



**CALIFORNIA STATE SCIENCE FAIR  
2016 PROJECT SUMMARY**

<b>Name(s)</b> <b>Andrew J. Salentine</b>	<b>Project Number</b> <b>J1719</b>
<b>Project Title</b> <b>Harnessing the Power of the Sun Using Solar Ovens</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The objective of my project was to determine if dimension/volume of a solar oven has an effect on its ability to achieve higher temperatures.</p> <p><b>Methods/Materials</b> I built two solar ovens with identical construction, but different dimensions. One oven was 1 cu. ft. in volume with a 1 sq. ft. glass lid. The other was 8 cu. ft. in volume with a 2 sq. ft. glass lid. A third oven was created by placing a shelf in the second oven reducing its volume to 4 cu. ft. while retaining the 2 sq. ft. glass lid. The ovens were placed outdoors side-by-side on concrete with average ambient temperature of 71.9 degrees F. A thermometer with three thermocouples was used to measure temperature. Two testing configurations occurred: ovens sitting flat with sun at an angle and ovens tilted so glass lids pointed directly at the sun.</p> <p><b>Results</b> The oven with 1 cu. ft. in volume and 1 sq. ft. glass lid area heated up to the highest temperature followed by the oven with 4 cu. ft. in volume and 2 sq. ft. glass lid area having the second highest temperature. Oven with 8 cu. ft. in volume and 2 sq. ft. glass lid area was not able to heat up to as high a temperature, therefore, having the lowest temperature.</p> <p><b>Conclusions/Discussion</b> My conclusion is that bigger is not necessarily better when it comes to solar ovens. The surface area of the glass lid in relation to the volume of the oven is the important factor. Solar ovens with a volume equal to or less than the surface area of the glass lid can achieve higher temperatures.</p>	
<b>Summary Statement</b> Determine if dimension/volume of a solar oven makes a difference in ability to heat up to the highest temperature.	
<b>Help Received</b> My Dad, John Salentine, and Ken Collin advised me on the design, construction and testing of my solar ovens and I built them. Michelle Schaefer helped me on design and operational methods.	