

9/10/2019 Meeting Minutes (First Team Meeting)

- Come up with budget
- UI Facilities is sponsor
- Recorder and Moderator switch every meeting
- Members: Shaun Andrews, Christopher Cervino, Shawn Naughton, Huiyu Zhao, Ziyu Quan
- Lead Instructor: Feng Li
- Project Mentor: Herbert Hess
- Graduate Student Mentor: Hussain Beleed
- Team name: "The Facilitators"
- First Instructor Meeting: Tuesday 5:00-6:00PM in the Education Building (top floor)
- Using GroupMe to communicate
- Shawn will get previous report (4 building microgrid to N building microgrid)
- Facilities contact: Marc Compton (Compton@uidaho.edu)

09/16/2019 Meeting Minutes (Prep for 1st Instructor meeting)

Meeting Agenda:

- Finalizing team Contract/Confirming team roles
- Discuss new meeting time
- Schedule meeting with sponsor (Marc Compton)
- Get in contact with previous team to learn about their project.
- Rough design goals

09/17/2019 Meeting Minutes (First Instructor Meeting)

-Make reservation for EE conference room from 4:30-6:00 PM on Tuesday

-Let Dr. Hess know on Thursday

Project Goal: University wants to ultimately have a microgrid for the whole campus, including generation.

-What issues should we consider?

-Previous project: 4 buildings with PV and using Steam Plant.

-Factors of microgrid: Generation, transmission, loads, protection, voltage references, frequency, reclosers, relays, other protective devices.

-Need to solve the puzzle of figuring out which breakers to use for optimized isolation and efficiency and generate an automated map for this configuration.

-How much will all of this cost?

-Do we want to build anything? (Prototype/Model)

-Schweitzer will donate any of their products within reason.

-Kenny/Simeon have 5 metering products from Schweitzer.

-Coordination with ITS for communication.

09/19/2019 Meeting Minutes (Meeting with Previous Project Members)

-Currently only have 6 relays, need 8 to facilitate Mclure, CNR, Gauss Johnson, and BEL.

-Also IRIC, Steam Plant, 2 Avista ties (1 by bookstore, other by parking lot of Winco)

Action items:

-Chris will begin working on budget.

9/24/2018 Meeting minutes

-Review of action items:

Budget will be submitted by the Thursday of week of the first Snapshot

Shawn will be the Wikipage person

Meeting with Marc Compton will be held on Wednesday at 3:00 pm at Facilities

-Going over the suggested questions for the client meeting.

Some adjusts were made and approved by Beleed

-Reviewing the previous Senior Design Team's presentation about the project

"UI Load Shed Senior Design Team"

Using SEL RTAC to control relays at different connections to groups of buildings

Looking at where the 6 relays are to be placed

We are focusing on integrating the IRIC into their already created network.

Questions for future of Micro-grid expansion were presented

These topics are what we could focus our project on, i.e. additional generation or modularization

-Client Meeting will be Wednesday at 3:00 – 4:00 pm

-Based on the meeting, we will be creating a Product Requirements document.

- Shawn will moderate the next meeting

-Chris will take notes for the next meeting

- Action Items:

Submit a Product Requirements to Feng

Meeting with the Sponsor at Facilities

Creation of a Team Google Drive

Meeting Minutes

10/01/2019

- Made Google Drive and was shared out
- Client Meeting
 - Find where to place switches and relays
 - Photocopy of the questions and answered will be photocopied and then sent out
 - SEL point of contact is Joe Stanley
 - Fred Pollard oversees energy distribution for facilities
 - Marc Compton is main contact
 - Discussed previous projects and how we would like to build from them
 - RTAC and Goose protocol
 - CAD files will be sent to Shawn Naughton from Marc
 - Prioritizing of locations goes as followed:
 - ❖ Steam Plant
 - ❖ McClure
 - ❖ CNR
 - ❖ BEL
 - ❖ Johnson
 - Will need to talk to Dr. Johnson about simulations from previous teams
- Product Requirements
 - Rough Product Requirements (filled out what we could and what was applicable)
 - Will also be sent out and shared within the shared drive
- Action Items
 - Set up another meeting with facilities to run through the product requirements with them
 - ❖ Shawn Naughton will be setting up the meeting
 - Contact Dr. Johnson to share the simulation with us from previous semesters
 - Submitting the budget at the same time as the product requirements
- Logbooks will be turned in on 10/16/2019
- Next Week's Meeting on 10/08/2019
 - Moderator: Huiyu Zhao
 - Minutes Written by: Ziyu Qian

Meeting Minutes 10/08/2019

Present:

Team leader of solar backup generation: Emerson Butler,

Hess, Herbert

Beleed, Hussain

-Introduction of team leader of solar backup generation project, he said our project aim is to provide solar power energy on campus, our information is limited, there are variable location to choose from, we will be updating information with Shaun.

