



**CALIFORNIA STATE SCIENCE FAIR  
2009 PROJECT SUMMARY**

<b>Name(s)</b> <b>Marisa A. Christensen</b>	<b>Project Number</b> <b>J1009</b>
<b>Project Title</b> <b>Can We Use Solar Energy When Our Air Is Dense with Pollutants?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The objective of this science fair project is to determine if atmospheric pollution affects the efficiency of solar panels.</p> <p><b>Methods/Materials</b> Six Miniature Photovoltaic Panels; One Model House or Board; One Large, Clear Container; Two Cans; One Package of Mosquito Repellent Coils; One Standing Floodlight; One Reflection Density Guide; One 10.4 Ohm Resistor; One Copper Board to Connect Wires; Two Meters; Duct Tape. Attach the six solar panels to each other, wires connected positive to negative. Mount panels to the board or roof of the model house. Attach the panels to two meters, one measuring electrical current, one measuring voltage. Power is calculated by multiplying the volts by the amps. Place the large, clear container over the model with the meters pulled out under the container where they can be easily read. Turn the standing floodlight on, light focused directly on the solar panels. Record data from the panels after three minutes. Divide three mosquito repellent coils evenly between two cans. Break each coil into small pieces about one inch long. Light one end of each small piece and place into the cans. Place cans under container in the two front corners facing the floodlight. Duct tape around the bottom of the container as to not let the majority of the smoke emitted from the coils out. Record voltage and current simultaneously from panels every three minutes for fifteen minutes total. Compare the atmospheric pollution within the container with the reflection density guide each time the voltage and current is recorded. Record the results.</p> <p><b>Conclusions/Discussion</b> My hypothesis was correct, atmospheric pollution does affect the efficiency of solar panels as to not allowing light to penetrate completely. As the smoke accumulated in the container, the solar panels could not absorb as much light as when fully exposed to the floodlight, hence the voltage and current both steadily decreased. The smoke from the coils also left behind much particulate matter on the model house and the panels itself, which was a variable to whether the solar panels would be able to absorb the light at full efficiency. As the sediment accumulated on the panels, the panels were obstructed and could not take in the radial energy.</p>	
<b>Summary Statement</b> The purpose of this project is to test whether atmospheric pollution affects the efficiency of solar panels.	
<b>Help Received</b> Father helped build model house; Used lab equipment from Santa Catalina Upper School with aid from Mrs. Paulette Struckman; Reflection Density Guide provided by Dr. Edward Wong; Research Interview of Mrs. Suzette DelBono	