



**CALIFORNIA STATE SCIENCE FAIR  
2013 PROJECT SUMMARY**

<b>Name(s)</b> <b>Daniel S. Yacoubian</b>	<b>Project Number</b>  33523
<b>Project Title</b> <b>A Novel Method of Improving Home Solar Panel Output: A Fundamental Concept with Profound Implications</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective of this experiment is to determine if home solar panel electric output can be increased without using any extra energy. This is tested by using a unique method of cooling the solar panel. This method consists of a novel tubing apparatus, which redirects airflow produced by an outdoor air conditioning condenser to a solar panel. Science has shown that solar panel energy production works most efficiently at cooler temperatures. I hypothesize that my original tubing apparatus will successfully re-direct airflow to the solar panel and decrease its temperature thus increasing electric output. <b>Methods/Materials</b> The voltage and temperature of an experimental solar panel versus a control solar panel were tested simultaneously. The experimental panel received airflow from a novel insulated flexible air tubing system designed to connect the home air conditioning condenser to the solar panel. Data was gathered over the course of three days and analyzed. The percentage of voltage increase of the experimental panel and its temperature change was calculated and compared to the control panel. <b>Results</b> The results demonstrate that there is an 8% increase in the voltage output of the experimental solar panel receiving airflow from the air conditioning condenser as compared to the control solar panel. <b>Conclusions/Discussion</b> I conclude that my hypothesis is correct, and it is possible to significantly increase the electric output of a solar panel, without using any extra energy, by cooling the solar panel with airflow from a home air conditioning condenser. This experiment represents the first time that airflow from an air conditioning condenser has been used to cool a solar panel and successfully increase electric output. The implications for energy conservation in such a system are great. This system can add great economic value to existing solar energy systems and may provide incentive for home or business owners to install new systems. In addition, this concept can influence design of new systems that would take advantage of the airflow from an air conditioning condenser.	
<b>Summary Statement</b> Solar panel electric output can be increased without using any extra energy by cooling the solar panel using the airflow produced by an outdoor home air conditioning condenser unit.	
<b>Help Received</b> Father helped assemble tubing apparatus. Mother assisted in typing.	