



# CALIFORNIA STATE SCIENCE FAIR 2009 PROJECT SUMMARY

<b>Name(s)</b> <b>Emma LaPorte; Raina Wuthmann</b>	<b>Project Number</b> <b>J1025</b>
<b>Project Title</b> <b>When Is 10%, Not 10%?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> One of our main goals for our science fair project, was that our project should relate to everyday life. One day our science teacher told us how his neighbor was getting a second story to his house. This seemed fine to us, but when he told us how this could affect his solar panels, we understood why he was concerned. He was worried because he wasn't sure if when part of his solar panel was shaded, no energy could be produced. We thought this would be an interesting idea for our science project, and definitely interesting to find out the answer! Also it relates to many people with second story houses around them or living in cloudy areas.</p> <p><b>Methods/Materials</b> For our project we used a solar panel, construction paper, camera, energy meter that measures how much energy is produced, tape, a dark room (garage), data table to record results, and three lights. For our science project we had a repeating method that we used. After finding and cutting out 10%-100% horizontally and vertically of the solar panel on construction paper, we began this repeating process. First we would find the power produced by the solar panel, when it is not covered. After we would find the power produced by the solar panel when 10% is covered horizontally. Then we would continue shading the solar panel horizontally and finding the power produced continuing up to 100%. After we did this, we did the same exact process, except we shaded the solar panel vertically.</p> <p><b>Results</b> When we first found all our data, we were extremely surprised. But as we researched further of why this could have happened, it all made sense. When we shaded the panel horizontally, the panel's power began decreasing right away, as we had expected. But then later when we shaded the panel 10% vertically, and it did not decrease until 70% of the solar panel was covered!</p> <p><b>Conclusions/Discussion</b> After more research, we found that all our data actually made sense! We learned about the wiring in a solar panel, and about solar cells. Our data then seemed right when we discovered that when you cover one cell in a string of solar cells, the entire string is knocked out. So basically when shading 10% horizontally, all three strings were unable to produce power. So that's why when we shaded horizontally it decreased. But when we shaded the solar panel vertically it did not decrease until 70% because even after one string was knocked out, the other two strings were still working.</p>	
<b>Summary Statement</b> Our science project, "When is 10%, Not 10%" is all about the wiring and shading of solar panels.	
<b>Help Received</b> Father helped set up resistor and get the solar panel.	