



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Vincent M. Spadone	Project Number J0828
Project Title Wave Power	
Objectives/Goals My objective was to make a floating device similar to a buoy that would generate electricity using the constant motion of the ocean.	
Abstract Methods/Materials Based on the Faraday shaking flashlight concept, a small floating device was created to generate energy using the motion of the ocean. Using a 2-liter soda bottle cut in half, a plastic tube, copper coil, magnets, Styrofoam, silicone, metal rod, a light emitting diode (LED), and rubber bands, a small floating model was made. The bottle was cut in half and fitted around a piece of Styrofoam. Copper wire was wrapped around a hollow plastic tube and attached to an LED light. The plastic tube was placed through the center of the Styrofoam and the bottle placed overtop and sealed with silicone. A strong magnet was placed on top of a metal rod and attached to a base for weight. Large rubber bands were attached to the bottle and base to keep the rod and floating device together. The floating device was placed in water to test.	
Results The final project design was able to light the LED when bounced up and down. In a controlled test, the buoy was moved manually to simulate the ocean. As the top part moved, the rubber bands kept the rod attached to the float causing the magnet to move up and down through the copper coil. As magnet passed through the plastic tube and copper coil, the LED flashed. More testing was done at the marina. When the water was calm, the rod did not move. When boats passed by, the wakes caused the surface water to move which moved the magnet through the coil to power the light.	
Conclusions/Discussion The movement of the ocean can be used to generate electricity. The efficiency of this prototype can be improved. For example, the rod is starting to rust and the rubber bands and weight need to be adjusted to match the force of the wave motion. More testing needs to be done in the open ocean. A more advanced design could actually store energy in a battery and quantitative tests could be run to see how much voltage is being made. The application of this concept is unlimited for future renewable energy resources.	
Summary Statement I created a floating device with magnets and copper coil that can generate electricity using the surface motion of the ocean.	
Help Received My mother helped proofread my report, drive me to stores and test sites, and assist with silicone glue	