



# CALIFORNIA STATE SCIENCE FAIR 2010 PROJECT SUMMARY

<b>Name(s)</b> <b>Anshul B. Chandan</b>	<b>Project Number</b> <b>J1007</b>
<b>Project Title</b> <b>Solar: Saving the Earth One Panel at a Time</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The objective of this experiment was to find how the angle and direction a solar panel faces affect the amount of electricity it generates. The goal was to find which angle and direction would be best for a solar panel to capture the most sunlight and, thus, generate more electricity in winter and spring. It is inferred that the panel facing south and has an angle of 45° will generate the most electricity because the equator is south of California and 45° is an angle where it will be able to get sunlight when the sun is both in the west and almost directly hitting the panel.</p> <p><b>Methods/Materials</b> After placing the three five watt panels in a flat open area, the panels facing north and south were propped up to a 30° angle while the third was placed at 0° equidistant from the other two. Then, every other hour from 9 a.m. to 3 p.m. the milli-amps (mA) and voltage of each panel was recorded using a multimeter and alligator clips. This was repeated on three separate days all of about the same weather but changing the angle of the north and south panels to 45° and 60°. The experiment was conducted in winter and spring which allowed two sets of data to be collected.</p> <p><b>Results</b> From the data collected it was concluded that, in the winter, the panel at 60° and faced south generated the most electricity at 410 mA at its peak. The data collected also showed that in the spring the panel at 45° generated the most electricity with 440 mA at its peak. The daily winter averages for the panel facing south were 248 mA for 30°, 244 mA for 45°, and 287 mA for 60°. The daily spring averages for the panel facing south were 363 mA for 30°, 370 mA for 45°, and 315 mA for 60°. The voltage of the panels was about 19.7, thus, making all the readings accurate. The panel at 0° stayed around 160 mA in winter and 323 mA in spring. Some days seemed to have few clouds or more sunlight than other days. The sun was pretty low in the sky during winter trials while it was pretty high in the spring.</p> <p><b>Conclusions/Discussion</b> The hypothesis created was supported. The hypothesis that said that the 45° angle of the panel facing south would generate the most electricity was supported in the spring because it had the highest milli-amps compared to all the other panels. During the winter, however, the panel facing south with an angle of 60° generated the most electricity. The panel facing south always generated more electricity than the other two panels.</p>	
<b>Summary Statement</b> The purpose of this project was to find the optimum angle and direction of a solar panel in order to generate the most electricity throughout the day.	
<b>Help Received</b> Dad helped set up experiment and helped make board; Mom helped print papers and get materials for board; Ms. Fisher corrected all information in the notebook; Mrs. Diaz read over annotated bibliography, bibliography, notes, and research report and corrected them.	