EE 491 WEEKLY REPORT #3

10/10/19 – 10/17/19

Group number: Sdmay20-14

Project title:115kV /34.5kV Solar Power Plant & Substation Design Project

Client &/Advisor: Black and Veatch / Venkataramana Ajjarapu

Team Members/Role: (Roles are rotated on an as needed basis) Jake Ciccola (Scribe / Client communications), Ethan Curnutte (Chief engineer), Ada Lupa (Test engineer), Blake Danek (Meeting facilitator), Michael Lortz (Design engineer), Bashir Mohamed (Test engineer)

Weekly Summary: This week, after meeting with our client we were able to finalize our location choice for our solar plant to be Albuquerque, NV. This locational choice was due to the irradiance of the location, the cost of land, the type of land, as well as some other smaller factors. Black and Veatch informed us about a problem we had with our current array parameter tool so we fixed that in order to be able to accurately compare the two panels so we can pick the better one.

Past Week Accomplishments: As a group we worked on:

- **Member 1: Jake Ciccola**
  - Helped to finalize our location choice of Albuquerque, NV. by finding information about the location. Helped complete the array parameter tool for the client.
- **Member 2: Ethan Curnutte**
  - Worked on array parameter tool for the JA Solar panel. From looking at the datasheet, I was able to complete almost all of the JA Solar array parameter tool.
- **Member 3: Blake Danek**
  - Researched different techniques we could use to optimize cost and land efficiency of the solar plant. Also looked into different array layout designs and chose the most efficient one. Once the parameter tool was filled out for both solar panel options, I compared the numbers and chose the higher power panel as it would greatly reduce the number of panels needed.
- **Member 4: Ada Lupa**
  - Helped finish the array parameter tool. Finalized and compacted all the information found about the location and presented the chosen area while providing the explanations and variables.
- **Member 5: Michael Lortz**

- ○ Began first draft of solar plant layout. Coordinated with array parameter tool and team to accurately layout design at scale.
- **Member 6: Bashir Mohamed**
  - ○ Looked at voltage drop calculations and how our series / parallel connections would result on the overall voltage and current output.

Pending Issues: We had a few small errors in our array parameter tool regarding the temperature coefficients in our panels as well as how to design the ratios of the rack width and height.

Individual Contributions: (Total hours only reflect hours accumulated from weekly reports)

Team Member	Contribution	Weekly Hours	Total Hours
Ethan Curnutte	Worked on array parameter tool for the JA Solar, provided information for the beginning works of the AutoCad file.	7.5	20
Ada Lupa	Finished the array parameter tool. Presented to the client about the location and its benefits dependent on tilt, weather, solar radiation, and environment	7	20
Jake Ciccola	Finished the array parameter tool in order to be able to present to the client. Presented the client with our final location. Completed the meeting agenda and meeting minutes.	8	20.5
Blake Danek	Finished the array parameter tool and chose which solar panel we will be using for our project.	9	20.5
Michael Lortz	Initial layout of a single solar array according to design from array parameter tool. Assist with array parameter tool finalization.	6.5	18.5
Bashir Mohamed	Looked at the single line diagram. And the DC voltage drop calculation starting from the PV cells up to the converter.	6.5	19.5

Plans For The Upcoming Week:

- **Member 1: Jake Ciccola**
  - Correct the errors in our array parameter tool and send updated (finalized) design to client. Fill out and send meeting agenda to client for upcoming meeting. Research necessary topics for voltage drop calculation.

- **Member 2: Ethan Curnutte**
  - Research Voltage Drop calculations and relate these topics into our excel file. Also complete array parameter tool as to the clients requests.

- **Member 3: Blake Danek**
  - Begin working on voltage drop calculations and gather questions from it that we can ask our client in the next meeting. Also research different industry charts that will be necessary for the voltage drop calculations.

- **Member 4: Ada Lupa**
  - Start looking into the voltage drop calculations in order to be ready to ask questions about it during the next meeting. Also work on the weekly reports for the team website.

- **Member 5: Michael Lortz**
  - Continue coordination of autoCAD drawings with array parameter tool as design is re-worked. Work towards a more feasible layout as we begin to understand the voltage drop calculations.

- **Member 6: Bashir Mohamed**
  - Gathering more information about PV voltage drop calculations.I have found that the DC voltage drop is very negligible since we designed to install all of our components such as combiner box, inverter, and the batteries close to the PV cell location.