



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

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Project Title Pull the Plug on Wasted Energy	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of this experiment was to determine if common household devices that remain plugged in during the time they are not being used would consume a significant amount of electricity. I believed that appliances would vary greatly in the amount of energy they consumed while 'off', but still plugged into an outlet.</p> <p>Methods/Materials In this experiment, 16 different household electrical appliances were tested using two 'Kill a watt' power meters, which measure the kilowatt hours used by an appliance. Each device was tested in its 'on' state for 30 minutes. The devices were also tested in their 'off' state for 5 hours; measurements were recorded at the end of the time interval.</p> <p>Results After 100 hours of testing, my results showed the computer (CPU) consumed the greatest amount of electricity when it was in its 'off' state. The computerized washing machine consumed the second greatest amount of electricity in its 'off' state, and the next greatest was the computer monitor. Assuming a 15 cent per kWh cost, this electrical consumption would amount to approximately \$130 a year. While \$130 might not seem like a great deal of money, this money also represents wasted energy. It was also noted that one of the appliances that was tested had lights on during its 'off' state, but the 'Kill a watt' meter did not register any electricity being used. A more sensitive, expensive metering device may be required to detect some of the lower, steady consumers of electricity.</p> <p>Conclusions/Discussion While each individual device may not use a great quantity of electricity in its 'off' state, having many appliances plugged in over time may amount to a significant waste of electrical energy. If every household across America wastes energy needlessly in this manner, it can add up.</p>	
Summary Statement The purpose of this experiment was to determine if common household devices that remain plugged in during the time they are not being used would consume a significant amount of electricity.	
Help Received Thanks to my science teacher who gave me guidance and encouragement. Thanks to my parents for supervising my testing.	