



IMAGINING TOMORROW: ALTERNATE ENERGY FUTURES

Presented by The Northeast Sustainable Energy Association



Clean Energy Award Region II: Central MA

Anna Chase,
Wachusett Regional High School,
Holden, MA

*"The Alternative to Alternative
Energy Solutions"*

Anna Chase is a junior this year. In addition to being a student advisor for Eureka!, Wachusett's science fair program, and a member of Science Seminar, she is a member of the National and Latin Honor Societies, and a participant in the Wachusett Humanities Scholar program.

She is a cellist for the school's chamber orchestra and the Worcester Youth Symphony Orchestra, and was a goalie for the Wachusett varsity soccer team for the past two seasons. Anna is a member of the First Church of Sterling and has been actively involved in the church's outreach programs. Her involvement includes rehabbing dwellings in Philadelphia and New Orleans. This past April, Anna traveled to New Orleans to assist elementary schools still feeling the affects of Hurricane Katrina. The inspiration for her Wind Solar Device project came as a result of her 2006 outreach trip to La Romana in the Dominican Republic.

Anna will spend this summer working and visiting colleges where she hopes to pursue a physics major in the Fall of 2008.

THE PROJECT began after working in some of the most impoverished makeshift medical clinics, Anna realized the need for an affordable alternative energy source that would not only help doctors provide adequate medical care for the villagers but improve the overall quality of life in the village as well.

The goal of this experiment was to build an alternative energy device that would (1) be less expensive, (2) take up less space, and (3) generate equal or more power than what is already on the market.

ABSTRACT:

A "wind solar energy device" (WSD) was designed, which had solar cells attached to the blades of a wind turbine. A control solar cell system was created by removing the blades of the WSD with the solar cells on them and positioning these blades at an optimum angle of inclination to the light source.



IMAGINING TOMORROW: ALTERNATE ENERGY FUTURES

Presented by The Northeast Sustainable Energy Association



Clean Energy Award, Region II: Central MA

Anna Chase, Wachusett Regional High School, Holden, MA

“The Alternative to Alternative Energy Solutions”

The control solar cells were exposed to wind from a fan at setting II for an hour while one measured the power being generated from the control cells every 10 minutes. These measurements were compared to the different power measurements of the same solar cells spinning on the blades of the WSD turned at angles of 5, 10, 15, 20, 25, and 30 degrees exposed to the same wind force, at the same distance from the light source as the control.

A control wind turbine was created that had the same design as the WSD, except no solar cells were attached to it. The different power outputs generated by the WSD's generator with its blades turned at angles of 5, 10, 15, 20, 25, and 30 degrees after being exposed to wind at setting II for 5 minutes were measured and compared to the different power outputs generated from the control turbine with its blades turned to the same angles after being exposed to the same wind velocity after 5 minutes, positioned the same distance away from the fan.

Two out of the three goals have been accomplished at this point in the engineering process: the WSD is less expensive than a wind turbine and a solar panel system are separately because the WSD eliminates the need for a prop to hold up a solar panel system. Also, by attaching solar cells on the blades of a wind turbine, the WSD takes up less space than the two separate devices. However, the WSD comes short of producing the same amount of power that solar panels and wind turbines do independently.