



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

Name(s) Vicki Hsieh	Project Number J0716
Project Title More Rotors, More Motors, More Power?	
Abstract Objectives/Goals Though it would be satisfying to have a wind turbine utilize all of the energy in the wind surrounding it, it is not possible. But by changing the design of the wind turbine so that it could generate more electricity seemed possible. With that thought in mind, I created the objectives for my project. The objectives of my project were to construct a windmill with two sets of rotors and motors and prove that it could generate more electricity than a windmill with only one set of rotor and motor. Methods/Materials The materials for the construction of the windmill were mainly PVC pipes, two small DC motors, wooden dowels, wooden hubs with adapters, and balsa wood. The windmill (with either one set or two sets of rotor and motor) was blown at from a fan one meter away. The amount of electricity generated by the DC generators was measured in mVolts and mAmps with a digital multimeter. Each variable was tested 25 times. The measurements in mVolts and mAmps were used to calculate the measurement in mWatts by using the following formula: Electrical Force (mVolts) x Electrical Current (mAmps) = Electrical Power (mWatts). Results The construction of a windmill with two sets of rotors and motors was possible. Overall results show that the windmill with two sets of rotors and motors generated 66.6% more electricity than the windmill with one set of rotor and motor. Conclusions/Discussion My results suggest that the overall efficiency of windmills could be increased through the addition of a second rotor and motor. If these windmills were installed, the extra energy produced by these windmills could substitute for the power generated by the coal and nuclear power plants. This would, as a result, lower the amount of greenhouse gasses emitted into the air and better the atmosphere and environment.	
Summary Statement The purpose of my project is to enhance the power-generating capabilities of a windmill by adding a second set of rotor and motor and compare its output to the output of a windmill with one set of rotor and motor.	
Help Received My parents helped me when I needed a third hand in building the windmill. My teacher helped find typing errors.	