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Caught Sleeping

This investigation is to find how power management methods (sleep and running) affect the amount of electricity (kilowatt hours) a computer consumes. I hypothesized that if the computer power modes are varied, then the amount of electricity used will be the least for sleep mode.

First, I measured the amounts of electricity consumed in sleep and running modes using an electricity meter (Kill a Watt). The first step is to put the computer into running mode. Then, I started the electricity meter and a stopwatch simultaneously. After a while, I stopped the meter and stopwatch and recorded data. The steps were repeated for sleep mode.

Secondly, basic data analysis (such as comparing average and random error) and statistical analysis (such as normality test, distribution modeling and a t-test) were performed to confirm the statistical difference between the two modes. The data collected and above analysis did support the original hypothesis. The average amounts of electricity consumed for running and sleep modes are 54.45 and 2.36 watts respectively.

These findings have led me to conclude that computer modes do affect the amount of electricity. Sleep mode uses less electricity than running mode. Finally, the conclusion obtained was applied into TCA. I established a statistical model to predict TCA electricity cost saving by putting computer into sleep mode when not in use. With 90% probability, TCA will at least save $1828 per year. In average (50% probability), TCA will save $2104 per year.