



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

Name(s) Megan R. Ruckstuhl	Project Number J1031
Project Title Here Comes the Sun	
Abstract Objectives/Goals My topic was to study the effects of intensity, temperature, and angle on a solar cell's power output. I chose this topic because I am interested in how solar cells work. I expected the solar cells to produce more power as the intensity of light shining on them increased, and as the light shines more directly on the cell. I also expected the solar cell to produce less power as temperature increased. Methods/Materials First, I bought two solar cells. My dad and I soldered them together to make one big solar cell. I also bought three different light bulbs. They were 205, 570, and 1050 lumens. I tested each light bulb in a 65 degree environment, 68 degree environment, and an 85 degree environment. For each light bulb and temperature environment I recorded the current and voltage at fifteen degree intervals starting at zero and advancing to one hundred eighty degrees. I multiplied the current and voltage together, to determine the wattage. I used the wattage to make my graphs. Results My results were that if I used the brightest light bulb, the most power was recorded. If I placed a light bulb at a 90 degree angle, then the most power was also recorded. The most power was recorded when I conducted the experiment in the 85 degree environment. My research stated that if the cell got hotter, the power should decrease. Therefore, my results on the temperature portion of my experiment were inconclusive. My results did show that if a cell is exposed to a major temperature difference, then the power output will change. Conclusions/Discussion My 1st hypothesis was that if I used the 1050 lumens light bulb, then the most power would be recorded. I was right. The least power came out of the 205 lumens light bulb. My 2nd hypothesis was that if I angled the light at a 90 degree angle, then the most power would be produced. I was right. When the light is at 0 degrees or at 180 degrees, the least power was recorded. My 3rd hypothesis was that if I performed the experiment in a cool environment, then the cell would perform the best. The cell put out more power in the hotter environment. My research stated that the hotter a solar cell gets, the power output should decrease. Temperature does have an effect on the power output of a solar cell. The results did not match my research. To further my study, I could use a different setup to study temperature effects and use a wider range of temperatures	
Summary Statement My project tested how angle, intensity, and temperature affected the power output of solar cells.	
Help Received Mother proof read report. Father helped solder solar cells together and collect data.	