EE 491 Weekly Report 2

1/30/18 – 2/6/18

Group 11

High-Level Design of a Distribution Microgrid

Client: Alliant Energy

Advisor: James McCalley

Nick Stitzell – Communications Engineer

Minoru Fernando – Economics Engineer

Joe Thurin – Power Engineer

Taylor Murphy – Research Engineer

Remo Panella – Data Engineer

Project Objective:

Create an excel document that estimates the economic impact of incorporating distributive generation and storage into a microgrid system.

Weekly Summary:

This week we began analyzing the system usage in Nichols, IA and the sun radiation in that area. We found similar microsystem designs and will be able to use these as a model for our system. We also re-evaluated our team roles and created another Power Engineer position and went away with the Economics Engineer position. This was due to our client decreasing the importance of being economically efficient with our design.

Past Week Accomplishments:

- Received system requirements from Alliant Energy
- Received solar and battery specifications from Alliant Energy
- Began collaborating on how to create an excel spreadsheet for the system.

Pending Issues:

- Uploading documents to project website.

Individual Contributions:

Team Member	Contribution	Weekly Hours	Total Hours
Nick Stitzell	Creation of inter-team objectives and semester plan, weekly status report, Team Project Plan	4	7
Minoru Fernando			
Joe Thurin	Analyzed system requirements in Nichols, IA and researched the effects of sunlight on the given system	3	3
Taylor Murphy	Researched microgrid and found possible solutions for Nichols power design based off of similar microgrid systems	2	2
Remo Panella	Began excel spreadsheet, created a list of possible inputs and outputs for the system, brainstormed questions for our next meeting	1.5	1.5

Plans for the Coming Week (1/30/18 – 2/6/18):

- Nick
  - Learn how to upload information to project website
    - upload weekly report, project plan
  - Finalize project plan
- Remo
  - List of input/output information
- Joe
- Taylor
  - Research more examples of similar microgrid designs
  - Research designs that combine solar and battery
- Minoru
  -

Summary of Client Meeting (1/30/18):

- PV and battery models? Diesel generator model?
    - Find common
        - 290W-350W
        - Solar Edge Invertors
        - Batteries part of system?
    - Outage recovery will need to be based off of Alliant's current response time of 2 hours.
        - This doesn't attempt to fix the problem, so additional research will be needed
        - Excel mileage from upcenter to calculate response time?
    - Include other options for backup generation? NO, diesel will be the main backup
    - Spec sheet data will be supplied from Alliant
- Create a list of input and output information for the excel document
- Alliant standard depreciation assets date of 30 years for simulation modeling
- We will be considering both utility and residential sized batteries + PV
    - Probably more expensive to do residential sized
- Customer costs?
    - Bring up again at a later date when we are further into the project
- Remove the economic estimates from the scope of this project.