CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY

Name(s)
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Project Number
31427

Project Title
Energizing Alternatives

Abstract

Objectives/Goals
The objective of my experiment was to compare power generated from a solar cell and wind turbine to determine which is the better alternative for the use in my community, given our unique weather conditions.

Methods/Materials
The experimental method involved designing and building the solar cell and the wind turbine apparatuses, researching weather conditions over the course of a year, interviewing subject matter experts, collecting current and voltage data, calculating power and energy, and finally drawing conclusions on which power source would be better given local sun and wind conditions.

The materials we used were photovoltaic cells, 2 dc motors, wire, PVC pipes, fan blades, multimeter, and wood and mounting materials.

Results
The total annual energy generated from the solar apparatus would be 132.48 watt-hours per year, verses 377.04 watt-hours generated per year from the wind apparatus. Based solely on my data, wind is the better alternative for my community.

Conclusions/Discussion
When only looking at the data, wind power is the better alternative for my community due in large part to the number of hours per day that power can be generated and the fact that voltage and current increased with greater wind speed. However, when I factor in expert opinion from my interviews I conducted, my conclusion is broader, indicating that a mix of alternative energy resources is actually optimal. This takes into account economic factors and timing of a typical energy consumption.

Summary Statement
"Energizing Alternatives" is about comparing solar and wind power for my commmunity to determine which would be the better alternative source of energy.

Help Received
Father helped brainstorm project idea with me,and built apparatus together.