

EE 491 Weekly Report 6

10/17/2024 to 10/24/2024

Team 41

115/34.5kV Solar Plant & Substation

Client: Black & Veatch

Faculty Advisor: Ajjarapu Venkataramana

Team Members:

Andrew Chizek -- Cost Estimator/ role player

David Ntako -- Team leader

Ben Palkovic -- Meeting Recorder

Mohamed Sam --

Sergio Sanchez Gomez -- Documentation

Dallas Wittenburg -- Meetings leader

Past Week Accomplishments

- Weekly Presentation – All
 - Safety Moment – Thermal Scanning in Solar Energy Systems
 - New Technology - Passivated Emitter and Rear Cell (PERC) Solar Cells
 - Voltage Drop Calculations
 - Presented to our client our initial calculations using the tool provided
 - Used Microsoft Excel to perform these calculations
 - Received feedback from client on calculations and amendments needed
 - Cost Analysis
 - Updated the detailed breakdown of all costs associated with the project including labor, overhead costs, material, PV module equipment
 - Presented to our client our Cost Estimation Analysis tool and received feedback about the selection of values in spreadsheet
 - Clarified about the estimation of residential, commercial, and industrial electric rates in the state of New Mexico for the spreadsheet
 - Drawings for Project
 - Further expanded AutoCAD drawings and diagrams
 - Received feedback from client and what we need to further look into

- Array Parameter Tool
 - Waiting on our client for feedback based on the spreadsheet we have sent them
- Plant Layout for Array
 - Provided a detailed description of the planned layout for the solar array within the plant.
- Ben – Made one line diagram and updated AutoCAD drawings to be more accurate and created different arrays.
- Dallas – Worked on cost analysis spreadsheet and further expanded various costs associated with the solar farm. Researched sunlight conditions in New Mexico and how long the solar farm will be in operation for.
- Andrew- Played with the cost analysis spreadsheet to start to get a total cost estimation. Also, researched more pricing for previous items found to add to our bill of materials.

Pending Issues

- Gantt Chart – Need to update and change how our chart is organized to better fit the needs of our client.
- Change some of our efficiency percentages in the cost analysis spreadsheet to be using the equation correctly. Wait for our questions about other values before being able to fill those in correctly.
- Wait on pricing for components that do not have a price for yet.
- Zoom in/out for one line diagram (more or less details).
- Further expand voltage drop calculations.

Individual Contributions

Name	Contribution	Hours this Week	Total Hours
Andrew	Expanded on the cost analysis and bill of materials. Also started to work with the cost analysis spreadsheet provided to get a finalized cost estimate.	4	20
David	Helping Mohamed Sam on voltage drop calculation, and worked on updating our Senior Design websites.	6	25
Ben	One line diagram, updated AutoCAD drawings, coordination for voltage drop calculations, worked on lightning talk.	5	24
Mohamed	Worked on client voltage drop calculation spreadsheet and performed research on associated factors in voltage drop of solar arrays	6	28
Sergio	Presentation, New Technology, help with voltage drop calculations	4	25
Dallas	Further expanded cost descriptions of various PV components, worked on spreadsheet that client provided related to cost analysis	6	29

Plans for Coming Week

Action Items for Client

- Further expand and work on voltage drop calculations using client spreadsheet
- Work on Gantt chart and update rows for better documentation for our client
- Continue working with AutoCAD drawings
- Create 1 line diagrams for solar farm design
- Further expand on cost analysis spreadsheet