



**CALIFORNIA STATE SCIENCE FAIR  
2006 PROJECT SUMMARY**

<b>Name(s)</b> <b>Mariel T. Williams</b>	<b>Project Number</b> <b>J0733</b>
<b>Project Title</b> <b>Ride the Energy Tide</b>	
<b>Abstract</b> <b>Objectives/Goals</b> My main objective for my project was to find whether or not it was possible for me to create a new way to generate energy from the power of waves, and if it could be cost competitive to that of a nuclear power plant. <b>Methods/Materials</b> I first brainstormed different plans for the model. When I finally chose the most effective of plans I started a list of materials and a projected procedure for my project. I first decided that I would use a shake-powered flashlight to represent the main production area. I then started the construction of a Plexiglas, sloped wave tank to best simulate the ocean floor, then created the handle and paddle on the front face of the tank that pushes the water into a wave when the model is full of water. When the wave surges it hits another paddle that is attached a bridge on the top of the tank holding the flashlight. In the flashlight I first removed the outer barrier and the bulb. In the handle area of the flashlight there is a magnet that moves in and out of a wire coil as the flashlight is shaken and creates an electrical surge. In the absence of a bulb I placed a plastic rod and bearing that connects to the magnet on one side and the moving paddle on the other. So as the paddle is moved by the current the magnet moves through the coil creating an electrical force. Finally I used a soldering iron and glue gun to attach two prods of an electrical gage to the main production center in the flashlight so that I was able to monitor the energy production. <b>Results</b> For my project I took the average power produced on my model and scaled it up to the same production rate and corresponding cost as a chosen local power plant. The overall cost for a nuclear power plant like SONGS with a 25 year life span would be \$15,050,000,000. Also the cost per year would be \$602,000,000. Over an equal life span to that of SONGS the overall price of a wave energy generator would be 14,945,625,000. Also, the price per year of a 25 year lifespan would be \$597,825,000. Therefore, my model of a possible wave generated electricity center is cost competitive to nuclear power plants. <b>Conclusions/Discussion</b> One of the greatest conclusions that I came to during the course of my project was that the concept of wave generated energy is one that could be an incredibly successful and appropriate decision for an alternate energy in coastal communities, being that it has great economic and environmental benefits.	
<b>Summary Statement</b> I created a wave generated energy production model and then I compared it's cost to a nuclear power plant's.	
<b>Help Received</b> Father helped prepare materials.	