EE 491 Bi-Weekly Report 5

10/23/18 – 11/5/18

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:

Our team has spent this whole report term working on integrating VBA into our simulation tool. It's been a slow and detailed process, since we haven't had any prior experience with VBA. This is the last major component of the design and then we will begin packaging the design together for delivery to Alliant and presenting for senior design.

Past Weeks Accomplishments:

The past few weeks prior to this report term was the beginning of our VBA code design.

Pending Issues:

Our minimal experience with VBA leads to some misunderstanding in our group when we're working on it separately, so we've had to find time where we are all able to work on it together. This has been difficult to coordinate since we all have vastly different schedules.

One major issue that we're running into is the limitations of computational power of the laptops we are running VBA through. While we thought we might be able to run hundreds, if not thousands of iterations of the simulation, we may only get about 10 or 20. Using a desktop computer or another larger computer with more computational strength reduce this, but it still drastically reduces the reliability of the simulation. Ideally, we would have many more simulations to make the results more accurate.

Individual Contributions:

Team Member	Contribution	Weekly Hours	Total Hours
Nick Stitzell	Report, collected power loss information from Alliant for the equations being used in the simulation	3	74
Minoru Fernando	Applied power loss information to the simulation tool	3	63
Joe Thurin	Wrote more VBA code for the simulation	6	84
Taylor Murphy	Assisted with code and debugged VBA integration	5	66
Remo Panella		0	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 (N/A):

- No client meeting during this period. There was nothing we had to discuss and we were able to use the normal meeting time to work on the design.