# CALIFORNIA STATE SCIENCE FAIR
## 2011 PROJECT SUMMARY

**Name(s)**
Emily M. Wong

**Project Number**
**J0233**

**Project Title**
## Blown Away: How Altitude Affects Electricity Production

**Abstract**

**Objectives/Goals**
My objective is to test if altitude affects the amount of energy (in watts) a windmill creates. If my experiment works properly, I believe we may be able to create more windmills in the areas that create more efficient electricity, and produce cleaner energy.

**Methods/Materials**
To test if altitude affects the amount of electricity a windmill creates, I got a fan and a windmill model. The model was connected to a multimeter, which measured the amperes and volts, which could be multiplied to get watts. I measured the watts at two, four and eight inches away from the fan. I also measured the wind speed with an anemometer at those distances. I tested this at four different elevations: 0 feet, 1500 feet, 4000 feet and 7500 feet. I graphed and charted the results.

**Results**
I observed that energy produced in watts at 0 feet elevation was 28% higher than at 7500 feet, although 4000 feet was different than expected, possibly due to a mistake in my operation. Results were similar regardless of distance from the fan.

**Conclusions/Discussion**
I can therefore support the idea that all things being equal, windmills will create more electricity at lower elevations rather than higher ones.

**Summary Statement**
My project tests how elevation affects the amount of electricity a windmill creates.

**Help Received**
Parents helped type report, drive me to places, and encouraged me.