

sdmay23-27: 115kV/34.5kV Solar Power Plant & Substation Design Project

Week 7 Report

November 4 - November 11

Team MembersMadison Lakomek — *Researcher*Brooke Nelson — *Leader*Ashton Randolph — *Meeting Minutes Taker*Jacob Miller — *Researcher*Jenna Runge — *Researcher*Madissen Lawrence — *Researcher*Zachary Zimmerman — *Researcher*Omer Karar — *Researcher***Summary of Progress this Report**

This week we began working on the substation design and wrapping up the last parts of the solar field design. The cost analysis was updated to include the small array. We also created a bill of material that includes all the components, wiring, and racking system for the solar field. We began working on trenching to connect the substation to the solar field. The CAD for the solar field was finalized by adding the CAB system. We also began brainstorming different layouts for the substation. Finally, we met as a group twice and with our client Black & Veatch to give updates on our progress.

Pending Issues

We are unsure about some particular components within the substations, such as the CTs and PTs. We also are working through which design will be the most optimal in terms of protection, cost, and overall design. We must finish figuring out the design to finalize the trenching.

Plans for Upcoming Reporting Period

We plan to divide the group into a design group and a protection group to split up the work and to be able to complete more throughout the next semester. We also are going to work through the design and begin the CAD for the project. We will continue to meet next week to start on all the beginning phases of designing a substation.

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Madison Lakomek	This week I worked on the bill of materials as well as updating the cost analysis for the solar field design. I also completed the weekly report summary and assisted on parts of the design document. I met with the team on Tuesday and Thursday as well as attended the client meeting with Black & Veatch on Wednesday	5	0

Brooke Nelson	I created a spreadsheet tool that figured out the trench calculations that are needed to connect the solar field to the substation. I attended the Black & Veatch meeting, created the power point for the meeting, as well as did the safety moment and new technology. I also worked on the testing part of the design document.	8	0
Ashton Randolph	This week I worked on the bill of materials for the solar farm components. I also helped Brooke with creating the trench calculation tool. Assisted in finishing the testing design document. I attended all the team meetings on Tuesday and Thursday and attended the client meeting with Black and Veatch.	5	0
Jacob Miller	I worked on the one time diagram for the substation. I also attended the Tuesday group meeting and Black & Veatch meeting. I also looked at the bill of materials and created a list of questions that was given to Black & Veatch.	5	0
Jenna Runge	This week I attended all meetings and worked on the reference table for the Trench calculations sheet.	5	0
Madissen Lawrence	This week I attended all meetings and worked on the reference table for the Trench calculations sheet.	5	0
Zachary Zimmerman	I attended all meetings. Assisted with the BOM documentation (racking and wire length calculations), finalized engineering drawings adding additional details to the key plan adding the CAB system layout. Made changes to the voltage drop calculations spreadsheet to ensure all calculations were accurate. Researched substation design and looked for transformers for our project.	6	
Omer Karar	This week, I worked on the one line diagram for the substation, Besides, attending the group meeting. I attended Black& Veach meeting.	5	0

Gitlab Activity Summary

Nothing to report.
