



**CALIFORNIA STATE SCIENCE FAIR  
2014 PROJECT SUMMARY**

<b>Name(s)</b> <b>Oliver N. Hill</b>	<b>Project Number</b> <b>J0113</b>
<b>Project Title</b> <b>Energy in the Wind</b>	
<b>Abstract</b> <b>Objectives/Goals</b> My project goal was to experiment with different blade configurations and aerodynamics to produce the most voltage. <b>Methods/Materials</b> Horizon WindPitch Education Kit which contains: A wind turbine, a pitch changer device, 3 BP-28 blades, 3 BP-44 blades and 3 BP-63 blades Horizon Renewable Energy Monitor Fan Computer Measuring Tape Extra blade kit  My test methods were running experiments with every possible combination of 3 blade profiles, 5 pitch angles, and 3 wind speeds. <b>Results</b> My results showed that the lower pitch angles produced the most power. Some of the blade profiles were better at different wind speed than others. The BP-28 blade was the lightest but the BP-44 blade produced more power on an average of 1.5 volts. There was always a steady increase of voltage from the low wind speeds to the high wind speeds for all profiles except for BP-44. The most power generated was 10 volts in the 3 blade tests and 10.61 volts and in the 6 blade tests. <b>Conclusions/Discussion</b> The pitch angle of 10 degrees generated the most power of all the pitch angles. I concluded the NACA BP-44 blade with a 10 degree pitch angle is the best combination of profiles and angles I tested. I believe my experiment can help the wind power industry to know that lower pitch angles produce more power. My experiment also shows that at different wind speeds, different blade profiles can produce more power.	
<b>Summary Statement</b> My project experiments with different blade configurations and aerodynamics to produce the most voltage.	
<b>Help Received</b> My parents helped review my work.	