A. Ball, N. Jen, A. Sterk, K. Wiersma

ENGR 339-A: Project Description

Due on 15 September 2010

Prof. VanderLeest 2:30 pm

1 Problem Statement

Electric panels today are basically the same as a few decades ago, despite the rapid advances in technology. This can be limiting not only for power companies but also for the consumers. As the price of electricity continues to increase, homeowners are becoming more concerned with how their electricity is being used. Unfortunately, the average homeowner has no easy or cheap way to monitor specifically when and where the power is used.

2 System Requirements

- The project shall not interfere with the expected delivery of power.
- The project shall provide “realtime” information regarding the distribution and consumption of power within the home.
- The project shall have a simple and easy-to-use interface.
- The project shall be modular, extensible, and scalable.
- The project shall accommodate local power generation (such as solar or wind) with the same monitoring as required above.
- The project shall store its settings in a non-volatile way.
- The project shall be tolerant of power outages.
- The project shall take measurements with at least as much accuracy as a conventionial power meter.
- The project shall monitor and report the status of the breakers in the breaker panel.

3 Block Diagrams

The following block diagrams describe the various aspects of the system. Figure 1 shows the scope of the project in that this project will reside primarily inside the electric panel. Figure 2 describes how the smart meter will coexist with the components that already exist inside a typical electric panel. Figure 3 shows the wireless base station that would store data and provide the internet link.

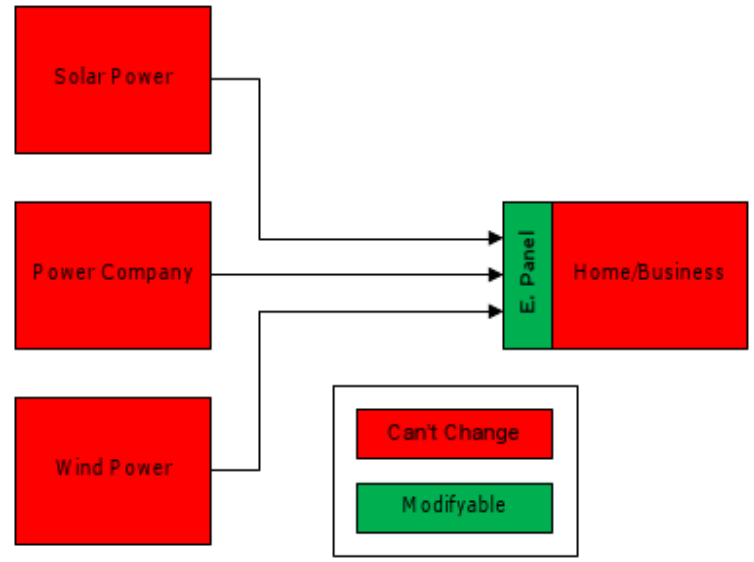

Figure 1: Scope of the Smart Meter project.

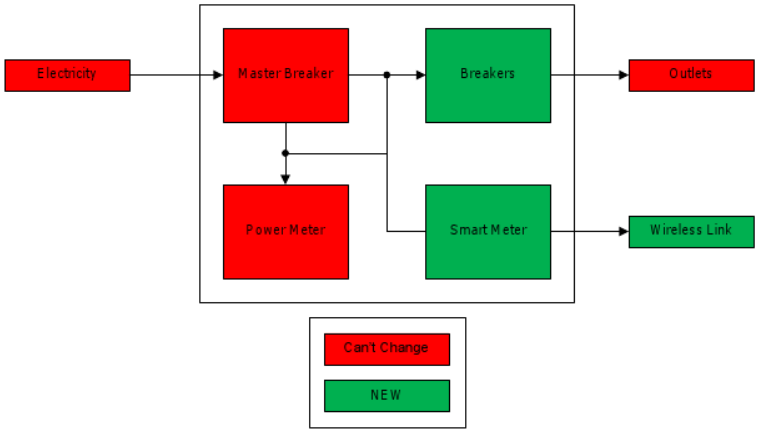

Figure 2: Smart meter Electric Panel.

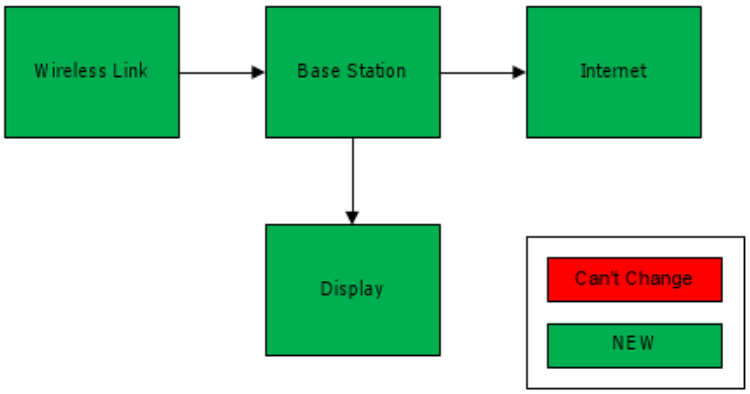

Figure 3: Wireless Base station.

4 Task List

1. Digially Controlled Breakers – Amy
2. Electric Panel Smart Meter – Kendrick
3. Wireless Base Station – Nathan
4. Digital Signal Processing – Avery
5. Communications Protocols – Team