



**CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY**

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Project Title Hydro vs. Aero	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals To identify which type of natural energy source is more efficient. A hydroelectric Dam, or a Wind turbine.</p> <p>Methods/Materials These are the materials we used to make our model of the more efficient hydroelectric dam and wind turbine: 7 90 degree angle plastic tube #; Large piece of reinforced Styrofoam; 2 120 degree angle plastic tubes #; 90 degree angle plastic tube 1/2; 10 foot plastic tube; Plastic valve 1/2; Sheet Plastic; 10 plastic cups; Voltmeter; Pinwheel; Plastic 1 Gallon container; 2 small electric motors; 4 electrical wires; Electric tape; 4 Washers; Super Glue; Pipe Glue; Elmer Glue; Drill; Sander; Circle saw; Blades; Pipe cutter; Screw driver; Large Tray; 135 gallon per hour / water pump; Vinyl tube; Hair dryer stand.</p> <p>Methods: We assembled all these parts into a miniature hydro electric dam and a wind turbine. We then tested the voltage of each electric source, and recorded the results.</p> <p>Results</p> <p>Results Water Turbine 1st Trial 2nd Trial 3rd Trial 4th Trial Voltage Given 3-5volts 2-4volts 5-6volts 1-3volts Time 1 Hour 2 Hours 30 Min 5 Hours</p> <p>Results Air Turbine 1st Trial 2nd Trial 3rd Trial 4th Trial Voltage Given 7-12Volts 7-12Volts 7-12Volts 7-12Volts Time 1 Hour 2 Hours 30 Min 5 hours</p> <p>Conclusions/Discussion We have concluded through research and the actual experimentation that our hypothesis was both correct and incorrect. On the correct side we saw that it is more efficient to have a hydroelectric turbine rather than a wind turbine. In a water turbine you have a constant flow of energy throughout the day and night, As to where a wind turbine is only functional when the wind blows with enough force in that direction. Also winds are very scattered at times making it very difficult for the turbines to change wind direction, which consumes energy in itself. On the incorrect side the wind turbine produced 100% more energy than the water turbine. Therefore we have come to the conclusion that both are equally efficient. They both have their flaws but compensate for them in their strengths.</p>	
Summary Statement To determine what type of natural energy source is more efficient, Water or Wind	
Help Received Father helped us choose the parts and drove us.	