



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

Name(s) Kennedy J. Bingham	Project Number J0102
Project Title Which Windmill Is Better?	
Abstract Objectives/Goals My family and I were driving through the desert and I saw a windmill farm. I noticed that all the windmills had three blades. I wondered why there were not more blades on a windmill. At the time I thought more blades would produce more power. My research question is; how does the number of blades affect the amount of electrical power generated by a windmill? In order to answer the question, I tested a five bladed and three bladed windmills in different wind speeds and temperatures. I measured the power generated by each windmill and compared the data. Methods/Materials Materials List: - Pen (1), - Pencil (1), - Lined and Graph Paper, - Science Fair Journal, - 5-Bladed Windmill (Computer Cooling Fan), - 3-Bladed Windmill (Computer Cooling, Fan), - Series II Multi-meter, - Wind Generation Device (Multi-speed/Multi-temp Hair Dryer), - Superglue (1 tube), - Velcro Strips, - Electrical Wire (included with multi-meter), - Alligator Clips (included with multi-meter), - Electrical Tape (1 roll), - Plywood (16# X 9#). Using the blow dryer to simulate the wind will ensure the same wind-speed and temperature for each data point. The fan will turn like a windmill. The turning of the fan will produce some amount of electrical power which will be measured by the multi-meter. I will then remove two blades from the windmill and repeat the experiment. I will use every temperature and wind speed combination available and do each test run twice for each windmill. Results A 3-Bladed windmill produced more VDC on average. Conclusions/Discussion This project has a major practical application. I found that a 3-bladed windmill in a hot windy environment would produce the most power. Therefore, building 3-bladed windmills in hot windy climates would be the efficient use of wind power.	
Summary Statement Is a 3-bladed or 5-bladed windmill better?	
Help Received Father helped construct and run experiment. Father helped type.	