

## **EE 491 WEEKLY REPORT #2**

9/26/19 – 10/03/19

Group number: Sdmay20-14

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

Client &/Advisor: Black and Veatch / Venkataramana Ajjrapu

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:** During this week we started working on the design of the array parameter tool that is provided by Black and Veatch. We did some research on pv solar power plant literature, and we learned about the efficient way of connecting pv components from the pv cells to the combiner box. This allows us to combine the entire wires coming from the pv cell into two negative and positive wires which will go directly into the inverter to convert the dc voltage to Ac voltage. This voltage will then match the grid voltage and our daily appliances as well.

**Past Week Accomplishments:** As a group we worked on:

- **Member 1: Jake Ciccola:**
  - Researched irradiance and learned that it is a measure of solar energy per unit area. Irradiance plays a very important role when picking a location and we used this information to help form our decision to locate our solar farm in Albuquerque, NM considering its high irradiance levels.
  - Helped differentiate the JA solar panel and the Eagle panel by looking at the array parameter tool and comparing their values (mainly size and cost).
- **Member 2: Ethan Curnutte:**
  - Compared data sheet values for the JA Solar Panel to the Eagle panel and put the necessary values into the JA Solar Panel Array Parameter Tool. When looking into the data sheet values its important to understand what information to use, like using the right module capacity, module length and width etc.
- **Member 3: Blake Danek:**
  - Looked into the potential advantages and disadvantages of different design choices for the array parameter tool. Also updated the gantt chart with new timeline.

- **Member 4: Ada Lupa:**
  - Looked at available land plots for the solar plant, took into account the weather, pricing, solar friendly neighborhoods and the land elevation. Made the final decision that the location would be Albuquerque, NM. Began research into the tilt that the solar panel should have for the best results. Updated the Eagle 72 Solar array parameter.
- **Member 5: Michael Lortz:**
  - Looked into downloading the CAD software for the layout of the solar plant. From the design aspect of the project, start to look at how we can use the information from the array parameter tool and implement it into the layout.
- **Member 6: Bashir Mohamed:**
  - Looked at the differences between JA solar and Eagle cells in terms of efficiency, cost and concluded that JA is the one feasible for our project.

**Pending Issues:** There were no issues this week

**Individual Contributions:**

<b>Team Member</b>	<b>Contribution</b>	<b>Weekly Hours</b>	<b>Total Hours</b>
Ethan Curnutte	JA Solar array parameter tool, meeting agenda.	6	12
Ada Lupa	Location decision making and research into the cost. Research into the angle tilt of solar panel and elevation effects.	6.5	12.5
Jake Ciccola	Helped fill out JA Solar array parameter tool, helped fill out and send meeting agenda to client, typed up and sent meeting minutes to client.	6.5	12.5
Blake Danek	Array parameter tool design choices, and updated the gantt chart	5.5	11.5
Michael Lortz	Downloaded CAD material and looked into the design of the system.	6	12
Bashir Mohamed	Researched ,and discussed ideas about the scope of the project.reviewed the array tool parameters suitable for our design.	7	13

## **Plans For The Upcoming Week:**

- **Member 1: Jake Ciccola**
  - Finish filling out the JA solar array parameter tool to the clients specifications. This will allow us to effectively and accurately compare the two panels so we can make a final decision as to which panel we will use in our design.
  - Create the meeting agenda for the upcoming meeting with the client.
- **Member 2: Ethan Curnutte**
  - Finalize the JA solar array parameter tool so that we can see which solar panel we will use. Look into getting access to AutoCAD, and also Bluebeam. Finally start to look into understanding how voltage drop calculations apply to our project.
- **Member 3: Blake Danek**
  - Finish up the Eagle 72 Solar panel array parameter tool. Also look into different design choices we could use for either panel such as tilt angle and row size.
- **Member 4: Ada Lupa**
  - Finalize the Eagle 72 Solar panel array parameter tool. Look into figuring out how much exact land we will need for our system. Start to look into understanding how voltage drop calculations apply to our project.
- **Member 5: Michael Lortz**
  - Begin creating the CAD model and look into how the inverters work with the system. Start designing the layout for the autocad drawings and understand the parameters that we have to follow for the land size and irradiance.
- **Member 6: Bashir Mohamed:**
  - Continue working on understanding the parameters used in PV solar cells.
  - Gather more information about the design of PV cells.