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Wind turbine for researching and demonstrating renewable hydrogen production to be commissioned

Summary:

(April 12, 2005)-When: Friday, April 22 (Earth Day)

Where: U of M West Central Research and Outreach Center (WCROC), Morris

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Minnesota Gov. Tim Pawlenty and other dignitaries will celebrate Earth Day (April 22) by dedicating the only public large-scale wind research instrument in the United States designed to conduct research on converting wind power into hydrogen. The 230-foot wind research turbine at the University of Minnesota West Central Research and Outreach Center (WCROC) in Morris is the foundation for an innovative wind-to-hydrogen project. It is one of four renewable energy systems under development within the University of Minnesota Renewable Energy Research and Demonstration Center in Morris.

The turbine's commissioning will cap two days of activities at the University of Minnesota, Morris (UMM) and the WCROC with themes centering on renewable energy and the environment. Other planned events include:

- o A meeting of the Upper Midwest Hydrogen Initiative beginning at 11 a.m. April 21
- o Displays of E-85, biodiesel, hybrid vehicles and other renewable energy items on April 21 and 22
- o WCCO "Good Morning Minnesota" radio show with Governor Pawlenty
- o Renewable energy experiences for elementary and secondary students at 9 a.m. April 22
- o A University of Minnesota Wind Walk & Run at 10:15 a.m. April 22 (A complete schedule of events is at <http://energy.coafes.umn.edu>): and
- o Tours of the WCROC, UMM, DENCO Ethanol Plant and West River Dairy.

Also, E-85 will be priced at \$.85 per gallon April 21 and 22 at the local E-85 station, sponsored by the filling station and ethanol plant.

"The purpose of these events is to increase the awareness of Minnesota's potential to be the leader in wind energy, biomass, renewable hydrogen, and other renewable fuels. The renewable energy research and education we are doing now will deliver a great benefit to Minnesota," said Greg Cuomo, head of the WCROC.

In addition to the research wind turbine operating at the WCROC, the University of Minnesota Renewable Energy Research and Demonstration Center in Morris includes a planned UMM biomass research and demonstration facility. The center is designed as a community-scale project whose goal is to combine local production and use of renewable energy with state-of-the-art research and demonstrations focusing on wind, biomass, biofuels, anaerobic digestion and renewable hydrogen. "Our goal is to establish systems research to stimulate the renewable energy industry and provide a

model for rural communities and agricultural producers to integrate renewable energy systems into their economies,” Cuomo said.

The research wind turbine will produce 5.6 million kilowatt-hours (kWhr) of power each year. The wind energy will be delivered to the nearby UMM campus, supplying over half its annual electricity use. The wind-to-hydrogen project at the WCROC has received initial funding from the state Commerce Department Energy Office, the Legislative Commission on Minnesota Resources, Xcel Energy and the university’s Initiative for Renewable Energy and the Environment (IREE). This system will stimulate the use of renewable hydrogen in applications like fuel cells and localized fertilizer production. In the future, the facility will conduct research and demonstration projects on wind energy storage and on-demand renewable energy systems such as biomass and biodiesel generation, in addition to hydrogen fuel cells.

The biomass research and demonstration facility at UMM received funding from the Minnesota Legislature as part of the 2005 bonding bill. The facility will explore a gasification technology to convert plant-based fuel stocks into energy in the form of synthetic gas that is intended to replace the use of fossil fuels such as natural gas.

The gasification of biomass is an emerging technology that opens the door to using locally available renewable fuel stocks that are greenhouse gas neutral and produce fewer pollutants than the traditional combustion processes for coal, oil or wood. Local fuel stocks being considered are corn stover and other agriculturally based plant materials. The WCROC and the USDA-ARS North Central Soils Lab in Morris will conduct biomass research to help support and further the development of this new agricultural industry.

Also in planning at the University of Minnesota Renewable Energy Research and Demonstration Center in Morris is an energy “smart” solar building addition to the WCROC office complex and work to facilitate a community anaerobic digester and methane pipeline system. A mix of university, state, federal and private funding is being sought to complete these core systems. The WCROC was a pioneer in ethanol research, building Minnesota’s first ethanol research facility in the early 1980s. The state’s ethanol industry is now a national leader, with 14 plants producing 300 million gallons of ethanol a year and annual sales running at \$380 million.

The University of Minnesota Renewable Energy Research and Demonstration Center is led by the University in partnership with stakeholders in rural west central Minnesota. IREE has provided leadership and funding to develop the research and demonstration systems. IREE is a key part of University President Robert Bruininks’ Initiative on the Environment and Renewable Energy (PIERE). For more information on IREE, see www.umn.edu/iree.

For more information on PIERE, see www.umn.edu/pres/01_init_env.html.

For more on the Morris energy projects, see <http://energy.coafes.umn.edu>

The WCROC, part of the university’s College of Agricultural, Food and Environmental Sciences, is an agriculture-based research station emphasizing interdisciplinary research designed to improve the lives of Minnesota citizens. For more information on its programs, see wcroc.coafes.umn.edu.

The University of Minnesota, Morris is an academically rigorous public undergraduate liberal arts college. It is the only college in the Midwest named among the top three public liberal arts colleges in the nation by U.S. News & World Report in its 2005 rankings of America’s Best Colleges. For more information about UMM, see www.morris.umn.edu.

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