

EE 491 Weekly Report 2

09/20/2024 to 09/26/2024

Team 41

115/34.5kV Solar Plant & Substation

Client: Black & Veatch

Faculty Advisor: Ajjarapu Venkataramana

Team Members:

Andrew Chizek

David Ntako

Ben Palkovic

Mohamed Sam

Sergio Sanchez Gomez

Dallas Wittenburg

Past Week Accomplishments

- Weekly Presentation – All
 - Safety Moment: Sun Exposure and Proper Hydration
 - New Technology: Advanced Metering Infrastructure
 - Land Comparison: Our group has made progress in comparing the potential solar farm sites to “buy” in New Mexico and Ames. We researched and presented key factors such as land availability, cost, sunlight exposure, etc.
 - Photovoltaic System: Our group has performed research and have analyzed the I-V curve characteristics of different photovoltaic systems to determine how panels perform under variable conditions
 - Array Parameter Tool: Used this tool to utilize the cut sheets of the equipment that we have found in our research to come up with ideal combinations

- Put together experimental values gathered from research on various industry solar panels and inverters to understand the tool itself better
- Discussed questions about the spreadsheet – Designer Choice: 200A, 400A, etc., section about the tilt of solar panels – fixed vs tilt models

Pending Issues

- Need to test ETAP on the computer they installed it on
- Waiting for response to our questions about the array parameter tool.

Individual Contributions

Name	Contribution	Hours this Week	Total Hours
Andrew	Helped research sunshine percentage in New Mexico compared to Ames to see which spot was better. Also did the research and slide about this week's safety moment.	2	5
David	Helped research about buying land in Ames IA Vs New Mexico. Then focused specifically to New Mexico by looking up the pros and cons of buying the land there.	3	5

Ben	Made an experimental version of the array parameter tool to figure out how it works. Participated in research to compare land in New Mexico to land in Ames. Made the New Technology part of the slide show.	4	7
Mohamed	Conducting research on purchasing land in Ames, Iowa focusing on evaluating the pros and cons .	3	6
Sergio	Help research I-V curves. Work with array parameter tool.	1	5
Dallas	Performed research on Current & Voltage curves for solar panels (I-V Curves), looked into some factors that impact the I-V curve of a solar panel, Found some examples of industry panels and	4	7

	their I-V characteristics		
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Plans for Coming Week

- Action Items for Client
 - Continue working with Array Parameter Tool
 - Decide on components and gather reasons as to why
 - Come up with expenses and budgets for the project and an estimated timeline
 - Get a complete array for review
 - Create a model using the array parameter tool and other resources
 - Further Research - Mentioned New Mexico was 2nd in cost factors – What was the 1st in cost factors?
 - Work on finalizing components, look into typical industry brands, mentioned ABB/Siemens in the meeting