



# 2010 MASSACHUSETTS CLEAN TECHNOLOGY AWARDS

A Program from The Foresight Project Inc; [www.theforesightproject.org](http://www.theforesightproject.org)



Region III: Southwestern  
Massachusetts

Courtney Dobrott, Natasha  
Dobrott: Somerset High  
School, Somerset

Clean Tech Award: "Residential  
Wind Turbine Feasibility  
Study"

## About Us:

Courtney: I am Courtney Dobrott and my project partner was my twin sister Natasha Dobrott. Besides having a twin sister, I also have an older brother and older sister. My parents, David and Sabine Dobrott, are both hardworking individuals whom I look up to, and hope to be as successful as them some day. When I am not with my twin sister, I am usually with my Irish Jack Russell Terrier named Zoey or my daschund, Jasper. My dogs mean the world to me and truly are my best friends.

I play soccer for my school and my town's spring travel team. In the spring, I also run long distance track. When I am not running or playing soccer, I am playing my viola for the school orchestra and string ensemble. I also am very involved in volunteering at school and in after school clubs. While school is a large part of my life, the activities that I do outside of school make me who I am and are the things that I enjoy the most.

Natasha: I am Natasha Dobrott and I am involved in many of the same activities as my twin sister Courtney. I am involved in the Big Buddy program at our school and in the key club, which volunteers throughout our schools and in the community. I am also in my school's orchestra and string ensemble; I have played the viola since 4th grade. I participate in fall soccer and am a sprinter and a long jumper in spring track for our school; I also play spring soccer outside of school. School and academics are very important to both of us but we are also very involved in other activities.

## Our Project:

The purpose of this project was to build a homemade wind turbine out of common materials and to determine whether it is an efficient and feasible source of power. Our design includes accessible parts such as car parts, scrap wood, and small electronic components that could be found at a local Radio Shack. The blades are 5 foot long, handcrafted from pinewood, making them light and functional. The



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main component of the design is the generator itself, which includes 24 magnets, two car rotors, and a fiber glassed stator, constructed of 9 wire coils encased in fiberglass resin. When the wind turbine is in operation, we measure voltage using a digital voltmeter and calculations are completed to determine the efficiency. Working at optimum efficiency our wind turbine would be able to produce about 500 watts with some adjustments to the design. At this point, we concluded that the amount of energy produced by our wind turbine was insufficient for residential purposes.

To continue the project we then projected the amount of time it would take for the wind turbine to "break-even" and start to make money for the consumer. We compared these calculations to 4 other commercial residential wind turbines and concluded that while our wind turbine did not produce anywhere near the same amount of energy as the commercial turbines, ours would be paid off in 8 years (assuming it runs on 20% year round), while the others would take anywhere from 17-30 years. Our final conclusion of the feasibility study of our wind turbine was that even though we were able to construct a working wind turbine, it is not the best option for alternative energy and if someone was looking into green energy a better way to save would be to reduce what they use or look into other sources (such as solar panels).

We became interested in this project because our grandparents followed the building of the wind turbines in Portsmouth, Rhode Island very closely since they are residents and because my grandfather is an engineer. Every time we would visit, he would tell us about the progress of the wind turbine, and about how tall it was to be really efficient. Once it was complete, we started to discuss if more towns should build residential wind turbines because they are an alternative source of energy and help to cut back on energy costs.

These conversations helped to inspire us to build a residential wind turbine of our own and to see if it is truly a feasible source of energy on a small, single-home scale.