



**CALIFORNIA STATE SCIENCE FAIR  
2011 PROJECT SUMMARY**

<b>Name(s)</b> <b>Margaux Shraiman</b>	<b>Project Number</b>  31046
<b>Project Title</b> <b>Going Green Has Never Been So Hot. The Peltier Effect and Geothermal Energy</b>	
<b>Abstract</b> <b>Objectives/Goals</b> This is my idea for a new and hopefully more efficient geothermal power plant. It is based on using the Peltier effect in reverse to convert temperature difference into electric power. <b>Methods/Materials</b> <ul style="list-style-type: none"><li>-Ice</li><li>- Copper Wires</li><li>- Metal Blocks</li><li>- Heater</li><li>- Thermal Compound</li><li>- Peltier Element</li><li>- Voltage Meter</li><li>- Thermometer</li><li>- Water</li></ul> <p>First, I heated the thermal blocks to a certain temperature. Then, I used a box full of ice to cool a shallow dish, which I filled with water. Next, I connected the Peltier element to the voltage meter and placed it in the water. When the blocks were the right temperature, I put a little bit of thermal compound on the top of the element and placed the block on top of it. After that, I calculated the voltage (volts) and current(amp) and recorded it. Then I started over, but heated the blocks to different temperatures.</p> <b>Results</b> Based on the results of my experiment, I can conclude that increasing the temperature difference does in fact raise the amount of electricity produced. <b>Conclusions/Discussion</b> The bigger the temperature difference, the more voltage you create. My experiment is important because it could be the first step leading to the invention of a new kind of geothermal power plant. In the future I am hoping scientists will take my research to the next step, and experiment with better equipment so as to reach higher temperatures and get more accurate results as well as potentially inventing the blueprint for an entirely new kind of geothermal power plant.	
<b>Summary Statement</b> Converting geothermal energy into electricity by using the Peltier element.	
<b>Help Received</b> Used lab equipment at UCSB under the supervision of Dr. Boris Shraiman and Dr. Pierre Neveu	