**Memo**

To: Professor Pisano

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Team: 15

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Subject: First Prototype Report

1. **Hardware Prototype**

1.1 Setup

The setup of our hardware prototype consisted of a pair of solar panels connected back-to-back in series (to conceptually represent the bifacial solar panels) in a circuit with a solar charge controller, lead acid battery, battery monitor, and a small light bulb serving as a test load.

1.2 Test Procedure

Once the circuit is fully connected, the readings on the solar charge controller and battery monitor can be read. The light bulb should be lit as well, but is most likely being powered by the battery rather than energy from the solar panels. Placing one of the LED light sources in the lab against one of the solar panels and turning it on demonstrates how the circuit behaves when it is exposed to more light.

1.3 Measurable Criteria

A successful test is marked by accurate readings being displayed by the solar charge controller and battery monitor. In addition, the solar panels should be able to power the load (lightbulb) as well as charge the battery with excess power when the LED lightsource has been turned on.

**2.0 Software Prototype**

2.1 Setup

To demonstrate our current prototype of the web server, all the setup required was a laptop. Two terminal windows were used to open the application and backend server.

* 1. Test Procedure

After starting the application, it was demonstrated how to sign up, log out, and log in a user. It was then shown how to add and update solar arrays in the database. Our demonstration of the server also included how a user would add a solar array to their profile. To demonstrate how our remote application will update in real time later on, database values were then changed and the webpage was refreshed, displaying the updated values.

* 1. Measurable Criteria

The ability to store login information as well as other information linked to a user profile such that it can be accessed after logging in is one of our main measures of progress. Additionally, both being able to access and update solar arrays in the database, as well as the server displaying the most up to date information on an array.

**3.0 Conclusions**

Good progress has been made on the remote application aspect of this project, and it will continue being improved on for the remainder of this semester as well as in the second half of the year. In terms of hardware, the team has gained a better understanding of the different components of putting together a small scale solar power plant. Now that our project definition/what our client wants has been finalized we will begin making noticeable progress in the hardware area, and aim to catch up to the software side of the project. Most importantly, although we need to work quickly, our priority must be on ensuring safety when working with batteries/supercapacitors.

Progress also has been made on the circuitry of control system for the reflector and monitoring system. Moving forward we will keep working on those and come up with a some sort of small housing to keep the circuitry of our monitoring and control system.