

**Environment and Natural Resources Trust Fund  
2011-2012 Request for Proposals (RFP)**

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**LCCMR ID: 156-F3+4**

**Project Title:** Supporting Community-Driven Sustainable Bioenergy Projects

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**Category:** F3+4. Renewable Energy

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**Total Project Budget:** \$ \$262,160

**Proposed Project Time Period for the Funding Requested:** 2 yrs, July 2011 - June 2013

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

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**Summary:**

This project contributes to the sustainability of locally-produced community forest bioenergy programs in NE Minnesota and statewide through feasibility, impacts, and management case studies in Ely and Cook County.

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**Location**

**Region:** NE

**Ecological Section:** Northern Superior Uplands (212L)

**County Name:** Cook, St. Louis

**City / Township:**

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_____ Funding Priorities	_____ Multiple Benefits	_____ Outcomes	_____ Knowledge Base
_____ Extent of Impact	_____ Innovation	_____ Scientific/Tech Basis	_____ Urgency
_____ Capacity Readiness	_____ Leverage	_____ Employment	_____ TOTAL _____%

## **Supporting Community-Driven Sustainable Bioenergy Projects**

### **I. Project Statement**

This project is needed to guide development of sustainable community-scale forest bioenergy programs in NE Minnesota and to provide examples from the region to assist communities statewide considering similar projects. Locally produced, community-based renewable energy systems hold significant promise for increasing energy security, reducing carbon emissions, and contributing to local economies. Over the past decade much has been learned about the physical availability of forest-derived biomass for large, regional (~25 MW) bioenergy facilities. Very little attention has been devoted, however, to small systems (~1 MW). Improving our ability to assess trends and opportunities at this scale will allow for long-term, sustainable forest management planning and project investment; thereby replacing energy production boom and bust cycles with efforts that are environmentally sensitive, economically-beneficial, and community-supported.

The goals of this project are to develop and share information and tools that address key questions about the viability of community bioenergy systems. During the first phase, existing models and planning tools will be adapted to evaluate feasibility, impacts, and management needs for community-scale and other small bioenergy applications being proposed in Ely and Cook County. During the second phase of the project, the information and tools developed in Ely and Cook County will be shared with communities, land managers, policymakers, investors, and others interested in the long-term prospects and viability of locally produced bioenergy. The outcomes of the project will be identification and use of strategies to:

- Estimate and sustainably manage fuel supplies within context of changing forest conditions and market demands during a projected 30-year bioenergy facility life span;
- Estimate and manage range of potential environmental, social and economic impacts of a community bioenergy system, including forest harvest, use, disposal, and transportation;
- Apply biomass production standards and harvesting guidelines for protecting air and water quality, habitat and biodiversity, and minimized wildfire risk;
- Reduce greenhouse gas emissions;
- Win broad support by communities, forest industry, public lands managers, and others.

Partners in this endeavor are the City of Ely and its Alternative Energy Task Force: Energy-Efficient Ely; Cook County and its Local Energy Project; Dovetail Partners; and the University of Minnesota. Additional collaborators include Firewise, Minnesota Forest Resource Council, Clean Energy Resource Teams (CERTs), and Superior National Forest.

### **II. Description of Project Results**

#### **Activity 1: Feasibility and impact assessments in Ely and Cook County     Budget: \$207,660**

The project will be initiated in a series of community meetings to ensure strong teamwork and broad communication. The UMN research group will adapt existing models to localized fuelsheds. The Forest Age Class Change Simulator (FACCS) will be used to estimate current and future forest biomass feedstocks under a variety of forest management scenarios and supply targets and will be used to forecast changes in forest carbon stocks resulting from forest type restoration, firewise treatments, and other practices. The newly developed InVEST GIS framework will be adapted to estimate biomass supply schedules at specified price and policy levels. The costs and financial arrangements needed to supply energy under a number of heat and power scenarios will be analyzed. Dovetail Partners will review the life cycle, or LCA (i.e., harvest, use, disposal, transportation, etc.) of alternative energy systems and report on environmental impacts (i.e., carbon emissions, sequestration, air quality, water quality, biodiversity, wildfire) of different systems and

management scenarios. Community coordinators and the project team will meet and communicate regularly with key community groups (residents, businesses, officials, timber industry, public forest managers, etc.) to address issues related to forest management, biomass feedstocks, spatial scale, and the supply chain. The project team will work with communities on technological, ownership, and management options for accumulating and processing feedstocks and operating bioenergy facilities. Activity 1 will be evaluated through community interviews and surveys.

