

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 a 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 Resources 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: \$133,375

The project will be initiated through 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. Biomass supplies at specified price and policy levels will be estimated. Costs and financial arrangements needed to supply energy under a number of heat and power scenarios will be analyzed. Dovetail Partners will review available information regarding the life cycle impacts (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. Activity 1 will be evaluated through community interviews and surveys.

Outcomes	Completion Date
1. Quantified forecasts of available biomass supplies and costs under different economic and management conditions in Ely and Cook County.	July, 2012
2. Critical review of life cycle impacts on environment, society, and economy of alternative forest bioenergy systems.	January, 2013
3. Management guidance to meet local goals for sustainability.	January, 2013
4. Informed and engaged community via quarterly meetings and public input and feedback mechanisms/communications	June, 2013

Activity 2: Broadly disseminate case studies and decision tools **Budget: \$16,625**

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 useful information, 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 the results of the project and information about Ely and Cook County case studies available online and through a variety of outlets(e.g., community and/or conference presentation). Evaluation by key groups at mid-point and conclusion.

Outcomes	Completion Date
1. Distribution of interactive tools, case studies via internet and partners	January, 2013
2. Minimum two mass media stories on project results	June, 2013

III. Project Strategy

A. Project Team/Partners

Kathryn Fernholz is Project Manager. Cheryl Miller is Project Coordinator 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, communications and education. Project team members are funded through 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 is pursuing local support for an engineering study and other analysis. In the future, both areas expect to pursue public and private financing for facility construction.

2011-2012 Detailed Project Budget

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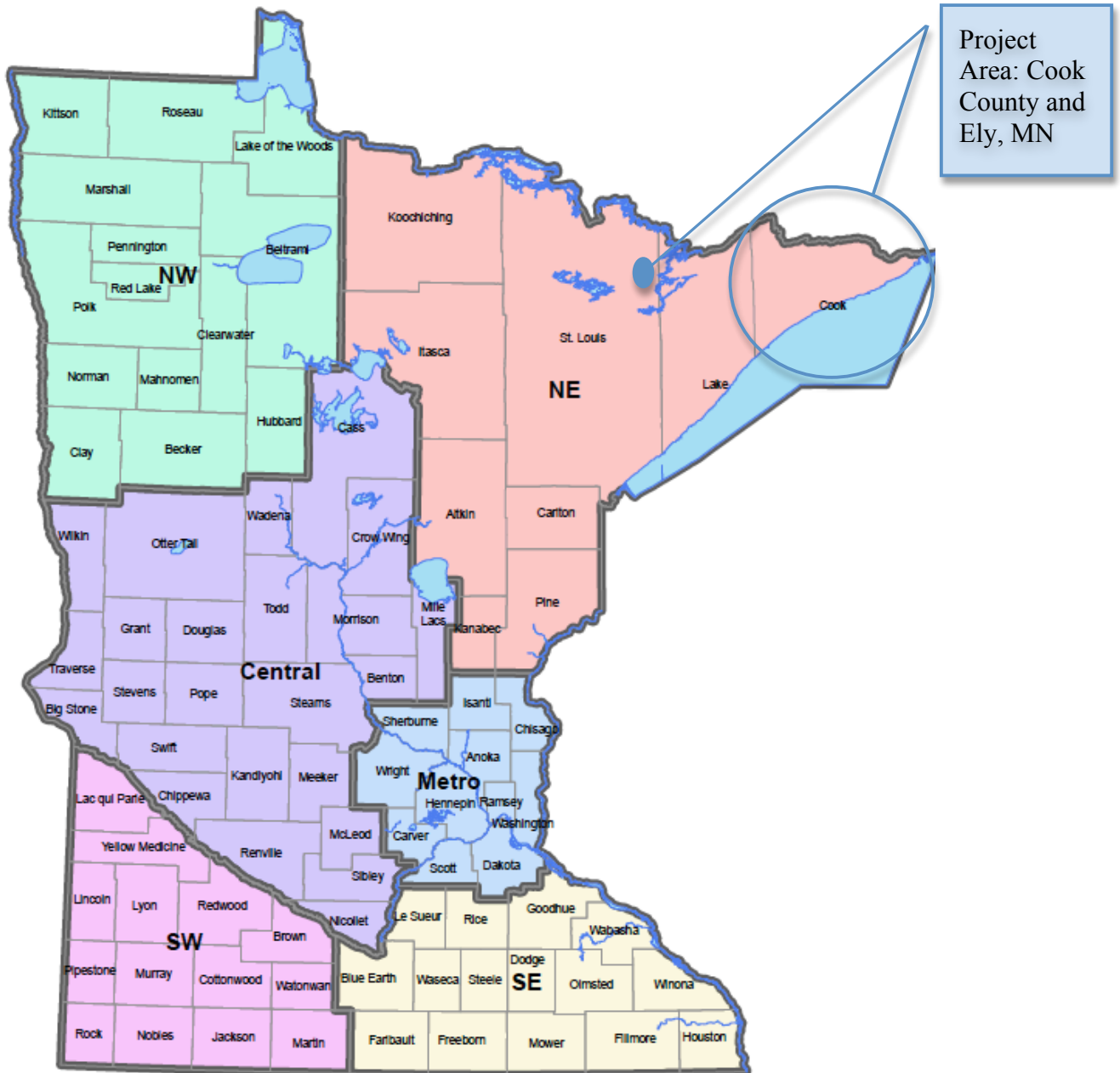
IV. TOTAL TRUST FUND REQUEST BUDGET 2 years

