CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)
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Project Number
J0905

Project Title
Wind Farming the Fertile Pavement of the San Joaquin Valley

Abstract

Objectives/Goals
Can wind generated from from highway traffic be captured to produce a useable source of energy.

Methods/Materials
First year: I used a Turbo Meter wind speed indicator to determine if there was more wind produced from the traffic along Highway 99 compared to my control site. Second year: Based on the results of the previous year, I built a prototype Savonius wind turbine from a kit. For the field trial I modified the turbine, attached a volt meter and returned to the same locations as the previous year attempting to capture the wind generated by the traffic.

Results
First year: Wind speeds at Highway 99 resulted in an average net gain of 1.72 kph above the control site. Second year: The cut-in wind speed for my Savonius wind turbine is 6.4 knots. The average of the wind speed readings taken along Highway 99 was 1.29 knots. At the control site it was .74 knots showing a net gain of .55 knots generated by traffic.

Conclusions/Discussion
First year: More wind was produced along Highway 99 than at the control site. Second year: Although a net gain of .74 knots was generated by traffic along the highway, the cut-in wind speed was too high to make that gain capturable by my Savonius in its current design. I was able to test my turbine on a very windy day and highway traffic produced 1.62 more volts than the control site. Design modifications are needed to compensate for the cut-in wind speed.

Summary Statement
Can the wind that is produced by highway/freeway traffic be captured and utilized to generate energy.

Help Received
Financial support and a second set of hands provided by parents.