

Group number: DEC1706

Project title: Renewable Energies Lab

Client &/Advisor: Prof. Ajarapu

Team Members/Role:

Leader: Travis Merrifield

Webmaster: Erika Korhonen

Communications: Noah Chartouni

Idea Holder: Josh Pahl & Steve Ukpan

- **Weekly Summary**

The main goal of this week was to brainstorm ideas for a system to model in our lab. We had three systems we wanted to explore; Solar Train, Charging Station and Home/RV. We generated pros and cons of each, as well as how we would implement the system in a lab exercise. Most of the time was doing research on model trains. There was a surprising lack of information on size and power of the motors within the models. For the Home/RV model we generated a table that would estimate the power consumption general appliances. We selected appliances that would allow us to power throughout the night given our currently purchased batteries.

- **Past week accomplishments**

- General analysis, of the three systems (solar train, charging station and home/rv)
- Learned a lot about scaling of model trains and different types of DC motors.
- Generated a chart to estimate the power draw of electronics through the night.

- **Individual contributions**

<u>NAME</u>	<u>Hours this week</u>	<u>HOURS cumulative</u>
Elika	8	66
Josh	8	58
Noah	8	49
Travis	12	63
Steve	7	54

- **Elika:** Participated in the brainstorm session and other meetings to generate project direction ideas. I researched many types of model trains, their associated parameters, and feasibility. I also came up with different ways it could tie into the existing solar powered setup and be implemented as a new lab.
- **Josh:** Helped develop and brainstorm the ideas for loads that we could model for the EE 452 lab. We came up with several ideas such as a solar powered train and a RV load. Most of the time was spent thinking about the model train and how we could make that work with the lab to make a more enjoyable experience for the students that still highlighted the necessary points. We also came up with a model for an RV/home type deal.
- **Noah:** Brainstormed ideas for possible loads we could simulate using our solar panel in the lab. Researched pricing of model trains and necessary equipment.
- **Travis:** Researched the model trains and learned about how they are scaled. Learned about dc motors and how power related to torque and current. Worked with Josh to make the power consumption table. Refined the Project plan.
- **Steve:** Researched documents on solar train system implemented in India & UK. Attempted to implement series controller to simulink model

- **Plan for coming week (please describe as what, who, when)**

- **Elika:** Continue studying the feasibility and scalability of our team's train and mobile RV idea. We will present a const analysis of the train and RV models to determine which one is better for students to work with.
- **Josh:** Help to finish up the simulink model and start the cost analysis of our different loads. I'm thinking I will help with the cost analysis of the RV mostly and jump in and help where I can on the Solar train.
- **Noah:** Continue to develop ideas for the solar train to draw more power from the panels. Look at feasibility of different solutions and discuss them with the rest of the group.

- **Travis:** Start cost analysis of the solar train and the home/rv. Finish the simulink model.
- **Steve:** Cost analysis of our systems & modify simulink model to deliver maximum power/continuous voltage from the array

- **Summary of weekly advisor meeting**

We presented this week over the three systems we could model for the lab. Professor Ajarapu liked the solar train and the home/rv ideas. Next time we need to have more details on the two subjects to include cost analysis.