
EE 491 Weekly Report 10

4/10/18 – 4/17/18

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 are wrapping up our design to present to the panel of judges on April 24th. We've continued to work on the prototype by hand editing to represent a full year of simulations. Our matlab prototype isn't far enough along to be presentable as a finished product, so we have dedicated time this week to getting it to a point that is presentable and beneficial for showing our long term simulation. Our team has also began to put together a final presentation for the panel. We would like to have the entire design ready to go by next Tuesday the 17th so that our last client meeting of the semester will be a mock final presentation, which we will give to Alliant energy.

Past Week Accomplishments:

Last week we finished our second version of the Project Plan. This project plan is still not complete, so we will need to finalize it by the end of the semester. We met with Alliant energy to go over our current prototype and to discuss our deliverable for the end of this semester. At the end of this semester, Alliant would like an excel spreadsheet that is able to simulate a full year of load data and to have a reasonable estimate for outputs from the user defined environment. Alliant will continue to be

collecting load data from Nichols, IA for us over the summer for us to include in the design when we return to classes in the fall.

Pending Issues:

Our MATLAB simulation is not as far along as we had hoped at this point in the semester. We've had difficulty creating an input script for the user that incorporates all of the calculations from the current excel prototype. Therefore we will need to improve the format for it to be presentable to the panel of judges. We will not be able to get it to a finished design, but we should be able to demonstrate its usefulness in testing the excel simulation.

We are having a difficult time in excel with referencing between tabs. This is necessary for our deliverable product because we would like two condensed tabs for input and outputs, then separate tabs for calculations.

Individual Contributions:

Team Member	Contribution	Weekly Hours	Total Hours
Nick Stitzell	Finished the second version of the project plan, began working on the final version of the project plan, completely updated the website, began a final presentation in PowerPoint for the panel	15	53
Minoru Fernando	Continued estimating load profile on monthly basis, finding mathematical ways to represent monthly profiles, project plan updates	12	47
Joe Thurin	Continued reformatting V3 prototype, continued assisting Remo with MATLAB design	13	61

Taylor Murphy	Continued troubleshooting solar profiles and began adding visual representations for the outputs tab, reformatting of the inputs tab, continued assisting Remo with MATLAB design	13	47
Remo Panella	Continued with MATLAB input processing and the analysis design. Also built testing document.	12	49

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Plans for the Coming Week (4/10/18 – 4/17/18):

- Nick
 - Complete final version of project plan
 - Work on a high-level testing plan
 - Continue working on final presentation
- Remo
 - Get MATLAB to a point in which it is presentable to the panel
- Joe
 - Finish formatting for the excel design
 - Finish power calculation for Nichols
 - 100%
 - 90%
 - 80%
 - Assist with MATLAB design
- Taylor
 - Finish formatting for the excel design
 - Finish power calculation for Nichols
 - 100%
 - 90%
 - 80%
 - Assist with MATLAB design
- Minoru
 - Complete final version of project plan
 - Work on a high-level testing plan
 - Continue working on final presentation
- Alliant Energy

Summary of Client Meeting (4/17/18):

We pitched our final design to Alliant Energy and they were very pleased. Our design has exceeded their expectations and they are excited to bring us to their office in the fall to give a full presentation to some of their directors of the distribution engineering department. Our team also concluded that it may be feasible for us to add elements of economic projections into the scope of the project. This will be revisited in the fall.