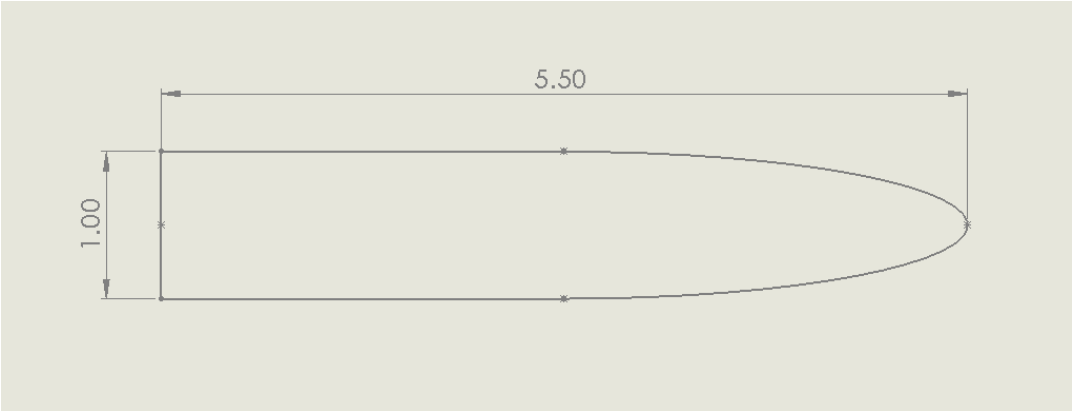
By: Samantha Sharma, Jing Xu, Wenyuan Yin, Peter Tranoris, Jeffrey Zurita

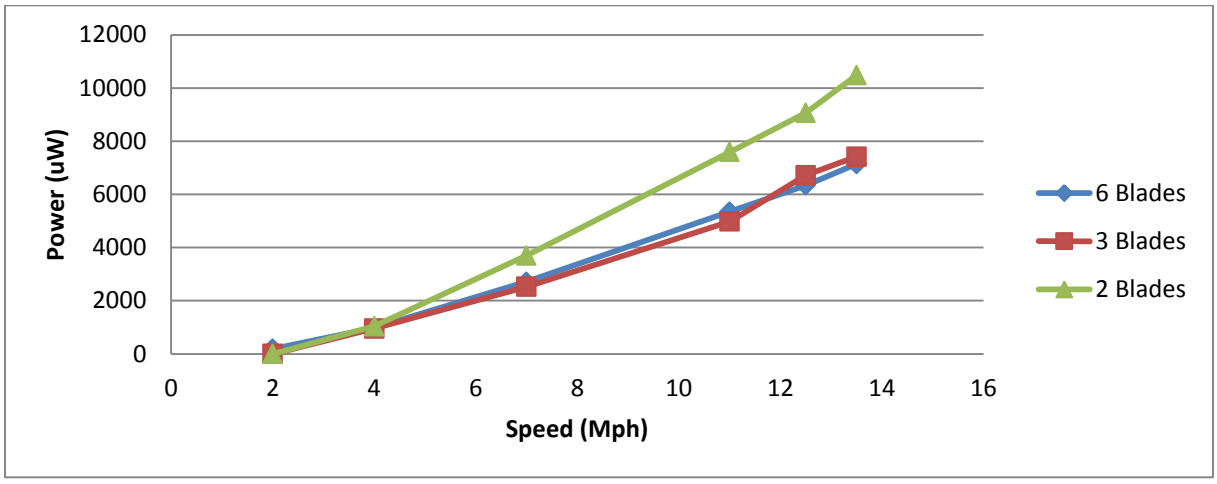
To find the best blade shape, group five designed different blades and tested which wind turbine gave out the most power. Jeffrey's blade design was an oval shape tip and rectangular base of 2 inch chord-length and 5.5 inch span. Peter's blade design (figure one) was an oval shaped tip with a rectangular base of 1 inch chord-length and 5.5 inch span. Jing designed blades with rectangular tips and oval bases: a chord -length of 3 inches and a span of 5.5 inches as well.

Figure One:



The reasoning behind our selecting of these three blades was logical. We chose Jeff's and Jing's to be able to compare the two different shape designs and see which one was more effective; oval at tip and rectangular at the base (Jeff) or rectangular at the tip and oval at the base (Jing). Peter's design was chosen to directly compare with Jeff's as well, as they were the same shape design but had different chord-lengths: 1 inch and 3 inches respectively. This was to see whether a wider or thinner blade was more effective.

Figure Two:



To determine how many blades are best, it is easiest to look at Jing's graph of power vs. speed. It can be determined that two blades created the most powerful wind turbine. The three bladed turbines are the second most powerful and six blades was the weakest. This trend was also found by testing Jeff's and Peter's blades using 2, 3 and 6 blades per turbine.

Figure Three:

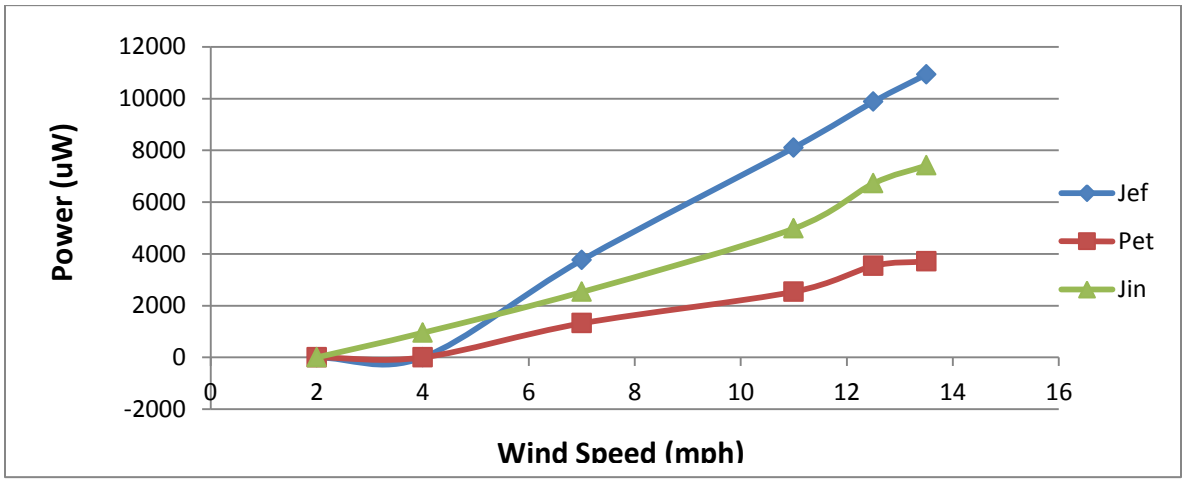


Figure three shows the power output vs. wind speed of turbines with two blades. We can see that Jeff's design was the most effective. When three and six bladed turbines were also graphed by

power vs. speed, the same trend was found: Jeff's design was the best. In conclusion, the best shape of the turbines had an oval tip and a rectangular base. More testing could be done to see which chord-length was the most effective.