



**CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY**

Name(s) Michael A. Connors	Project Number 34538
Project Title Electromagnetic Capture of the Energy of Wave Motion: Translational vs. Rotational Capturing Mechanisms	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of my project is to try to find a cheap and efficient source of alternate energy. The objective of my project was to harness the motion of waves as a source of alternate energy. My experiment was to determine whether more energy can be captured from the translational motion of waves than the rotational motion of waves.</p> <p>Methods/Materials For the translational test, the waves moved a platform of styrofoam, aluminum, and weights up and down, that was connected to a wire, that was connected to a lever that amplified the total linear motion by almost 3 times. For the rotational test a blade rotated side to side with the motion of the waves and had a gear attached to it in order to translate the rotational motion to linear motion that could make the magnet go through the generator coil. The gear was connected to a wire connected to the lever. The other end of the lever had a wire that had a neodymium magnet attached to it, dangling inside of the generator coil with 3000 feet of copper insulated wire wrapped around it. It was connected by alligator clip wires to an electrical circuit on a breadboard consisting of conductors and semiconductors. The electrical circuit was connected to an arduino with a LCD that read out the accumulated charge.</p> <p>Results The translational mechanism captured on average about 11% more electricity than the rotational mechanism.</p> <p>Conclusions/Discussion The results that I gathered supported my hypothesis, that the translational motion of waves would capture more energy than the rotational motion of waves. In the future if I am going to try to capture energy from wave motion I know to use the translational motion of waves not the rotational motion of waves.</p>	
Summary Statement My project was about finding an alternative source of energy from the motion of waves and determining whether the rotational motion of waves captured more energy than the translational motion of the waves.	
Help Received My uncle helped me with concepts and brainstorming design ideas.	