P O W E R
Power Outlet Wireless Energy Reducer
Proposal

By Grace De Geus, Niloc Quimby,
Nate Pickett, Charles Hathaway

Challenge Definition
As the country works towards becoming more energy efficient and "green", homeowners are looking for ways to play their part in decreasing our use and reliance on electricity. There are a few incentives and aids on the market that can help homeowners improve the efficiency of their homes including companies like Efficiency Vermont.

Although we can cut down on energy consumption by creating more efficient devices, it will ultimately be up to the individual choices we make that allows us to cut down on energy consumption. There are products that can keep devices from draining power while not in use, like smart power strips, and devices that can monitor the energy use of a single power outlet, like the Kill-A-Watt [1]. These products are useful on a small scale, but we are thinking bigger, on a household-wide scale.

Proposed solution
We propose a device that will allow homeowners to monitor their power consumption on a per-device basis. It will be an adapter that will plug into any 3-pronged outlet. This adapter will monitor the power being used by each outlet. Each device will report the power consumption to a central server. Our goal is to allow homeowners to have a device in each outlet in the house, if desired, to optimize the amount of data collected about power usage house-wide.

Competitive Analysis
The advantage of this device, as compared to the Kill-A-Watt, is there is no screen on the device; the data is displayed on the user's computer screen or phone. It will consolidate data from each of the devices in the home and provide the user with analyzed data to show trends and areas for improvement.

There will also be the option to control which outlets are on, giving the homeowner the ability to prevent vampiric drain.

Deliverables
The following are the deliverables of this project.

- Adapter prototype
- Complete documentation including source code and schematics
- Test run results of power use over time of various devices
- A server that will collect, store, and return data through an easily accessible API
- A webpage that will display the collected data by making use of the API
- An Android application that will display the collected data by making use of the API

In short, the adapter prototype must allow the following:

- Allows a device to plug into it and get nearly the same power it would on the native outlet
- Must be able to report the current wattage consumption every *n* seconds to the server software

The server should:
- Store information it receives from the adapters
- Allow retrieval of stored information through a self-explanatory, consistent, API

The web page/App should:
- Display information about each specific outlet
- Display aggregate data
- Allow the user to toggle outlets on/off

In addition to the “product”, we will deliver several case studies and example usages.

References

1: Eugene Water & Electric Board, 2011,
http://www.eweb.org/saveenergy/home/killawatt