



**CALIFORNIA STATE SCIENCE FAIR  
2004 PROJECT SUMMARY**

<b>Name(s)</b> <b>Magda T. Langiewicz</b>	<b>Project Number</b> <b>J0819</b>
<b>Project Title</b> <b>How to Eliminate the Energy Crisis in California</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> My objective was to prove that the energy crisis in California could be solved by use of energy efficient lighting in each household.</p> <p><b>Methods/Materials</b> I've created a survey asking how many light bulbs on average there are within a household, the type of lighting used, number of hours used, and the wattage of each bulb. I've calculated the energy usage used for lighting per day, month, and year. By analyzing a data I've estimated how much energy could be saved by use of energy efficient lighting. I have estimated how much energy we would save if we replace one, three, five incandescent bulbs or 50%, 75% and 100% of incandescent bulbs with fluorescent bulbs.</p> <p><b>Results</b> My results were that the average energy usage for lighting per household is 2.426 MWh. The average incandescent light bulb energy usage is 2.233 MWh, and the average fluorescent energy usage is 0.193 MWh. The total energy saved per household is 0.773 MWh and the average wattage of an incandescent bulb is 60 Watts. The average number of incandescent bulbs is 40, the average number of fluorescent bulbs is 8 in each household, so the average total number of bulbs is 48 and the average hours the light is on through the year is 1224.2 hours. Changing three bulbs in each household in San Diego County would preserve the amount of energy produced by the San Diego Kearney Power Plant. On the other hand, changing five light bulbs in each household throughout the state would preserve more energy than the capacity of the Diablo Canyon; the largest nuclear power plant in California.</p> <p><b>Conclusions/Discussion</b> The statistical analysis of my data shows that if we were to convert all or many of our incandescent light bulbs to fluorescent lighting we would be able to reduce or even eliminate energy shortage through the San Diego county and the state. My project has encouraged people to be more concerned about energy usage, its shortage and methods of preserving it.</p>	
<b>Summary Statement</b> My project shows how to reduce the energy shortage in California by using energy efficient lighting, "smart lighting".	
<b>Help Received</b> 100 survey participants provided information about energy usage for lighting within their household and my father for guiding me through my project.	