

## EE 492 Bi-Weekly Report 5

Start Date: November 1, 2024

End Date: November 11, 2024

Group number: 18

Project title: Utility Scale Lithium-Ion Energy Storage Project

Client: Burns and McDonnell

Faculty Advisor: Zhaoyu Wang

Team Members/Role:

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

### **Bi-Weekly Summary:**

We continued to focus on running the different tests for our etap model. We made adjustments to our system per our clients request and generated reports to discuss with them.

### **Accomplishments from last period**

#### As a group:

We ran all the necessary tests on our and generated reports to discuss with the clients. We ran cable thermal analysis on the PCS cables, the Aux cables, and home run cables. Additionally, we ran short circuit and arc flash tests on our medium and low voltage buses at different voltage loads (95% and 105%).

### **Pending Issues:**

We need to regenerate our test reports into a summary report so we can better analyze the system

**Individual Contributions:**

Name	Individual Contribution	Hours this reporting period break down	Period hours	Total Hours
Oksana Grudanov	<ul style="list-style-type: none"> <li>- Working on ETAP model and testing</li> <li>- Worked on redoing cable calculations and sizing</li> <li>- Client Meetings</li> <li>- Team meetings to discuss results of analyses</li> </ul>	7.0 (team meeting for testing) 2.0 (Cable schedule Update) 3.0 (Client Meetings)	12.0	110.0
Sarah Ebert	<ul style="list-style-type: none"> <li>- Client meetings</li> <li>- Technical documentation and research</li> <li>- Team meeting</li> </ul>	3.0 (Client Meetings) 4.0 (Technical documentation) 4.0 (Team meetings)	11.0	110.0
Cole Dustin	<ul style="list-style-type: none"> <li>- Client Meetings</li> <li>- Cable thermal Analysis</li> <li>- Short-Circuit Analysis</li> <li>- ArcFlash Analysis</li> </ul>	3.0 (Client Meetings) 3.0 (Team Meetings) 2.0(Cable thermal Analysis) 1.5(Short-Circuit Analysis) 1.5(ArcFlash Analysis)	11.0	110.0
James Mendenhall V	<ul style="list-style-type: none"> <li>- Working on ETAP model and testing</li> <li>- Client Meetings</li> </ul>	7.0 (team meeting for testing) 2.0 (Cable schedule Update) 3.0 (Client Meetings)	12.0	110.0

**Plans for the upcoming period:**

- Work on creating technical reports for our client. We will discuss the short circuit, arc flash, and cable thermal results in two reports
  - Report 1: Cable Thermal Analysis
  - Report 2: Short Circuit and Arc Flash Analysis
- Rerun tests to generate the summary report
- Redo technical document on cable schedule to reflect changes made this semester

**Individual Assignments for the upcoming period:**

Oksana: Work on editing the cable schedule report for the client that reflects changes made to the cable schedule this semester. Also, work on the cable thermal analysis report with James

James: Work on the cable thermal analysis report for the client with Oksana

Sarah: Arc flash and short circuit technical documentation for the client with Cole

Cole: Work on the Arc flash and short circuit technical documentation for the client with Sarah

**Summary of advisor meeting:**

We have not been in contact with our faculty advisor as he has not returned our emails

**Summary of client meetings:**

For our client meeting, we continued to discuss the results of the tests we ran and made some changes to our equipment values to better suit the system. We updated our fuse and breaker values this week as our arc flash was incredibly high and exceeded the PPE requirements. Due to this, we needed to update and rerun the test. After this test, we were able to see that at the worst case scenario was below 40 Cal, which is suitable to work on provided the individual uses a 40 cal suit and the system is de-energized. We also looked at the time current curve (TCC) generated in ETAP to analyze how our system operates during an arc flash. Next, we discussed reports we will be providing to the client and how they would like us to organize the reports.

**Appendix:**

ETAP Model

# One-Line Diagram - Ames BESS | Load Flow Analysis | LF