<b>Outcomes</b>	<b>Completion Date</b>
1. Quantified forecasts of available biomass supplies and costs under different economic and management conditions in Ely and Cook County.	July, 2012
2. Quantified life cycle assessments capable of comparing full range of environmental, social, and /economic impacts of alternative forest bioenergy systems.	January, 2013
3. Detailed management methodology to meet local goals for sustainability.	January, 2013
4. Informed and engaged community via quarterly meetings and a minimum of three surveys on key aspects of forest bioenergy	June, 2013

**Activity 2: Broadly disseminate case studies and decision tools** **Budget: \$54,500**

We will share the expertise, tools, and knowledge gained in this project to accelerate learning in other rural communities and among land managers and policymakers. Our team will produce a flexible and interactive framework, including models, inventory protocols, analytical matrices, and fact sheets needed in assessing the physical and economic feasibility of locally produced community bioenergy systems and their impacts. We will make these and information about Ely and Cook County case studies available through publications, public events, linked websites, and social media outlets. Evaluation by key groups at mid-point and conclusion.

<b>Outcomes</b>	<b>Completion Date</b>
1. Web-based network for distribution of interactive tools, case studies	January, 2013
2. Booklet containing forest bionenergy case studies and tools	January, 2013
3. Four presentations via CERTs and MFRC networks	June, 2013
4. Minimum two mass media stories on project results	June, 2013

**III. Project Strategy**

**A. Project Team/Partners**

Cheryl Miller is Project Manager and coordinates all activities and output. Steve Bratkovich and Jim Bowyer (Dovetail Partners) assist with feasibility study and evaluations of LCA of bioenergy systems. Grant M. Domke (UMN Forest Resources) conducts assessments of forest biomass, environmental, and carbon effects of bioenergy systems and Steven J. Taff (UMN Applied Economics) modifies existing economic models for use at a community scale. Local coordinators in Ely and Cook County compile information, conduct surveys, and coordinate outreach/engagement. Dovetail creates web-based outreach sites and works with project partners and local coordinators on publicity and education. Project team members are funded though Trust Fund dollars.

**B. Timeline Requirement** Adapting forecasting models and running alternative scenarios based on community input is estimated to take 18 months. Education and outreach will require an additional six months. Total project time is July 2011 to June 2013.

**C. Long-Term Strategy and Future Funding Needs** This project is part of a concurrent effort to build community-scale bioenergy systems in Ely and Cook County. First stage feasibility studies, (containing broad assumptions about forest resources availability) have been completed. Ely has received funding for second stage engineering study; Cook County will seek funding for next phase based on this project. In the future, both areas expect to pursue public and private financing for facility construction.

