



Minnesota
STATE COLLEGES
& UNIVERSITIES

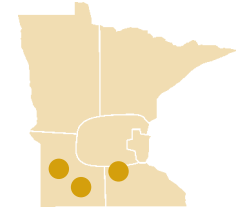
DISTRICT 1

PROJECT/REQUEST

LOCATION

**Minnesota West
Community &
Technical College**
Granite Falls, Jackson

Minnesota Center for
Renewable Energy
\$1,500,000



**Minnesota State
University,
Mankato**

Project at a Glance

- Work with regional, state and national business and industry on applied research projects to increase energy diversity and national security
- Develop new strategies for energy efficiencies, sustainability and conservation
- Move Minnesota and the nation and toward energy independence and contribute to national sustainable energy efforts
- Strengthen the agricultural, manufacturing and market sectors in renewable energy production

Project Description

The Minnesota Center for Renewable Energy is a collaborative initiative that focuses the talents of faculty at Minnesota State University, Mankato and Minnesota West Community and Technical College on this very important issue. The center, located in an area rich with wind energy and agriculture, will provide an applied research and workforce training consortium of faculty to assist business and industry partners and stimulate entrepreneurial leadership. Faculty, with undergraduate and graduate students' support, will provide industry leaders the applied research expertise and

supporting technician training to encourage technology transfer.

The center's purpose is to continue the movement of the nation and the Midwest toward energy independence that is more sustainable and based on agricultural resources. The major technological challenges are harvesting, transporting and transforming agricultural biomass into products readily available to the consumer. Rural economies will benefit through growth of higher-paid technical jobs. From the agricultural perspective, renewable energy will increase revenues for local landowners through leases for wind turbines and price increases for agricultural commodities due to increased demand.

The center's applied research, workforce training and industry outreach design will focus on applications of the technologies in wind energy and biofuels to include ethanol, biodiesel, methane from biowastes, fuel cells, hydrogen and other bio-refinery applications, as well as technologies to increase energy conservation.

Predictions that world oil and natural gas production will peak in 10 to 15 years heighten the need for continuing this program to increase sustainable



Southern Minnesota ranks high as a production zone for wind energy and ethanol production.

energy resources. The center provides technical training for a workforce in the renewable and wind energy industries. This initiative is developing

the technical staff, as well as the applied research and development capacity, to fully tap the Minnesota's rich agricultural resources for

renewable energy production and is taking advantage of the region's favorable zones 3 and 4 wind resource.

Minnesota Center for Renewable Energy

Minnesota State University, Mankato has a national reputation for its applied research with manufacturing company processes and practices in the production of renewable and recyclable resources. The university is the lead institution of the Minnesota Center for Engineering and Manufacturing Excellence, designated by the Board of Trustees of Minnesota State Colleges and Universities.

The Minnesota Renewable Energy Center continues to pursue renewable and wind applied research opportunities that contribute to the nation's energy independence through the development and use of renewable resources. In addition the center is working to alleviate shortages of qualified personnel to work in the biofuels and wind industries. These shortages continue to limit the expansion and application of these industries as a national resource.

Specific goals include:

The applied research of Minnesota State University, Mankato is targeted at renewable energy efficiencies in production, processing and use of biomass; the development of applications of wind energy storage; streamlining of transportation

methods for biomass to producers and consumers; and working on conservation technologies to reduce per capita energy consumption. The university assets will be used in collaboration with industry to enhance business development in the renewable energy industry.

Examples will include:

- Design automotive engines to increase energy efficiency and reduce emissions
- Develop new methods of processing biomass to improve flow to the consumer
- Develop anaerobic digesters to produce longer-chained carbon compounds
- Establish battery-driven vehicles as a method to store wind energy
- Develop new and more efficient liquid fuels from biomass

Workforce education and training

- Entry- and advanced-level technician training for the energy production industries
- Continued development of training via alternative methodologies, including on-site, online, CD-based, instructor-led and blended training
- Development of virtual coursework in all elements of the renewable industry
- Industry involvement in curriculum development including evolving technologies

These projects represent the future of sustainable energy and will allow the Center for Renewable Energy to continue to demonstrate its strong leadership in the field. The center will continue to provide important applied research initiatives and opportunities, offer a basis for public-private partnerships with industries, enrich student education and provide economic benefits to renewable energy operations and agricultural communities.

Participating Institutions:

Minnesota West Community & Technical College
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Minnesota State University,
Mankato
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Industry collaborators:

- Minnesota Soybean Association
- Minnesota Corn Growers Association
- John Deere
- Case-IH
- KatoLight
- Cummings Engines
- Minnesota Hog Producers Association
- Sebestra Blomberg and Associates
- Induction Research
- Davisco Company



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