EE 491 Weekly Report 8

10/31/2024 to 11/07/2024
Team 41
115/34.5kV Solar Plant & Substation
Client: Black & Veatch
Faculty Advisor: Ajjarapu Venkataramana

Team Members:

Andrew Chizek -- Researcher
David Ntako -- Team leader
Ben Palkovic -- - Meeting Recorder
Mohamed Sam -- Technical Lead
Sergio Sanchez Gomez -- Documentation
Dallas Wittenburg -- Meetings leader

Past Week Accomplishments

- Weekly Presentation – All
    - Safety Moment
    - New Technology
    - Voltage Drop Calculations
        - Initially completed and presented updated voltage drop calculations to our client using the tool provided
        - Used Microsoft Excel to perform voltage drop calculations for accuracy
        - Addressed specific feedback from our client and incorporated their insights into further changes
    - Cost Analysis
        - Added to the estimation of total costs based on feedback from our client. Changed the breakdown of costs associated with the project including labor, overhead costs, material, PV module equipment
        - Presented to our client our Cost Estimation Analysis tool that we updated including generation factor, sunshine value, and cost per hour
        - Incorporated additional feedback from our client for a more precise cost estimation

- Drawings for Project
    - Expanded on AutoCAD drawings and diagrams to include the latest updates
    - Received feedback from our client and noted specific areas for further development
    - Worked on initial side profile drawings of the solar panels and ground mounting systems. Drawings show the angle of the panels with respect to the ground, DC combiner box location, mounting of panels to the support system, and panel orientation
- Array Parameter Tool
    - Received feedback from our client and we will work to update this based on their feedback
- Plant Layout for Array
    - Provided a detailed description of the planned layout for the solar array within the plant.
    - Discussed potential layout adjustments with our client and obtained feedback for the next phase of development
- Gantt Chart – Design Plan
    - Reviewed our project's Gantt Chart with our client and received feedback on what we need to change
    - Identified key components to modify and improve the project timeline

Pending Issues

- Gantt Chart – Continue to modify and improve the Gantt chart, adding new components as suggested by our client
- Cost Analysis Tool – Further develop the cost analysis tool to ensure a true cost estimate
- Wait on pricing for components that do not have a price for yet
- Array Parameter Tool – Continue refining the tool based on our client's feedback
- Drawings and Layouts – Implement further changes to the project drawings and explore additional design options
- Further expand voltage drop calculations

Individual Contributions

Name	Contribution	Hours this Week	Total Hours
Andrew	Research more about cost estimation and information to fill out the spreadsheet we were given. Helped with design issues or problems we ran into	3	28
David	Worked with Mohamed on AutoCad (adding components on our second array model), and worked on some voltage drop calculation.	5	30
Ben	Writing for design document, creation of journey map and pros-cons list.	3	34
Mohamed	Helped to finish design document and work with David on voltage drop calculation	4	38
Sergio	Design document, update Gantt chart, client presentation, collaborate with Dallas to create side-view drawings of solar panels and ground mounting systems using AutoCAD, solar panel mounting research.	8	37
Dallas	Helped Sergio create side-view drawings of solar panels and ground mounting systems using AutoCAD, researched mounting systems for large-scale solar applications.	6	41

Plans for Coming Week

Action Items for Client

- Cost Estimation Tool – Add our research and feedback from our client into the spreadsheet
- Further expand and work on voltage drop calculations using the spreadsheet tool provided by our client
- Work on Gantt chart and update rows for better documentation for our client
- Continue working with AutoCAD drawings – Improve side profile drawings that show the angle of the panels with respect to the ground, DC combiner box location, mounting of panels to the support system, and panel orientation
- Create 1 line diagrams for solar farm design
- Further expand on cost analysis spreadsheet
- Look into creating a mock site plan drawing