

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

LCCMR ID: 062-B2

Project Title:

Scaling-up Biogas: Anaerobic Digestion Technical and Policy Tools

LCCMR 2010 Funding Priority:

B. Renewable Energy Related to Climate Change

Total Project Budget: \$ \$401,605

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

Other Non-State Funds: \$ \$88,150

Summary:

Draw on the expertise of diverse stakeholders to create an interactive GIS-based map of Minnesota's biogas potential, proven project models, a comprehensive website for biogas development, and consensus policy recommendations.

Name: Amanda Bilek

Sponsoring Organization: Great Plains Institute

Address: 2801 21st Avenue S, Ste 230

Minneapolis MN 55407

Telephone Number: (612) 278-7118

Email: abilek@gpisd.net

Fax: (612) 278-7151

Web Address: www.gpisd.net

Location:

Region: Statewide

County Name: Statewide

City / Township:

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

PROJECT TITLE: Scaling-up Biogas: Anaerobic Digestion Technical and Policy Tools

I. PROJECT STATEMENT

Scaling-up anaerobic digestion is essential for Minnesota to achieve its statutory renewable energy and climate goals. Agriculture is the Midwest's largest emitter of methane and nitrous oxide, both extremely potent greenhouse gases. Given the track record of digesters in similar states, such as Wisconsin, there is enormous opportunity to develop a robust digester industry in Minnesota. Anaerobic digesters have experienced limited growth because the policy framework and technical resources do not exist to make digester development commonplace. Turning this around could be a boon for rural communities, particularly as the nation considers legislation to regulate greenhouse gas emissions. Both individually-owned and cooperatively-owned digesters could become profit centers for producers and their rural communities, yielding community-based, locally-produced renewable electricity and synthetic natural gas, fertilizer, carbon and/or renewable energy credits and odor control.

Building on previous LCCMR-funded work, the central goal of this project is to remove market and policy barriers to biogas development by providing: better information about feedstock availability and optimal feedstock mixes for different digester technologies; information about the latest technology; examples of successful projects; promising new development models that can improve the economics of digester facilities; and consensus policy recommendations from the many diverse interests who have experience with digester development. To achieve these goals, Great Plains Institute will convene a Biogas Advisory Group to leverage existing expertise and to: clarify barriers to digester development and propose any needed policy changes; identify promising new development models; and advise on development of a one-stop Web site of resources including a GIS-based, interactive map to help developers match feedstocks and energy end-users. This would be Minnesota's first stakeholder process bringing all interested parties together to share information and learn from each other's anaerobic digester successes and challenges.

II. DESCRIPTION OF PROJECT RESULTS

Result 1: Assemble Biogas Advisory Group of diverse stakeholders to clarify barriers to digester development and provide policy advice and commercial insights for scaling-up biogas.

Budget: \$98,800

The Biogas Advisory Group will develop consensus policy recommendations to accelerate the commercialization of anaerobic digesters in the short term while setting up the industry for self sustained long-term growth. The Advisory Group will also shape development of a GIS-based map of biogas potential and likely end-users as part of a one-stop Web portal for biogas developers. Potential stakeholders would be: representatives from livestock organizations, food processors, electric and gas utilities, non-governmental organizations, academic researchers, engineers, project and technology developers, state and local regulators, and others.

Deliverables

1. A final report from the stakeholder process containing:
 - a. Consensus policy recommendations for scaling-up biogas.
 - b. New project development models that utilize digesters' abilities to produce renewable electricity, natural gas or other co-products.
2. Develop a biogas component for Great Plains Institute's EnergyChoice™ simulator to model the cost and greenhouse gas implications of proposed biogas policies and made available at www.mnbiogas.org.

Completion Date

December, 2011

December, 2011

Result 2: Partner with the Department of Administration, Land Management Information Center to develop a GIS-based, interactive map, to reveal Minnesota's biogas potential and provide a project development tool.

Budget: \$138,385

An interactive, GIS map would help digester developers of all kinds identify optimal project sites based on proximity to the right mix of feedstocks and to local users of the resulting electricity and synthetic natural gas. The Biogas Advisory Group will provide feedback and oversight. GIS map layers would include at least the following: 1) Co-digestion feedstock locations, volumes and costs; 2) Livestock operations (type, size and biogas potential from manure digestion); 3) Local electric utilities; 4) Location of three-phase and single-phase electrical lines; 5) Opportunities for natural gas injection; 6) Industrial and commercial natural gas users; and 7) Farm equipment suppliers for anaerobic digestion technologies (pumps, agitators, augers, etc.).