## 2011-2012 Detailed Project Budget

### Supporting Community-Driven Sustainable Bioenergy Projects

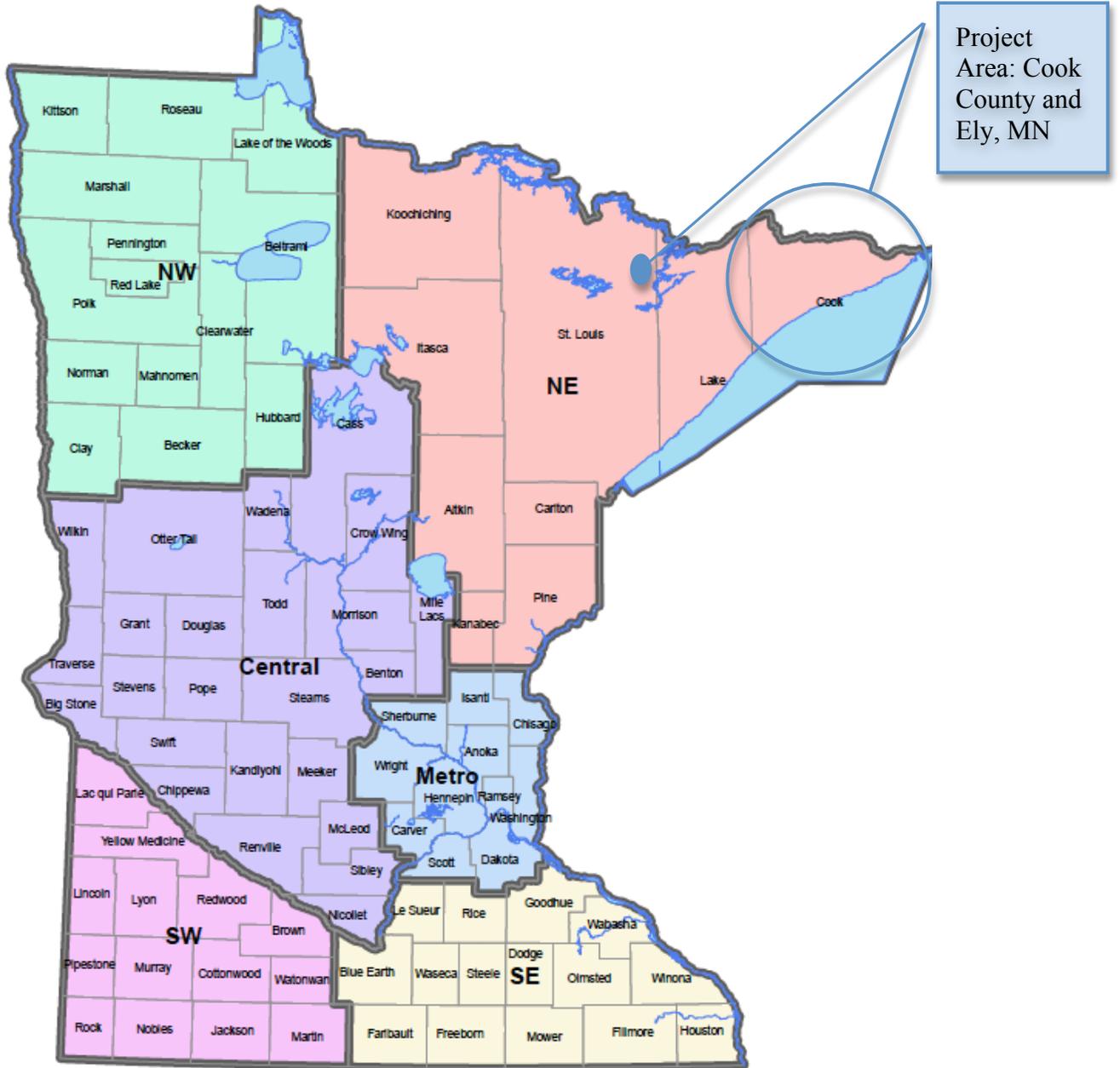
#### IV. TOTAL TRUST FUND REQUEST BUDGET 2 years

