



**CALIFORNIA STATE SCIENCE FAIR  
2015 PROJECT SUMMARY**

<b>Name(s)</b> <b>Jason B. Morris</b>	<b>Project Number</b> <b>J0214</b>
<b>Project Title</b> <b>The Effect of Cooling a Photovoltaic Cell</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The purpose of this experiment was to determine whether or not the cooling of a photovoltaic cells had a positive impact on the production of solar power. If cooling the photovoltaic cell produced more energy, the follow-up goal was to find the cheapest and most efficient way to generate solar power and warm water (the byproduct of the cooling process) for economically disadvantaged communities.</p> <p><b>Methods/Materials</b> An apparatus needed to be created to cool the photovoltaic cells. Two pieces of sheet metal 12# x 12#, which is considerably cheaper than copper, were placed on top of one another with metal spacers in between the sheets. The internal spacers were placed in a zigzag pattern to direct the flow of the water in order to achieve a more efficient cooling action.</p> <p>Two water ports were installed and the edges of the cooling unit were sealed off with silicon. The cooling system was placed on the back of the photovoltaic cell and water was pumped through it. Using both a cooled and a non-cooled photovoltaic cell, the power produced at different intervals was measured. The power produced was calculated using Ohm's law, along with a voltmeter and a 20 ohm resistor.</p> <p><b>Results</b> The results showed that the cooled photovoltaic cell produced an average of 20% more power than the non-cooled photovoltaic cell.</p> <p>This cooling apparatus will reduce the number of photovoltaic cells needed to produce power.</p> <p><b>Conclusions/Discussion</b> This means that economically disadvantaged communities, both within the USA and in other countries, are able to have access to affordable electricity, some of them for the first time.</p> <p>In addition, the byproduct - warm water, will be available for their household purposes.</p>	
<b>Summary Statement</b> The purpose of this experiment was to determine whether or not the cooling of a photovoltaic cells had a positive impact on the production of solar power.	
<b>Help Received</b> Dad helped cut sharp sheet metal.	