Deliverables**Completion Date**

- | | |
|--|------------|
| 1. The mapped location of all potential co-digestion sources in Minnesota, including location, volumes and costs. | June, 2012 |
| 2. A fully functioning Web-based GIS mapping tool at www.mnbiogas.org . | June, 2012 |
| 3. A Users Guide (also available on-line and as a CD) that describes the on-line mapping tool, and how a typical user might make the most of it. | June, 2012 |

Result 3: Develop a one-stop on-line shop for MN biogas development: www.mnbiogas.org.

Budget: \$164,420

The MNBioGas.Org Web site will contain all the information and resources necessary to make digester development as simple and efficient as possible. We expect it to be useful to farmers, cooperatives, food processors, livestock producers, local economic development agencies, government agencies, environmental organizations, and other parties interested in this renewable energy and climate mitigation technology. We will draw on domestic and international experience and resources to develop these tools.

Deliverables**Completion Date**

- | | |
|---|---------------|
| 1. Successful ratios for co-digestion of available feedstocks. | January, 2012 |
| 2. Robust Web site populated with beta-tested resources and technical content at www.mnbiogas.org | June, 2012 |
| 3. Develop an environmental/community education website component, including digester FAQ's and basic overview information. | June, 2012 |

III. PROJECT STRATEGY**A. Project Team/Partners**

Great Plains Institute-Amanda Bilek (project management), Brendan Jordan (model simulator coordinator), Jennifer Johnson (GIS coordinator), Sarah Wash (report production & web development), EnergyChoice™ modeler, and research and data collection specialist.

Department of Administration, Land Management Information Center-John Hoshal and Brent Lund (design and develop GIS-based web mapping application, allowing public to view and analyze relevant spatial data, create detailed maps and reports at varying geographic levels).

Minnesota Agri-Growth Council-Daryn McBeth and Leslie Shuler Svacina (communication to membership, advisory group development and policy tool development).

Minnesota Department of Agriculture-David Weinand (advisory group development, technical and policy tool development support, data collection and website development support).

University of Minnesota, Department of Bioproducts and Biosystems Engineering-David Schmidt, Dr. Charles Clanton and graduate research student (review of existing feedstock ratio studies and laboratory co-digestion feedstock ratio research).

B. Timeline Requirements

Project will be conducted over a two year period to allow sufficient time to develop technical and policy resources.

C. Long-Term Strategy

Our long-term strategy is to further test and refine these digester development tools with actual projects, and to employ the Institute's rich network of stakeholders to promote their use.

Project Budget

IV. TOTAL PROJECT REQUEST BUDGET

\$401,605

2 year project request

<u>BUDGET ITEM</u>	<u>AMOUNT</u>
Personnel: Amanda Bilek, Program Associate, GPI (30% FTE): management of project deliverables and reporting, coordinating project partners. Two-year position, 30% of salary, 30% of benefits.	\$ 62,400
Brendan Jordan, Program Manager, GPI (5% FTE): consult on project deliverables, coordinate model simulation development. Two-year position, 5% of salary, 5% of benefits.	\$ 12,480
Jennifer Johnson, Program Associate, GPI (15% FTE): coordinate GIS project development and team members, oversee data collection and research specialist. Two-year position, 15% of salary, 15% of benefits.	\$ 31,200
Sarah Wash, Communications Specialist, GPI (25% FTE): policy report production, GIS map user guide production, mnbiogas.org web development and coordination with contract web developer. One-year position, 25% of salary, 25% of benefits.	\$ 26,000
Modeling specialist, GPI (10% FTE): Work with Forio Business Simulations to create biogas component. One-year position, 10% of salary, 10% of benefits.	\$ 10,400
Research and data collection specialist, GPI (20% FTE): work with GIS map development team to collect data points for GIS map. One-year position, 20% of salary, 20% of benefits.	\$ 14,560
Contracts: Scenario modeling contract: Forio Business Simulations, Michael Bean, technical development of biogas component for model.	\$ 10,000
website development contract: contractor yet to be identified but will provide website architecture, template and web code construction.	\$ 15,000
University of Minnesota, Department of Bioproducts and Biosystems Engineering: David Schmidt, Dr. Charles Clanton and graduate student to collect existing research studies on co-digestion feedstock ratios to determine research needs. Conduct experiments to measure anaerobic digestion gas production using animal manures and organic feedstocks.	\$ 125,000
Department of Administration, Land Management Information Center: Brent Lund and John Hoshal, design and develop a GIS-based web mapping application, allowing the public to view and analyze relevant biogas spatial data and create detailed maps and reports at varying geographic levels.	\$ 78,605
Minnesota Department of Agriculture: David Weinand, MN Biogas Advisory Group development assistance, provide data for GIS development and website development assistance.	\$ 10,000
Travel: In-state travel for Great Plains Institute staff. Mileage estimate based on 16 meetings over two-year project (200 miles per meeting x .55cents a mile = \$1760). Remaining is meal per diem and lodging for project staff.	\$ 3,960
Printing/material production: printed final report from stakeholder process (100 copies) and printed GIS user guide (200 copies). Printing estimates determined based on past report production costs.	\$ 2,000
TOTAL PROJECT BUDGET REQUEST TO LCCMR	\$ 401,605

