

EE 491 Weekly Report 7

10/24/2024 to 10/31/2024

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 -- Technical Lead

Sergio Sanchez Gomez -- Documentation

Dallas Wittenburg -- Meetings leader

Past Week Accomplishments

- Weekly Presentation – All
 - Safety Moment – Remote Site and Communication Safety
 - New Technology - BIPV (Building-Integrated Photovoltaics)
 - Voltage Drop Calculations
 - Presented to our client our updated calculations using the tool provided
 - Used Microsoft Excel to perform these calculations
 - 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 that we updated from the past week- This includes our generation factor, sunshine value, and cost per hour
 - Drawings for Project
 - Further expanded AutoCAD drawings and diagrams
 - Received feedback from client and what we need to further look into
 - Array Parameter Tool
 - Got 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.
- Gantt Chart – Design Plan
 - Look into the feedback given to us by our client
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- Ben – Made a simpler version of one line drawing and added a typical rack detail. Helped with measurements for voltage drop calculations.
- Dallas – Worked with Andrew on the cost analysis spreadsheet and further expanded various costs associated with the solar farm. Researched price of generation factor of New Mexico and compared that to Iowa and the rest of the US. Researched capacity factors for our solar farm.
- Andrew- Updated the cost analysis tool by looking into sunshine values, and helped with other tasks when needed.
- Mohamed- Worked on voltage calculations spreadsheet and make some update to the spreadsheet to get all the voltage drop values.

Pending Issues

- Gantt Chart – Modified and added components to the Gantt Chart based on feedback from our client
- Add more to the cost analysis tool to get a true cost estimate
- Wait on pricing for components that do not have a price for yet.
- Further expand voltage drop calculations.

Individual Contributions

Name	Contribution	Hours this Week	Total Hours
Andrew	Worked with Dallas on the cost analysis spreadsheet. Also looked into the issues we are still having about our farm.	5	25
David	Working with Mohammed on Voltage drop calculation and did some research on ampacity for selecting wire sizes.	8	20
Ben	AutoCAD drawings, help with voltage drop, lightning talk, and worked on design document. Updated documents in website.	7	31
Mohamed	Worked with David on voltage drop calculations.	6	34
Sergio	Work with AutoCAD, client presentation slides, documentation	4	29
Dallas	Worked with Andrew on cost analysis spreadsheet. Performed research on price of generation factor for cost analysis.	6	35

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
- Look into creating a mock site plan drawing