EE 491 Bi-Weekly Report 4

10/9/18 – 10/22/18

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.

Summary:

This week can be summarized by two things, VBA and PIRM 2. Our team has been researched and tinkering with integrating a VBA program with the excel prototype to generate more detailed simulations. For example; rather than using 5 different templates for solar radiation and weather days, we can use 100. And instead of running one simulation, we can run 10,000. This took up most of our time for the last couple weeks. As for PIRM 2, we used VBA and grid forming as our main technical challenges. We are no longer using MATLAB, as was requested of our clients last meeting, and will instead by diving deeper into a VBA integration since it is nicely compatible with excel.

Past Weeks Accomplishments:

Last week we received our newest load data from Alliant and used this to enter in our new information and improved the user interface for the prototype.

None of us has VBA experience. This means toying with different functions and researching how to use it. It seems fairly intuitive, so it shouldn't be much of an issue.

Individual Contributions:

Team Member	Contribution	Weekly Hours	Total Hours
Nick Stitzell	Status Reports and PIRM 2 construction, prepared materials for Alliant, VBA	4	71
Minoru Fernando	Assisted on VBA	3	60
Joe Thurin	Began VBA program and finished the one button input	7	78
Taylor Murphy	VBA, assisted with one button input	4	61
Remo Panella	VBA, researched demand and growth of Nichols, was sick for a week and wasn't able to meet with us regularly	2	61

Plans for the Coming Weeks (10/8/18 – 10/22/18):

- Finalize the quantity calculations
- Continue working on VBA to be able to output the combinations of panels and batteries that give <=5% excess demand
- Plot the reliability vs the cost

Summary of Client Meeting and PIRM 2 (9/27/18):

PIRM 2 from 10/18/18

- We need to flesh out a list or image of what our final design will be
- In our final report and poster, we need to clearly explain why we are using excel and what the point of the simulation is

Client Meeting from 10/18/18

- Confirmed that reliability will not be a part of the design
- Transmission costs will be negligible
- Alliant would like to set up a time for us to give them a final presentation since they won't be able to be at the deadweek presentation