
EE 491 Weekly Report 9

4/3/18 – 4/10/18

Group 11

High-Level Design of a Distribution Microgrid

Client: Alliant Energy

Advisor: James McCalley

Nick Stitzell – Communications Engineer

Minoru Fernando – Research Engineer

Joe Thurin – Power Engineer

Taylor Murphy – Power Engineer

Remo Panella – Data Engineer

Project Objective:

Create an excel document that estimates the cost of incorporating distributive generation and storage into a microgrid system at Nichols, IA.

Weekly Summary:

This week we have begun our final prototype design of the semester. At the end of this semester we will be presenting our final prototype to Alliant Energy, and then will be sharing the design with the EE 491 panel. We continued improving the excel design to be more organized in its calculations and presentation of inputs/outputs. We've done this by separating each task of the prototype into its own tab and by creating separate input and output tabs at the very beginning with graphs depicting the year-long simulation. The graphs help us and the clients quicker visualize all of the information being outputted through the simulation and the corresponding equations.

Past Week Accomplishments:

Last week we presented our second prototype to Alliant and discussed the direction of the design. We have decided to use our MATLAB simulation as a base for creating the excel simulation, rather than including the MATLAB simulation in our deliverables. This is because Alliant would like an easy to understand, singular location for all of the calculations, tables, inputs, and outputs of the

microgrid design. We will continue to work on a MATLAB simulation as it will be able to simulate long durations without entering in every input by hand.

Pending Issues:

We don't know how presentable our MATLAB simulation will be by the end of the semester for the panel. We don't have a script, rather we've been copying our inputs from excel and pasting them into MATLAB to run the simulation. Ideally, we would like to write a script in MATLAB that allows the user to input information into a table and MATLAB spits out the calculated outputs with visual representations of the simulation. We haven't gotten far enough in this design yet for it to be deliverable to the panel.

Individual Contributions:

Team Member	Contribution	Weekly Hours	Total Hours
Nick Stitzell	Continued improving project plan, continued implementing user manual	4.5	38
Minoru Fernando	Estimated load profiles for months with missing load data	4	33
Joe Thurin	Started re-formatting V3 to be more user friendly, expanded V3 to 31 day simulation, began integrating solar profiles from research	5	48
Taylor Murphy	Integrated new solar profiles into V3 prototype, updated project plan research descriptions	5	34
Remo Panella	Created menu tools for Matlab simulation, continued designing simulation	7.5	37

Plans for the Coming Week (4/3/18 – 4/10/18):

- Nick
 - Finalize the website
 - Upload all information left
 - Complete bios

- Include all weekly status reports, project plans, and design documents
 - Prepare all materials for presentation
- Remo
 - Continue creating the simulation in MATLAB
 - Plan to have it completed before 4/24/18 (panel presentation day)
 - Preferably before so that we know how to operate it and are able to troubleshoot
- Joe
 - Finish prototype V3 (excel) extension to 31 days
 - Finish incorporation of all load and solar profiles from Minoru and Taylor.
 - Adjust format of V3 (excel) to be more user friendly
- Taylor
 - Finish prototype V3 (excel) extension to 31 days
 - Finish incorporation of all load and solar profiles
 - Adjust format of V3 (excel) to be more user friendly
- Minoru
 - Continue designing user manual
 - Prepare materials for presentation
- Alliant Energy

Summary of Client Meeting (4/10/17):

- Will be having a presentation for Darin and Logan from Alliant next Tuesday
- Will be delivering our finalized excel design to Alliant
- Will demonstrate our incorporation of MATLAB into the design
- Solar panels in Madison, WI can be used for our design
 - Solar resource calendar
 - Winter, more overcast and constant
 - Summer, more variable