**B. Timeline Requirements**

*The project is anticipated to run from 7/1/10 to 5/31/12. Result one will take place first. Result two and three will take place largely simultaneously, and Result 4 will take place last.*

**C. Long-Term Strategy**

We are asking for funds to assist with all pre-development project costs. Actual capital and construction costs will be covered by the established public business entity. We believe this proposal will enable Silver Bay, and numerous other communities in NE MN to develop its recently discovered wind resource in a manner that maximizes local economic benefits. Future wind development in the region will employ the local knowledge and expertise obtained from this funding, but require no additional assistance other than existing wind development incentives and future transmission infrastructure improvements.

## Project Budget

### IV. TOTAL PROJECT REQUEST BUDGET (2 years)

<b>BUDGET ITEM</b>	<b>AMOUNT</b>
<b>Personnel:</b>	\$ -
	\$ -
<b>Contracts:</b>	\$ 176,000
	\$ -
<b>Equipment/Tools/Supplies:</b>	\$ 47,500
<b>Acquisition (Fee Title or Permanent Easements):</b>	\$ -
<b>Travel:</b>	\$ 4,000
<b>Additional Budget Items:</b>	\$ -
<b>TOTAL PROJECT BUDGET REQUEST TO LCCMR</b>	<b>\$ 227,500</b>

### V. OTHER FUNDS

<b>SOURCE OF FUNDS</b>	<b>AMOUNT</b>	<b>Status</b>
<b>Other Non-State \$ Being Applied to Project During Project Period:</b> University of Minnesota Northeast Region Sustainable Development Partnership (NMSDP) for \$10,000 and University of Minnesota Center for Community and Regional Research (CCRR) for \$5,000. All funds are to be used for community pre-development work.	\$ 15,000	Secured
<b>Other State \$ Being Applied to Project During Project Period:</b>	\$ -	n/a
<b>In-kind Services During Project Period:</b> City Administration and Economic Development Staff assisting in the project.	\$ 5,000	Secured
<b>Remaining \$ from Current Trust Fund Appropriation (if applicable):</b>	n/a	n/a
<b>Funding History:</b>	\$ -	

## **Community Wind Development Pilot Project in Silver Bay, MN – Project Team Members**

Our project team is a combination of individuals and organizations committed to seeing the City of Silver Bay thrive and alternative energy professionals motivated about the enormous potential success of this project. The City of Silver Bay, The Silver Bay EDA and the University of Minnesota-Duluth form the nucleus of the project team. Dr. Mike Mageau (University of Minnesota-Duluth) and Bruce Carman (working on behalf of the City of Silver Bay) will co-lead the project.

**Dr. Mike Mageau, Director of the Center for Sustainable Community Development, University of Minnesota-Duluth.** The mission of the Center for Sustainable Community Development is to understand how communities can transition from global dependence toward community self-reliance by designing and implementing economically attractive, as well as socially and environmentally sustainable, local energy production systems. Mike has spent the last five years monitoring the North Shore's wind resource, creating a detailed wind resource map of the region and working with several communities to determine the economic feasibility of developing their wind resource.

**Jim Skurla, Director of the Bureau of Business and Economic Research (BBER), University of Minnesota-Duluth.** Jim is currently Acting Director of the Bureau of Business and Economics in the Labovitz School of Business and Economics at UMD. Jim has over 24 years of work experience in economic development. As a Business Development Specialist at UMD's Natural Resources Research Institute Business Group, Jim has worked with business development for aquaculture, wood, peat and clay products. Jim has expertise in business plans, economic impact and feasibility studies, business assessments, and loan packaging (SBA 504 7A, Low Doc, Revolving Loan Funds, Northeast Ventures, Arrowhead Technology Fund). Jim has an M.A. in Economics, from the University of Wisconsin-Milwaukee (Statistics and Finance), and a B.A. in Economics (minor in Business Administration), from the University of Minnesota-Duluth. He is also a Certified Financial Economic Developer, with the National Development Council.

**Stacey Stark, Director of the Geographic Information Sciences Lab (GISL), University of Minnesota-Duluth.** As Director of the Geographic Information Sciences Laboratory (GISL) at UMD, Stacey secures funding to maintain the GIS lab and to support student projects and research, assist faculty with GIS use, and promote the use of GIS in UMD research and in student curriculum. The GISL serves as a resource to students and faculty alike to learn and incorporate GIS into their work. Stacey has 12 years of experience as a GIS Analyst, developing methodology in many aspects of natural resource management and research including wetland mapping, hydrologic analysis, renewable energy resources analysis, and landscape ecology and watershed management.

**Bruce Carman, Project Manager:** Bruce will be working on behalf of the City of Silver Bay. Bruce has BA in Architecture with an emphasis in Construction Engineering from Iowa State University. He has 25+ years experience in design and construction, including management of several large and unique projects. Bruce currently is the Project Manager/Coordinator for Silver Bay: Eco-Industrial Opportunities, a project to transform the existing Silver Bay Business Park into a self-sustaining Eco-Industrial Park

