



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

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Project Title What Is the Effect of Temperature on Solar Cells?	
Abstract Objectives/Goals The purpose of this project is to see the effect of temperature on solar cells converting light energy to electrical energy. I hypothesized that the warmer cells would produce more energy Methods/Materials The solar cells were connected in parallel form using copper links with positive sides connected with positive and negatives with negative. The cells were frozen for an hour at -10° C, in a laboratory refrigerator, afterwards their temperature was checked with a multimeter and thermocouple, and then put under a 100 watt light bulb. The resulting voltage was measured digital multimeter. The steps above were repeated at 2-degree increments until 24° C. Then the cells were heated in a laboratory oven to 100° C and their voltages were checked. This test was repeated by changing the temperature of the oven variably until 24° C. Results The voltage produced by the frozen cells reached 1.78 volts at -10°; the voltage at room temperature (24°) was 1.39 a 14% difference of voltage produced. The voltage produced by the heated cells dropped as low as 0.81 Volts at 100° C Conclusions/Discussion The hypothesis was wrong; when the cells were at a lower temperature they produced more voltage. Although the difference of voltage produced does not seem very large under a 100-watt light bulb, differences under natural sunlight can be much more. By keeping the cells cooler we will not only produce more voltage but also prevent overheating which will increase the longevity of the cells. A 2,000 watt solar cell system for a single-family home can provide around half the energy needed by the household. Use of this solar cell system, in turn, would result in a significant reduction in the amount of coal burned and 10,000 lbs fewer greenhouse gas emissions.	
Summary Statement The effect of heat on open circuit solar cells to see the difference of voltage they produce.	
Help Received	