



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Kaitlyn N. Wilde Wantz	Project Number J1039
Project Title Generating Power Using Micro-Hydroelectric Generators	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals I attempted to see if it was possible to make a micro-hydro generator more efficient by using more blades in the turbine. I hypothesized that it wouldn't matter, as long as the speed of the water was consistent.</p> <p>Methods/Materials I built two generators (one with four blades, one with eight). I connected them to a multi-meter one at a time, tested them each 50 times using a hose, and recorded the voltage. The independent variable in my test was how many blades on each generator. The dependent variable was the amount of electricity produced.</p> <p>Results The number of blades does effect the amount of electricity. Generator A, which had eight blades, produced an average of 49.6 VCA, while Generator B, which had four blades produced an average of 44.2 VCA.</p> <p>My hypothesis was proven wrong, but if I think about it, if the turbine only had one blade, it wouldn't spin very well, would it?</p> <p>Conclusions/Discussion During this project I have learned so much including how to build a micro-hydro generator, at least a very basic one. I learned about alternative fuels and how hydroelectricity works during the research phase. When testing I learned how to use a micro-hydro system and how to be specific. It is best to hold the generator at a downward angle so the water will hit the turbine correctly. I also learned something about my hypotheses. My hypotheseis was proven incorrect, however, it turns out that the amount of electricity each system generated varied slightly. Generator A, with (eight blades) produced an average of 49.6 VCA, while Generator B (four blades)produced an average of 44.2 VCA. My hypothesis was definitely weakened. However, this has caused me to form a new hypothesis that if you increase the number of blades, the amount of electricity will increase slightly.</p> <p>My actual numbers were pretty easy to gather once I figured out how to use a multi-meter. My numbers didn't vary too much. My only outlier was a 47 VCA for Generator B, for which the range was typically 43 to 45 and not much above or below. I think my test was fair, my conclusions and numbers were correct and reliable. I'm confident in the construction of my generators, and I think I did this project to the best of my abilities. My parents are proud and I feel a sense of accomplishment.</p>	
Summary Statement How the number of blades inside the turbine affect how much electricity a micro-hydro system will produce.	
Help Received My dad helped me pick a subject. My grandma is helping me type this application.	