

Science Fair Project Selected for Award

NCAT recently awarded its third annual Sustainable Energy Award to Absarokee eighth-grader Shawna McClurg. The award is given each year in recognition of the best sustainable energy projects at Montana's State Science Fair.

NCAT energy engineer Ray Schott attended the science fair in Missoula during May and considered a number of projects for the award. While the award is typically presented to one project in both Division 1 (grades 9 through 12) and Division 2 (grades 6 through 8), McClurg was this year's sole recipient. In recognition of her accomplishment, McClurg was presented with a Certificate of Merit and a \$100 U.S. Savings Bond.



For her project, McClurg designed an experiment using the electrical output of a small dc motor to choose blades for a windmill. The motor was connected to a hub that was able to accept a variable number of flat blades. In her experiment, she recorded the motor's output voltage when the device was subjected to the airflow from a household fan. The fan pushed air through a shroud to force more air across the test machine. She recorded the motor's electrical output when the hub was configured with one, two, four, and six blades.

She also varied the length of the blades, from 4 to 8 to 12 centimeters long. Her experimental procedure involved recording the electrical output for one 4-cm blade, then added 4-cm-blade numbers 2, 4, and 6 in sequence. She repeated the experiment using the 8-cm and then 12-cm blades, and then repeated the total procedure three more times. Averaging the data from the four test sequences, she determined that the configuration of six 8-cm blades produced the highest average electrical output. She further concluded that the blade configuration was specific to the wind speed produced by the household fan and changing the speed of the air would change the number of blades on the wind machine.

Congratulations Shawna!