



**CALIFORNIA STATE SCIENCE FAIR  
2008 PROJECT SUMMARY**

<b>Name(s)</b> <b>Michael C. Ray</b>	<b>Project Number</b> <b>S0813</b>
<b>Project Title</b> <b>The Weight to Energy Efficiency of a Hydrogen Peroxide Powered Tesla Turbine</b>	
<b>Abstract</b> <b>Objectives/Goals</b> This project is the result of the search for a cleaner alternative energy source. Because hydrogen peroxide produces only water and oxygen as a byproduct of its breakdown, it is one of the cleanest fuels in the world. This project is a test of whether a hydrogen peroxide powered Tesla turbine has more energy than a battery of the same weight. <b>Methods/Materials</b> This project uses 30% by weight hydrogen peroxide in a conventional Tesla turbine. Catalyzing the hydrogen peroxide and running it through the turbine, then measuring the electrical output obtains the energy content. By dividing the energy content by the weight, the weight to energy efficiency of the apparatus is obtained. <b>Results</b> In order to achieve a higher weight to energy efficiency than a NiMH battery, the turbine must achieve about 50% efficiency in converting the energy efficiency of the hydrogen peroxide into electrical energy. Currently Tesla turbines can achieve efficiencies of 80 to 95%. <b>Conclusions/Discussion</b> This project proves hydrogen peroxide as a viable alternative to batteries and other portable energy sources. The benefits of this project are that it also details a system for the application of hydrogen peroxide as a fuel source.	
<b>Summary Statement</b> This project is an attempt to provide a cleaner alternative energy source that would replace batteries as a mobile energy source.	
<b>Help Received</b> Mother helped check grammar in report; Dad checked experiment for safety and correctness; Chemical reaction information discussed with uncle (Tom Sliga) as well as Dr. Joel Burley of Saint Mary's College.	