-Discuss the meeting last Thursday,

- Lot cable voltage is 13.8KV
 - The cable inside is based on the current capacity,
 - Change the substation,
 - University have to pay retail for it,
 - temperature makes different,
 - design large grid, the previous team they worked on five buildings, decide what you want figure out your design, how far can go , how much supply.
 - how they figure out, that steam turbine really close to , add some cable to protect system
 - stand on the shoulder can figure out what load is , you can extend a small or great distance.
 - Defining the project is the difficult part,
 - what question should we ask, the question should they be asking, name your number building, specialize building somewhere, design never go overhead.
 - Cost benefit, initial cost,
 - What we have to do keep the lights on? What your generation, what your load, how is it connect together.
 - How do we shed load? come up short
 - When approved, then draw the line, get more generation, develop the microgrid,
 - How we do the paper work, to get the donation or we need, SEL equipment did a lot for us , see the wikipage, Daniel put them on the wikipage. They will be solving storage,
 - Ask: if the generation works all time, should we work all time? Something components by season.
 - We do not supply net power, agency cannot compete with private business, competing with private industry.
 - What is demand charge?
 - Look upon this on the website, look up the commercial power schedule, the main piece is the energy charge and commodity, demand charge.
 - Security requirement, micro normal security charge, huge power bills, pay extra power to make sure the power continue, what cost are and how they pay,
 - Schedule requirement shares on bblearn and onedrive,
 - Within two week, we decide to do the training.
 - Take a look out previous page on wikipage, wikipage would be the separate thing,
- Snapshot next Tuesday:**
- What is snapshot?

- We should divide the project, what is your test, what is your time, what your timeline, you should have the major piece on snapshot.
- Question will with microgrid example based on campus, built from the piece of other team ahead of us, design review will tell us what to do.
- location, three options, marc will give us decision. each location will going to fit.
- 3.30 pm-4:30 pm Thursday: work on snapshot, 6-9 sheet papers, pictures can be added.
Figure out snapshot tomorrow.

Next meeting moderator: Ziyu Qian

Recorder: Huiyu Zhao

10/15/19

Meeting minutes

The design Validation Plan

- 10/22/19
Assess how much available generation is usable.
Determine power output of steam turbines, PV array, and backup generation.
(Spreadsheet)
- 10/29/19
Figure out what potential building we can support, based on load demand.
Attain average metering data from facilities.
(Spreadsheet)
- 11/06/19
Micro grid must account for seasonal changes and effects on available power.
Calculate average power output of steam turbines and PV array on a monthly basis,
(Spreadsheet)
- 11/06/19
Prioritize loads for load shedding based on critical infrastructure.
Determine critical elements inside each potential building being added to the microgrid.
(Document)
- 12/13/19
Relays and switches must be incorporated for load shedding and islanding for buildings.
Determine locations of switches and relays for adding building(s). (Contingents upon location of PV array.)
(One Line)
- 01/15/20
Relays must be set appropriately to shed load when necessary.
Develop an algorithm for relay settings for automated load shedding and islanding.
(Simulation)
- 02/15/19
Microgrid must take into account selected location of PV array.
Configure simulation to incorporate new generation and connectivity.
(Simulation)
- 03/15/20
Economic analysis must be conducted.
Determine cost/benefit analysis of new implementations to the microgrid.
(Report)

10/29 Team Meeting

Review previous actions items:

- Design Review scheduled for November 19, 5-6pm at Facilities
- Waiting for the other team's next RTDS simulation to learn from
- The Solar Team wants to do the carport style at the Kibbie Dome parking lot

Researching previous projects:

