

## EE 491 Weekly Report 6

Start Date: March 6

End Date: March 19

Group number: 18

Project title: Utility Scale Lithium-Ion Energy Storage Project

Client &/Advisor: Burns and McDonnell, Zhaoyu Wang

Team Members/Role:

- ❖ Oksana: Leader; responsible for keeping the team on track
- ❖ Sarah: Organizer; responsible for revising, editing, and helping keep track of all our reports.
- ❖ James: Document Report; responsible for the submission of our reports. Inverter quantity and cable sizing to batteries
- ❖ Cole: Point of Contact/Communicator; responsible for meeting and contacting the clients, faculty advisor, and the AutoCAD site layout design.

### **Weekly Summary:**

This week, we worked on the battery sizing report for our client, worked on updating the one-line diagram, and took notes for the start of cable sizing.

### **Past Week Accomplishment:**

As a group:

- Hand sketched one-lines
- Created one-lines using AutoCAD

Individually

- James: Updated AutoCAD one-line drawing. Complete Design Document Part 2: Requirements, and create a final report rough draft.
- Cole: I will help with starting the technical documentation outline that will include all of our justifications, math, and progress up to this point.
- Oksana: I worked on calculations, weekly reports, and verifying the spacing and layout for the battery technology.
- Sarah: I worked on the rough draft for the one-line diagram. I also completed relevant calculations to size components in the one-line.

### **Pending Issues:**

Need to finalize a meeting with our advisor when he is available.

**Individual Contributions:**

Name	Individual Contribution	Hours this reporting period break down	Total hours for the week	Total Hours
Oksana Grudanov	<ul style="list-style-type: none"> <li>- Worked on reviewing the NFPA NEC 2020 for cable sizing</li> <li>- Worked on the weekly report</li> <li>- Emailed faculty advisor regarding a meeting</li> <li>- Add meeting notes to teams for our client</li> </ul>	3.0 (NEC code review for cable sizing) 2.0 (Weekly Meeting) 0.5 (Email Faculty Advisor + add meeting notes to teams) 0.5 (Weekly Report)	6.0	28.0
Sarah Ebert	<ul style="list-style-type: none"> <li>- Finalized our single-line diagram sketch</li> <li>- Reviewed spec sheets and calculations</li> </ul>	2.0 (Updating single-line sketch) 2.0 (Weekly Meeting)	4.0	29.0
Cole Dustin	<ul style="list-style-type: none"> <li>- Organized team file structure</li> <li>- Added multiple sections to the final document</li> </ul>	2.0(Weekly Meetings) 0.5(Organizing files) 1.5(Final report)	4.0	27.5
James Mendenhall	<ul style="list-style-type: none"> <li>- Update Single Line</li> <li>- Final Report Rough Draft</li> </ul>	1.0 (Update Single Line) 2.0 (Final report rough draft) 2.0 (Weekly Meetings)	5.0	27.5

**Plans for the upcoming week:**

- Review the rough draft for the final draft and finalize the sitewide one-line drawing.
- Continue to work on the battery sizing report for the client
- Find various spec sheets for the main breaker, switchboard, main power transformer & main voltage transformer values
- Discuss the high-side transformer voltage from the substation with the faculty advisor (contact local utility)
- Add notes to the one-line diagram
- Do research on cable sizing in preparation for the next client meeting on cable sizing.

**Individual Assignments for the upcoming week:**

Oksana: Continue to take notes on cable sizing from the NFPA NEC 2020 in preparation for tackling cable sizing and the math next week. I will also help with the battery sizing report for the client and work on adding the headers for each section of the report.

Sarah: Work on the final report for the client- add stuff about the one-line diagram. I will also assist James with the final draft AutoCAD drawing for the one-line and update our team website.

Cole: Will find the models for several of the items on the equipment pad. I will also work on keeping the technical documentation up to date.

James: Finalize Autocad one-line drawing.

**Summary of weekly advisor meeting:**

We have yet to meet with our advisor this week. We sent him an email to meet with him in the next couple of weeks. He is available to meet with us in the next two weeks and we will discuss with him everything we have progressed on so far.

**Summary of weekly client meeting:**

In this week's meeting with the client, we discussed the one-line more in-depth with the client. We discussed what we needed to add to our one-line diagram in regard to missing information. We discussed looking up several spec sheets for the main breaker and switchboard to get values we can use in the diagram. We will need to find the voltage for the main power transformer; we will find a standard value online to use for this purpose. Additionally, we will need to use a new value of 1500 A for the main breaker, as it will produce more expected values, and we will need to find more information regarding the main breaker and the switchboard from the spec sheets. We will use a standard value of 7.25 for the percent impedance of the PCS skid transformer. Finally, we briefly discussed cable sizing and the client answered a few questions we had regarding research and determining cable sizing. We need to find various values for the one-line diagram to finalize it for next week's meeting and continue researching cable sizing and reviewing the NEC 2020 code.