V. OTHER FUNDS

<u>SOURCE OF FUNDS</u>	<u>AMOUNT</u>	<u>Status</u>
Other Non-State \$ Being Applied to Project During Project Period:		<i>Pending</i>
Land O'Lakes Foundation	\$ 10,000	
Energy Foundation	\$ 50,000	<i>Pending</i>
Irwin Andrew Porter Foundation	\$ 28,150	<i>Pending</i>

Organization Description

The Great Plains Institute (GPI) is a non-partisan non-profit corporation based in Minneapolis, serving 12 Midwestern states and the province of Manitoba. The Institute brings together key public and private leaders from across the Midwest to identify and implement policies, technologies, research and educational efforts that will accelerate the transition to a renewable and low-carbon energy system, and a society that is economically, environmentally and socially sustainable and prosperous over generations.

Our core competency is to foster consensus, then action, among “odd bedfellows.” We help broad and diverse stakeholders reach agreements on difficult policy and technology issues. We then work with elected officials and others to translate that consensus into new public policies, accelerated technology deployment, research efforts and educational campaigns.

For example, in June of 2007, a GPI-led stakeholder group called Powering the Plains released the region’s first consensus-based 50-year Energy Transition Roadmap for achieving a renewable and low-carbon energy economy. The Midwestern Governors Association, GPI, and its partners then parlayed this Roadmap into aggressive energy and climate accords signed by ten Midwestern governors and the premier of Manitoba in November 2007:

www.midwesterngovernors.org and www.midwesternaccord.org. The Institute is still working with the Pew Center on Climate Change, World Resources Institute and the Midwestern Governors Association to provide energy and climate expertise, professional facilitation and coordination to four governor-appointed Advisory Groups charged with recommending policies to achieve these accords, including a market-based Cap and Trade system for managing greenhouse gases. The Institute is also working with the Midwestern Legislative Conference to engage legislators in this important work.

Project Manager Qualifications

This project will be led by Amanda Bilek, a program associate with the Great Plains Institute. Amanda was formerly at the Minnesota Project where she developed deep expertise on anaerobic digester technology and valuable industry connections during her six-year tenure. Amanda worked with a project team to study the economics, impacts on soil quality, and potential of weed seed destruction from Minnesota’s first on-farm digester at the Haubenschild dairy farm. Ms. Bilek participated in a research project at the Haubenschild farm testing fuel cell technology as an alternative generation option for biogas utilization. And her project work and coordination helped establish one of Minnesota’s five on-farm digesters through a 2005 LCCMR appropriation to implement pilot digester technology at a mid-sized dairy farm in Minnesota. She has also authored • and coordinated development of • several digester reports, factsheets and web resources. Amanda graduated from the University of St. Thomas in 2001 with degrees in political science and environmental studies, and grew up on a diversified crop and livestock farm in Wadena County, Minnesota.

Additional management and oversight will be provided by Brendan Jordan, manager of the Great Plains Institute’s Next Generation BioEnergy Program.

