



**CALIFORNIA SCIENCE & ENGINEERING FAIR  
2018 PROJECT SUMMARY**

<b>Name(s)</b> Aditya S. Kakarla	<b>Project Number</b>  38046
<b>Project Title</b> Fresnel Lens and Temperature vs. Solar Panel Output	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The objective of this project is to figure out if I can increase the electricity you can receive with a solar panel by increasing/decreasing the temperature and using a Fresnel lens.</p> <p><b>Methods/Materials</b> A Fresnel lens and a infrared thermometer probe were used, so I could see the temperature of the solar panel and the effect of the Fresnel lens on the solar panel. I would check the voltage of the solar panel with and without the Fresnel lens, and I would use my thermometer to check the temperature. I would change the temperature by using plastic bags with hot or cold water in it. This would help to simulate a warm or cold environment.</p> <p><b>Results</b> The results of this project showed that cooler temperature would increase the voltage by around 0.217 volts per degree Fahrenheit, and the Fresnel lens would increase the voltage by around 1.7%. These results mean that having a colder surface temperature for the solar panel, and using a Fresnel lens both increased the amount of electricity that would be produced by the solar panel. My lowest temperature, 53 degrees Fahrenheit, had around 23% more voltage than my recording with the highest temperature, 116.6 degrees Fahrenheit.</p> <p><b>Conclusions/Discussion</b> Providing a colder environment and using a Fresnel lens will increase energy output of a solar panel. This project could help us learn more in better utilization of solar panels, and therefore finding new applications such as cars or even airplanes.</p>	
<b>Summary Statement</b> use of Fresnel lens and cooler temperature helped improve output of solar cell	
<b>Help Received</b> I received help from my parents in procuring Materials for my project and I learned concept of solar cell energy production from my Dad and online	