<u>BUDGET ITEM</u>	<u>AMOUNT</u>
<u>Personnel:</u>	
Dovetail Partners Develop and deliver communications about the project including website and publications on locally-produced community bioenergy in Minnesota. Steve Bratkovich: Summarize environmental impacts and guidance for biomass harvest. Jim Bowyer: Review life cycle impacts of identified bioenergy systems	\$ 14,000
<u>Contracts:</u>	
Cheryl Miller: To provide overall project management, including coordinating and overseeing all activities, timelines, and products	\$ 32,500
University of Minnesota: (1) Grant Domke will adapt FACCS model and conduct assessments of forest biomass, environmental, and carbon effects; and (2) Steve Taff will conduct economic and financial assessments of biomass supplies and bioenergy production.	\$ 60,000
Local Community Coordinators: To conduct outreach effort (coordinate meetings, surveys, communication) and gather and present pertinent information related to bioenergy system alternatives in Ely and Cook County. <i>Specific contractors to be determined.</i>	\$ 40,000
<u>Travel:</u> Travel (500 miles roundtrip) and lodging for quarterly meetings and reseach and outreach activities in Ely and Grand Marais	\$ 3,500
TOTAL ENVIRONMENT & NATURAL RESOURCES TRUST FUND \$ REQUEST	\$ 150,000

V. OTHER FUNDS

<u>SOURCE OF FUNDS</u>	<u>AMOUNT</u>	<u>Status</u>
Other Non-State \$ Being Applied to Project During Project Period:	\$ -	
In-kind Services During Project Period: 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 (\$2,000)	\$ 14,200	
Funding History: 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 Coordinator 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).

Project Management for Grant Administering Organization and Main Contact Person:

Kathryn Fernholz, Executive Director, Dovetail Partners

Kathryn has worked on development and forest management issues in a range of roles. With a consulting firm, Kathryn was a member of the environmental services department where her work included natural resource inventories, comprehensive planning, environmental impact assessments and the use of Geographic Information Systems (GIS). While working for the Community Forestry Resource Center, Kathryn developed and managed a group certification project for family forests and worked to increase local capacity to provide forest management and marketing services that are compatible with certification standards. Kathryn is also an experienced forest certification lead auditor. Kathryn has been a leader within the forestry community in the Upper Midwest through her service as Chair of the Minnesota Society of American Foresters and her appointment to the Minnesota Forest Resources Council. Kathryn served as a member of the Advisory Board for the Blandin Foundation's Vital Forests/Vital Communities Initiative, and currently serves on the Minnesota DNR's Stewardship Committee, and the Forests for the Future Committee. She is a member of the Board of Directors for the Minnesota Environmental Partnership, the Forest Guild, and the College of Food, Agricultural and Natural Resource Sciences Alumni Society. Kathryn has a B.S. in Forest Resources from the University of Minnesota, College of Natural Resources and also studied at the College of Saint Benedict in St. Joseph, MN and Sheldon Jackson College in Sitka, Alaska.

Organizational Description

Dovetail Partners (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.