# CALIFORNIA STATE SCIENCE FAIR
## 2010 PROJECT SUMMARY

**Name(s)**
Scott D. Weismann

**Project Number**
**J1036**

**Project Title**
## How Does Shading Affect the Power Output of Different Solar Panel Technologies?

**Abstract**

**Objectives/Goals**
My objective was to determine how shading affects the power output of two different kinds of photovoltaic solar panel technologies.

**Methods/Materials**
I tested two kinds of solar panels, monocrystalline and amorphous. I did three tests for each panel, one without shade, one shaded lengthwise, and one shaded widthwise. Each panel had to be at the same angle facing the sun, and I used a power meter, with which for each test I measured the volts and amps to find the wattage, or power output. I then analyzed the data by comparing the results of the two shading tests to the test without shade to find how much power had been retained when shaded.

**Results**
For shading lengthwise, both panels retained about 8% of their total power output without shade. For shading widthwise, amorphous retained 58% and monocrystalline a mere 14% of the total power output without shade.

**Conclusions/Discussion**
I concluded that the amorphous panel was more efficient when shaded than the monocrystalline, since amorphous technology is made without a definitive cell structure, as opposed to monocrystalline, which is made with precise cuts to create a more efficient cell structure. With this knowledge, people now know more about what panel type they should buy for their own house depending on where they live. If they live in a place with overhanging trees that may block sunlight, amorphous panels would be better. If they live in an open area, they should consider the monocrystalline technology, since monocrystalline is about twice as efficient in direct sunlight than amorphous.

**Summary Statement**
My project is about whether an amorphous or monocrystalline panel is more efficient when shaded.

**Help Received**
My dad helped me understand how a solar cell worked.