
EE 491 Weekly Report 1

1/23/18 – 1/30/18

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

Weekly Summary:

This week did not have much progress. Our team is still figuring out how best to approach the task and we need a little bit more information from the client before we get started with calculations and design. We will be asking more specific questions from the client during our next meeting and will hopefully leave the meeting with specific information that we can begin using for a rough draft of our distribution microgrid. We as a team have gained clarity as far as what our roles are, and will be using this next meeting on January 30th to begin our individual work.

Past Week Accomplishments:

Met with client and advisor for our introductory meeting to gain a foundational understanding of the project.

Pending Issues:

Everyone: We don't have any data on the PV panels that Alliant Energy uses. We will need this information to proceed with our kWh calculations for the distribution system.

Individual Contributions:

Team Member	Contribution	Weekly Hours	Total Hours
Nick Stitzell	Weekly Status Report, Created a Client Meeting Minutes form, created a plan for next week	3	3
Minoru Fernando			
Joe Thurin			
Taylor Murphy			
Remo Panella			

Plans for the Coming Week (1/23/18 – 1/30/18):

- Have info for PV panels to use for calculations
- Nick
 - Weekly Status Report for Week 2
 - Meeting Minutes from 1/30/18
 - Plan for Week 3
- Remo
 - Begin excel outline for documenting distribution system calculations
 - Collect information and results from team members
- Joe
 - Come up with a method for calculating the amount of energy needed from PV panels to produce enough kWh to meet/exceed the peak kWh demand in Winter & Summer in Nichols, IA.
 - Use the hourly sunlight for the peak demand days to estimate the kWh production/efficiency of the PV panels for each hour on the peak demand day
 - Estimate how many PV panels are needed to meet peak kWh
- Taylor
 - Find the latitude and longitude for Nichols, IA
 - How much kWh is produced by the PV panels used by Alliant Energy?
 - What is the initial cost of the PV panels?
 - What is the life expectancy of the PV panels? Maintenance costs?
 - Any other important information about the PV panels?
- Minoru
 - Use the estimated quantity of PV panels from Joe to estimate the cost of the...
 - Initial purchase of PV panels
 - Maintenance cost of PV panels
- Alliant Energy
 - What model of PV panel will we be using?
 - What model of battery will we be using?

Summary of Client Meeting (1/23/18):

- Target small island systems far away from interconnection
 - System connectedness to the grid will depend on distance and cost of interconnection vs self-sufficiency
- Nichols, IA is our initial location for study
- kWh and peak demand statistics are not exact numbers
- The economics of storage will make or break the microgrid effectiveness
- The reliability of the system will not be in the scope of the microgrid design
- PV & Battery will be the primary forms of generation and storage for this design
- Both residential and acreage applications of PV can be explored economically
 - The emphasis will be on the utility scale of generation
- The industry will need to lower the cost of electricity to compete with self-generation