<u>BUDGET ITEM</u>	<u>AMOUNT</u>
<b><u>Personnel:</u></b>	
Steve Bratkovich: Feasibility study, environmental guidance and outreach/education	\$ 15,000
Jim Bowyer: Evaluations of LCA of bioenergy systems	\$ 12,000
<b><u>Contracts:</u></b>	
Cheryl Miller: To provide overall project management, including coordinating and overseeing all activities, timelines, and products	\$ 40,000
Grant Domke: To adapt FACCS model and conduct assessments of forest biomass, environmental, and carbon effects	\$ 50,000
Steven J. Taff: To modify InVEST economic model to estimate biomass supplies, costs, and financial arrangements.	\$ 50,000
Ely Coordinator: To conduct outreach effort (coordinate meetings, surveys, communication) and gather and present pertinent information related to Ely's bioenergy system alternatives. <i>Specific contractor to be determined.</i>	\$ 40,000
Cook County Coordinator: To conduct outreach effort (coordinate meetings, surveys, communication) and gather and present pertinent information related to bioenergy system alternatives. <i>Specific contractor to be determined.</i>	\$ 40,000
<b>Travel:</b> Travel and lodging for 3 persons for quarterly meetings in Ely and Grand Marais = \$ 5,920; travel and lodging on four additional trips for project manager for activities and oversight = \$ 1,740	\$ 7,660
<b><u>Additional</u></b>	
Development and maintenance of project website, webinar, social networking tools	\$ 4,000
Publication: 1000 copies of 24-page, 2-color booklet on locally-produced community bioenergy in Minnesota (case studies of Ely and Cook County and analytical tools).	\$ 3,500
<b>TOTAL ENVIRONMENT &amp; NATURAL RESOURCES TRUST FUND \$ REQUEST</b>	<b>\$ 262,160</b>

#### V. OTHER FUNDS

<u>SOURCE OF FUNDS</u>	<u>AMOUNT</u>	<u>Status</u>
<b>Other Non-State \$ Being Applied to Project During Project Period:</b>	\$ -	
<b>In-kind Services During Project Period:</b> Meeting facilities for 8 meetings each in Ely and Grand Marias (\$ 1,200); Ely and Cook County in-kind staff and volunteer time (\$6,000). MFRC staff time (\$2,500) CERTS staff time (\$2,500) Dovetail	\$ 14,200	
<b>Funding History:</b> Ely has secured \$5,000 from Blandin Foundation and \$10,000 from CERTs for initial feasibility study; and \$50,000 for engineering study from MN OES. Cook County has secured \$10,000 for initial feasibility study from city and county governments, public hospital and school.	\$ 75,000	

### Minnesota (By Geographic Region)



Source: <http://www.lccmr.leg.mn/maps/lccmr-regions.pdf>

## **2010 LCCMR Proposal**

### **Project Manager Qualifications**

Cheryl Miller will provide project management services for this project, overseeing and coordinating all activities and outputs of the program. She is an independent contractor who, since 2005, has led the Minnesota Terrestrial Carbon Sequestration Initiative, a research and public policy forum on carbon management in the state's forests and agricultural areas. Through the Initiative, Cheryl worked with academic, government, private, and non-profit stakeholders to develop and implement research on scientific, economic, and public policy facets of carbon sequestration and report results to legislative and other audiences. She is currently organizing collaborations with government, non-profit, and business groups to conduct demonstration projects of the most promising sequestration options, including forest bioenergy programs. Her most recent (2009) publications are "Trapping Greenhouse Gases: A Role for Minnesota Agriculture in Climate Change Policy in *Rural Minnesota Journal* and "Getting Organized for Action: Conversations on formalizing a terrestrial carbon program for Minnesota" for the Minnesota Forest Resources Council. Prior to her work in carbon sequestration, Cheryl ran the wetlands and watershed conservation program for Audubon Minnesota where she participated in numerous collaborative projects, including in the Red River of the North. Cheryl has degrees in journalism from the University of Iowa and public policy from the University of California (Davis).

### **Organizational Description**

Dovetail Partners ([www.dovetailinc.org](http://www.dovetailinc.org)) provides authoritative information about the impacts and trade-offs of environmental decisions, including consumption choices, land use, and policy alternatives.

Dovetail is a highly skilled team that fosters sustainability and responsible behaviors by collaborating to develop unique concepts, systems, models and programs. Dovetail Partners is a 501(c)(3) nonprofit corporation. Dovetail excels at solving complex business problems and helping responsible firms to become successful. We also help regions define programs that increase the job creation and the job quality of resource-based industries.

#### **Mission Statement:**

To provide authoritative information about the impacts and trade-offs of environmental decisions, including consumption choices, land use, and policy alternatives.