SW MN Technical Skills Challenge
Minnesota West Jackson Campus- April 24, 2009 or
Minnesota West Granite Falls Campus– April 30, 2009

Wind Energy

Grade Level: 9-12

Individual or Team: Teams of 2 students (An individual may also compete in lieu of a team)

Activity to be completed:
The wind has been helping humans do work since the beginnings of civilization. The ability to harness the wind's power has again come to the forefront as we look for better ways to create energy. Living in a region that serves as a leader in wind energy production, it only seems logical to create a competition that allows students to test their wind power knowledge and learn more about this incredible resource.

Blade design and engineering is one of the most complicated and important aspects of current wind turbine technology. Today's blades must be designed to extract as much energy as possible while being durable, quiet and cheap. This competition will challenge students to design and build wind turbine blades that generate the maximum amount of electricity in the most efficient manner.

Time: Approximately two hours

Materials/Equipment Allowed: All blades will be designed, constructed, and tested during the day of the competition. Each team will be given a variety of materials to use in the design and construction of their blades including, but not limited to balsa wood, cardstock, paper plates, and dowels. The wind source for testing the blades will be a 20" x 20" box fan.

Blades will be attached to a turbine similar to the one found on the following website:
http://www.kidwind.org/xcart/product.php?productid=42&cat=4&page=1

Prior planning isn't necessary, but students may visit this or a similar website prior to the event:
http://www.windpower.org/en/kids/index.htm

Judging: The judging panel will be conducted of representatives and professionals from the wind power industry. Blades will be tested for power output, design, and construction quality. A short quiz to assess the student's understanding of wind energy may be included.

Power Evaluation
Average power will be calculated- milliamps x voltage. Score will be relative to other competitors.

Design Evaluation
Judges will examine the wind turbine design, and students must be prepared to discuss/defend their design choices. Craftsmanship and creativity will be taken into account during judging. This portion of the judging will be performed immediately prior to testing in the wind tunnel.

General event questions may directed to:
Gail Polejewski
SW/WC Service Cooperative
507-537-2273
gail.polejewski@swsc.org

Technical question may be directed to:
Michael Arquin
KidWind
Phone: 651-917-0079
michael@kidwind.org

Technical Skills Challenge
REGISTRATION FORM
Wind Energy

School: _____

Mailing Address: _____Zip:_____

Instructor Name: _____

Instructor's Email: _____ Phone: _____

I am registering students for the following Wind Energy Competition:

____ **Jackson Campus, April 24, 2009** ____ **Granite Falls Campus, April 30, 2009**

- **Event will run from 9:30-2:30 at either campus**

Team Competition: Maximum of 1-2 students per team. (Grades 9 - 12):

Student Names/Grades:

Team #1: _____
_____

Team #2: _____
_____

Team #3: _____
_____

* If more registration space is needed, please copy this page as necessary.

EARLY BIRD Registration Fee: $10 per Student if Postmarked by April 3, 2009.
After April 3, registration cost: $20 per student. (NO registrations accepted after April 17).
□ Check Enclosed □ Please Bill My School (Purchase Order#: _____)

Checks payable to: SW/WC Service Cooperative, Technical Skills Challenge

Refunds are not available. Substitutions are acceptable. If possible, please call before the event with student name(s) for any substitutions.

Mail or FAX this completed registration to:
SW/WC Service Cooperative
1420 East College Drive
Marshall, MN 56258
Attn: Laurie Van Watermeulen
Fax#: 507-537-7327