



**CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY**

Name(s) Lauren A. Zeidler	Project Number J1145
Project Title Generic vs. Brand Name Light Bulbs: A Bright Idea?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of this experiment was to determine the actual lifespan of incandescent light bulbs and to assess whether light output changed over time.</p> <p>Methods/Materials A light meter was placed parallel to the shadow of the filament support in the bulb, using a 0.91 meter stick to verify the distance. Every two hours (whenever possible) the reading on the light meter was recorded along with the date, time, and input voltage. 60 watt GE brand (brand name) light bulbs and ACE brand (generic) light bulbs were tested at 120 volts, 135 volts, 147 volts, and 157 volts.</p> <p>Results At 120 volts, packaging claimed the bulbs would last 1000 hours (42 days) and have a lumen output of 840 lumens. The ACE bulb lasted only 358 hours, and the GE bulb lasted 764 hours. Both became dimmer on average until they finally burned out, but the lowest lumen measurement was 972 lumens. A second set of light bulbs was connected to a variac voltage converter, which was set at 135 volts. This reduced the estimated lifespan to 210 hours. The GE bulb lasted 215 hours, and the ACE bulb lasted 338 hours - over 50% more hours than predicted! Next, the variac voltage converter was set to 157 volts, making the estimated lifespan 30 hours. This time the ACE bulb lasted 36 hours, while the GE bulb lasted 46 (over 50% more hours than predicted). A fourth experiment was performed at 147 volts (since this variac could not be set at 157 volts). The estimated lifespan at this voltage was now 70 hours. The GE bulb lasted 46 hours. The ACE bulb lasted between 54-62 hours (it burned out overnight).</p> <p>Conclusions/Discussion The ACE brand light bulb seemed to be the better buy. On average, the ACE bulbs were brighter than the GE brand bulbs in all four experiments. There was no clear better bulb in terms of lifespan.</p>	
Summary Statement The purpose of this experiment was to determine the actual lifespan of incandescent light bulbs and to assess whether light output changed over time in both brand name and generic brand light bulbs.	
Help Received Mother and father supervised the experiment; Sam Runco and JVC supplied me with the variacs.	