



CALIFORNIA STATE SCIENCE FAIR  
2016 PROJECT SUMMARY

<b>Name(s)</b> Toby J. Still	<b>Project Number</b>  36349
<b>Project Title</b> How Does Temperature Affect Solar Cells?	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> To determine if solar cells generate more power at colder or hotter temperatures.</p> <p><b>Methods/Materials</b> Set up a light source a fixed distance away from the solar cell and test voltage (volts), current (amps), surface temperature (degrees Celsius), and lux (lumens per square meter), at different places with varying temperatures. Take measurements three times at each location. These places include: Walk-in refrigerator and freezer, a cold garage at night, a cool laundry room, a regular bedroom, a hot bedroom, and a hot sauna at the YMCA.</p> <p><b>Results</b> The hotter the location the more power the solar cell generated. The voltage dropped at greater temperatures, but the current increased, with a net result of greater power. We also measured lux input part way through the testing, and discovered that the light source (power in) fluctuated slightly during our tests.</p> <p><b>Conclusions/Discussion</b> Testing demonstrated that a solar cell does generate more power at higher temperatures, proving my hypothesis correct.</p>	
<b>Summary Statement</b> Understanding how temperature affects the power output produced by a solar panel, by measuring the voltage and amperage produced in rooms of varying temperatures.	
<b>Help Received</b> Ross Cathie (salesman for PlanetSolar), provided initial guidance and advice as well as a small solar cell panel with wire leads. The light was borrowed from Greencoast Hydroponics. My father helped me build the PVC light holder and solar assembly, and create the Excel data graph.	