

# Innovate to Mitigate

We started this challenge by conducting experiments that simulated the how the atmosphere changes when the environment changes. It was difficult to take this a step farther & create our own test, so we went back to reading articles and were interested in a shake flashlight. We wanted to create our own version to power the life-line of most junior high students, their cell phone. Cell phones don't use a large amount of energy, but when you think about the total used across the country, it really adds up. We really wanted to choose something we could have an impact on.

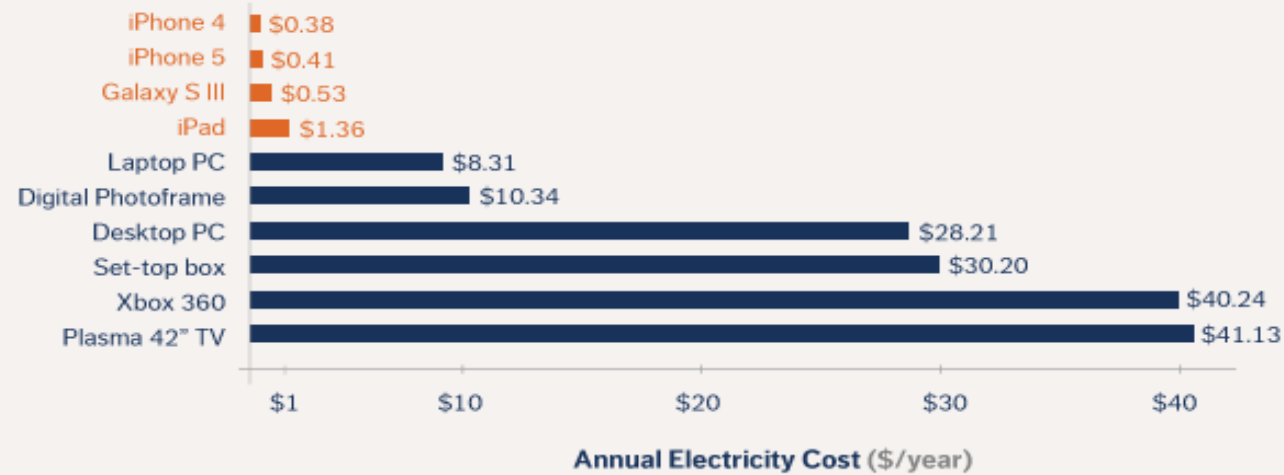
We learned about circuits, tried making our own generator, and wanted to adapt a hand crank generator to charge a cell phone. We were running short on time and decided to use a pre-made hand crank generator when ours was not working correctly. We learned that after many classes of cranking, we could generate about a 1% increase in our battery life every 10 minutes. It would take us about 1000 minutes to charge a dead battery. We learned that this is definitely not a cost effective approach, since it only costs about 40 cents to charge our phones for the year. This challenge really inspired us to think bigger and we wish we had more time to see if we could create a larger generator, perhaps on an exercise bike.



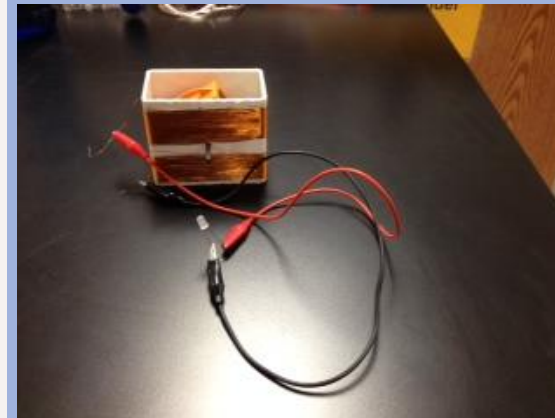
The electricity used annually by the 170 million iPhone 5's purchased in the next 12 months...will be equivalent to powering all the homes in Cedar Rapids, Iowa for a year.

<http://blog.opower.com/2012/09/how-much-does-it-cost-to-charge-an-iphone-5-a-thought-provokingly-modest-0-41year/>

## Smartphones and tablets use dramatically less energy than traditional consumer electronics



Source: Electric Power Research Institute, 2012; iPhone 5 and Galaxy S III (Opower, 2012); Xbox 360 (Hittinger et al., 2012). Costs correspond to in-home electricity usage and are based on the average US residential electricity rate.



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