

# UNIVERSITY OF MINNESOTA MORRIS

**High energy. Low consumption.**

## **Winds of Change**

### **A National Model for Renewable Energy**

Currently, an on-site 1.65 megawatt Vestas turbine supplies power to half of the University of Minnesota, Morris' buildings. The first large-scale wind research turbine ever constructed at a U.S. public university is located at the nearby University of Minnesota's West Central Research and Outreach Center. The turbine, which began generating power in March 2005, is an important step in integrating renewable energy into Minnesota's rural economies as well as developing Minnesota's research and education strength around renewable energy. Planning for additional turbines is underway.

### **A Rural Model for the Nation**

Planned research and demonstration projects will focus on wind storage and on-demand renewable energy systems such as biodiesel generation, biomass, and hydrogen fuel cells.

### **Facts and Figures**

- The first large-scale wind research turbine at a U.S. public university began generating power March 7, 2005.
- On Earth Day 2007, the turbine's total electrical production of 11,570,000 kWh (since March 8, 2005) resulted in the following emissions **not** being emitted into the environment: CO<sub>2</sub> (carbon dioxide) 12,322 tons.; NO<sub>x</sub> (nitrogen oxides) 44 tons.; SO<sub>2</sub> (sulfur dioxide) 78 tons.
- The wind turbine produces 5.6 million kilowatt-hours of power each year for use at UMM.
- The wind turbine is a 1.65 megawatt Vestas NM 82.
- The tower is 230-feet high. Each blade is 135 feet in length.
- The turbine begins producing electricity when the wind speed reaches 7.8 miles per hour at 230-feet and will reach its maximum production of 1.65 megawatts of electricity at wind speeds of 29 miles per hour.
- According to wind data collected at the WCROC, the turbine location above the Pomme de Terre River has an average annual wind speed of 16 miles per hour at 230 feet.

### **WCROC: A Tradition of Pioneering Research**

The West Central Research and Outreach Center is an early pioneer in ethanol research. In the early 1980s, the WCROC built the first ethanol research facility in the state. Minnesota's ethanol industry has now grown to be a national leader with 14 plants producing 300 million gallons of ethanol and annual sales of \$380 million.

*"Our belief is that the renewable energy research and education we are doing now will deliver a great benefit to Minnesota. Renewable energy is poised to become an important part of our state and nation's energy future, and Minnesota will be a leader in this work."*

—Greg Cuomo, Director of Operations UMORE Park,  
former head of the WCROC



## **The West Central Research and Outreach Center**

The University of Minnesota's West Central Research and Outreach Center (WCROC) is located in Morris, Minnesota. The WCROC, part of the U of M College of Agricultural, Food and Environmental Sciences, celebrated its 90-year anniversary in 2004—providing a tradition of excellence in applied agricultural research and education for farmers and rural communities in crop production, animal sciences, horticulture, water quality, economics, rural sociology, and forage management. Read more at [wcroc.coafes.umn.edu](http://wcroc.coafes.umn.edu).

## **The University of Minnesota, Morris**

The University of Minnesota, Morris is an academically rigorous, public undergraduate liberal arts college. *U.S. News & World Report* has ranked UMM among the top five national public liberal arts colleges in the U.S. for six consecutive years. Declared “a model liberal arts college” by the North Central Association of Colleges and Schools in its re-accreditation report, UMM rivals the top private liberal arts colleges in selectivity, academic rigor, and educational opportunities—at a public school price.

## **The University of Minnesota**

The University of Minnesota Initiative for Renewable Energy and the Environment (IREE) has provided leadership and funding to stimulate development of this research and demonstration system. IREE is a key part of University of Minnesota President Robert Bruininks' Initiative on Renewable Energy and the Environment.

The University of Minnesota Renewable Energy Center at Morris is led by the University of Minnesota in partnership with these key stakeholders in west central Minnesota:

### **University and Research Organizations**

West Central Research and Outreach Center  
University of Minnesota, Morris  
Initiative for Renewable Energy and the Environment  
West Central Regional Sustainable Development Partnerships  
Agriculture Utilization Research Institute (AURI)  
South Dakota State University  
University of North Dakota Energy and Environmental Research Center (EERC)  
National Renewable Energy Lab

### **Non-Government Organizations**

Clean Energy Resource Teams (CERTS)  
Minnesota Soybean Growers  
Minnesota Soybean Research and Promotion Council  
Minnesota Corn Growers  
Minnesota Corn Research and Promotion Council  
Southwest Foundation  
Upper Midwest Hydrogen Initiative

### **Government Agencies and Programs**

State and Federal Legislators  
City of Morris  
Minn. Department of Commerce Energy Office  
Legislative Commission on Minnesota Resources  
Minn. Office of Environmental Assistance  
Stevens County Economic Improvement Commission

### **Companies**

Otter Tail Power Company  
Great River Energy  
Xcel Energy  
Diversified Energy LLC  
Chippewa Valley Ethanol Company  
Runestone Electric Association  
Norsk Hydro

*A number of agriculture producers, citizens, and University of Minnesota faculty have also been key partners in the Renewable Energy Research and Demonstration Center at Morris.*

*To learn more about green energy initiatives at UMM, visit [www.morris.umn.edu/greencampus](http://www.morris.umn.edu/greencampus).*

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