CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY

Name(s)
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Project Number
J2029

Project Title
Are Energy Efficient Light Bulbs Really Worth Their Cost?

Abstract

Objectives/Goals
My project is about finding the best type of energy efficient light bulb. The purpose of this project is to inform people about the type of bulb that is truly most worth its cost in order to save people money and electricity.

Methods/Materials
Materials
10 LED bulbs - 60watt replacement, 10 CFL bulbs - 60watt replacement, 7 incandescent bulbs - 60watt, Desk lamp, Watt-meter (to measure electrical consumption), 120 volt power supply (a standard United States wall socket), Clock or timer
Steps for Testing
1. Make sure desk lamp and watt-meter are unplugged. 2. Screw a light bulb into the desk lamp. 3. Plug the desk lamp into the watt-meter. 4. Plug the watt-meter into the wall socket. 5. Set the timer for 10 hours. 6. Turn on the lamp and start the timer at the same time. 7. When the timer goes off, record the kilowatt hours, volts, AMPs, and watts indicated on the screen on the watt-meter. 8. Repeat for the other 29 light bulbs.

Results
As a result of my experiments, I found that of the two types of energy saving bulbs I tested, the CFL was most worth its cost. Based on measurements I collected during my experiment, I calculated the average time it would take for each type of bulb to make up its cost in energy savings. The CFL bulb took about a third as much time to make up its cost as the LED did. These results supported my hypothesis because I hypothesized that the CFL would be most worth its cost. Based on my results, the LEDs were overall more efficient than the CFLs, but their average cost was by far higher than the CFLs#. This high price is what caused the longer repayment time.

Conclusions/Discussion
The data I collected strengthened my hypothesis. My hypothesis stated that if I tested each type of bulb for an equal amount of time, the CFL would be most worth its cost; this proved to be true.
All the energy efficient light bulbs I tested saved enough electricity to offset their high purchase price. The CFLs were the cheapest investment because the LEDs did not have great enough energy savings to make up its high price before the CFL did. If I were to do this experiment again, I would test even more brands and varieties of bulbs to get an even more accurate overall result.

Summary Statement
My project is about finding the type of energy efficient light bulb that is most worth its cost.

Help Received
father purchased my materials, my teacher gave me advice on my project