- Looking for questions, new technology, or insights
- Electric Generator Modeling and Automatic Generation Controller
 - Spokane microgrid expansion
 - Pauvin Kingly? Master student who did his thesis off the microgrid expansion
 - Jordan Scott also wrote thesis
 - 2 synchronous generators on the river, providing 13 MW to the city, they were 2 blocks apart from each other and a major substation in between them
 - AGC (Automatic Generation Control) needed for all microgrids, they set the frequency and voltage standards
 - Setup a network of solar panels on the roofs, around 100 MW and took hold of the hospitals' generators
 - They had an 11-12 loads, and an algorithm
 - We will be building off previous team's algorithm
 - PV and backup generators are same as this project
 - We need to get an indication from Facilities on some buildings for prioritizations
- Grid Defender
 - Overhead line drop when adverse conditions happen
 - Security wise thinking
 - We will have most of the lines underground
- UI Steam Turbines
 - 3 turbine option
 - Have link to a broken electrical metering website for campus
 - Expected output power shown on presentation
 - Hess will look for this report
- Campus Facilities Load Shedding Design
 - 9% from steam plant to supply buildings
 - We can choose the buildings that we want to add from the System Overview section picture
 - Keep our scope wide so that we can have actual load shedding occur
 - We need to look at the seasonal changes that are occurring
 - More steam power in winter, more PV in spring to late summer
- Action Items
 - Setup meeting with Facilities
 - Review previous projects for next meeting
 - Recorder: Ziyu
 - Moderator: Chris

11/05/2019 Meeting minutes

-Review previous items

- * Set up meeting with facilities at Nov. 19 Tuesday at 5:00pm to 6:00pm.
- *Talk to Jordan Scott, she knows other people wrote other pieces.
- *Marc will send a list of transformers and we should have the building we will decide to do based on these transformers.
- *Ph.D. Hess said one team broke campus up into seven groups of buildings and make microgrid for each of seven and linked these microgrid together into a big microgrid.
- *Shaun said that what facility put in there were two megawatts PV array.
- *Have assessment which we can take a look at the loads and determine how much we can support.
- *Power plant will not go down and power plant is next to the campus.
- *Couple of options: steam turbines, solar on the roof of the Eric.
- *We should come up with generators make them synchronous if we want to add them. Ph.D. Hess said we can consider adding synchronous generations from previous team.
- *Pay attention to how the systems connect together, there is a way to make your systems more effective.
- *Shaun said that the scale of the PV array is decreasing around 750 megawatts. There will have 360 megawatts per hour. The load and the winter time assume 8 hours, 35 to 40 megawatts per month, assuming the solar array supply 240 megawatts in a month.
- *We don't need to have pumping water in emergency situation, most water in steam plant is a closed system. We should ask Marc that do we need emergency situation, what is priority on the water.
- *There is lots of loads and we need to figure out which has prioritization.
- *The problem now is pick the building, take a look at the distribution diagram.
- *How to connect and how to serve the priorities instead of paying attention too many details.
- *Set a meeting on Saturday evening.
- *Basic outline of design review will be available next Tuesday.

Next meeting Moderator: Ziyu Qian

Recorder: Huiyu Zhao

11/12/2019 meeting minutes

Review previous items:

Review the last Friday's client meeting (4th client meeting)

- Wells are a main priority during an Avista outage.
- Solar panel array is specifically for just the wells.
- Aim for 500k dollars.
- Mention LLC & Chiller are being added to Steam Plant.
- Chiller isn't a critical load.
- Scope of Microgrid.
- Emergency circuit are the focus.
- All emergency circuits in all buildings before focusing on powering other circuits within buildings.
- Janssen and EP are being added to microgrid with a more detailed look at IRIC.

Keep working on design review. Improve the presentation slides.

- Emergency should be the priority.
- New Loads:
 1. Janssen Engineering Building;
 2. Engineering Physics Building;
 3. LLC & North Campus Chiller Plant;
 4. Wells.

Keep working on the design review at 3:30p.m. on this Thursday.

Next meeting:

Moderator: Huiyu Zhao

Recorder: Naughton Shawn

12/3/19 Meeting Minutes

Agenda: Feedback on Design Review, Review meeting with SPBG, Prepare for Snapshot

- Feedback:
 - Bad:
 - Lack of budget information
 - Look up incentives from Avista/taxes
 - Ask for IRIC advantages
 - Look at Steam Plant presentation
 - Diagrams
 - Organization lacking, not all members spoke equally
 - Missing client needs
 - Missing implementation into grid
 - Good:
 - Project management
 - Project goals
 - Good organization
 - Do:
 - List questions that we found
- SPBG Meeting:
 - May need to power both wells fully with steam plant
 - In case of outage at night
 - More reliant on us than originally thought
- Snapshot
 - Budget
 - Value Proposition
- Estimation of Solar Monthly Production for IRIC solar array
- SEL Accounts for Programs received
- Action Items:
 - Attend Take-A-Load Off Presentation
 - Talk to Kenny about SEL donations
 - Moderator: Yuri
 - Recorder: Shaun