EE 491 WEEKLY REPORT 12 ***Date: 4/17/2017***

Group number: DEC1706

Project title: Renewable Energies Lab

Client &/Advisor: Prof. Ajjarapu

Team Members/Role:
Leader: Travis Merrifield
Webmaster: Elika Korhonen
Communications: Noah Chartouni
Idea Holder: Josh Pachl & Steve Ukpan

- **Weekly Summary**

  Most the time this week was spent working the on final model design of the PV system. Because of complications, the model needed a series charge controller in order to make the system work. Without this controller, the MPPT would either see an equivalent resistance that is to low to reach max power or the simulation errors out. Elika was kind enough to bring his personal model train from home. We were able to conduct tests on the train and were able to measure the voltage range and stall current. We connected the train to the Boost Converter provided from previous groups and made conclusions from our experimentation.

- **Past week accomplishments**
  - Finished simulinks models for DC and AC loads.
  - Experimented with a train and boost converter.
  - Started and put a large dent in the final presentation.

- **Individual contributions**

NAME	Hours this week	HOURS cumulative
Elika	7	79
Josh	8	72
Noah	7	63
Travis	12	79
Steve	7	68

  - **Elika:** Brought my model train and tracks to school and experimented with the feasibility of using a train for the final model. I learned about a potential issue the boost convert presents and worked with Travis on different aspects of where we could go with the project.
  - **Josh:** Spent some time working with Travis on the simulink model trying to solve some of the issues that we were seeing with the model that we were using for the solar panel system. Also tested the boost converter to make sure it worked and did some experimenting with that and the train. Contemplated different ideas for how we could convert the the train lab into 4 workstations.
  - **Noah:** Researched the possibility of induction load. Looked at other options for the AC portion.
  - **Travis:** Spent many hours working on the simulink model. Created a DC and AC model and ran simulations to show conservation of energy. Helped the rest of the team experiment with the train and researched a new buck booster to be used next semester.
  - **Steve:** Worked with demonstration of train model for the lab. Brainstormed ideas for final presentation.

- **Plan for coming week**
  - **Elika:** Create a short video demonstrating the usefulness of the train as a teaching tool. This involves powering the train directly from the solar panels and making sure we don't push it past its limits. I also need to create content and rehearse for the final presentation coming up next week.
  - **Josh:** Rehearse for the final presentation as well as keep looking into how to make the different workstations feasible while maintaining the main ideas of what we would like to teach in the 452 labs.
  - **Noah:** Work with the team on the presentation and continue more research on

AC loads.

- **Travis:** Work on the final presentation. Spend some time working on the code for the charge controller; making it more efficient and adding load switch parameters. If time permits, investigate/fix how the model performs if there is not a charge controller present.
- **Steve:** Demonstrate our concept for the train model identify issues and brainstorm routes we can take to fix them. Work on finalizing the final presentation

- **Summary of weekly advisor**

  Professor Ajjarapu was not able to attend our meeting this week due to other obligations, so we met with our grad assistant instead. We discussed the model and how other teams have had the same issues as us. We spent a lot of time talking about the charge controller code and how to make it better. We finished by showing him a brief demo as to how a booster device can vary the voltage and thus the speed of our train.