



MASSACHUSETTS CLEAN TECHNOLOGY AWARDS

A Program from The Foresight Project Inc

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Middle School Clean Tech Awards:

Region V: Southeast MA

Award to:

Tayla Ullich Wilson, Gilmore Academy, Brockton, MA

"Vertical Wind Axis Turbine"

I'm Tayla Ulich. I'm 14 years old and am in the eighth grade. I live with my parents, my younger brother, Stephen, my younger sister, Sammie, and my dog, Nugget. I'm an avid reader and am a big fan of the Harry Potter series. My hobbies include soccer, softball, drama, and shopping. My interests include history, environmental sciences and music.

I decided to do this project when I started researching different alternate energy sources. Vertical axis wind turbines caught my eye as an original project and something that could be improved. My design is similar to the Savonius model, named after its inventor Sigurd J Savonius.

MY PROJECT:

The purpose of my experiment was to improve VAWT designs and to determine what conditions they performed best in. I did this by making a VAWT. My VAWT was a stand 30 cm high and 20cm wide. A turbine made from a water bottle was in the center. I made 4 different turbines — a control, one with 4 blades, one larger than the other and one made of aluminum. I then tested them in 67°F and in 37°F to test the difference between the two temperatures.

My results showed that the control generated 65.2 milli-volts on average over 100 seconds, while the 4-bladed turbine generated 124 milli-volts on average. The large turbine only generated 10.5 milli-volts over 100 seconds and the aluminum turbine generated 52.1 milli-volts on average over 100 seconds.

After doing the experiment, I have concluded that larger sizes and heavier material affect the turbine's efficiency negatively, while more blades increase the turbine's efficiency.

The conclusions reached by my project could make future VAWTs more effective, which would allow us to generate more electricity from wind turbines, which could help the Earth. By helping the Earth, we help insure our futures and the futures of our posterity.