

## **EE/CprE/SE 491 WEEKLY REPORT 6**

**10/18-10/24**

**Group number: *sdmay25-02***

**Project title: *Ames Microgrid Evaluation and Substation Consulting***

**Client &/Advisor: *Adam Arnold (Burns & McDonnell) and Dr. Zhaoyu Wang***

**Team Members/Role:**

- **Sean Carver - Transmission Team (Substation)**
- **Bethany Danley - Distribution Planning Team**
- **Thomas Edwards - Distribution Planning Team**
- **Nathan Kallal - Distribution Planning Team**
- **Mina Khalil - Transmission Team (Substation)**
- **MacKenzie Woods - Transmission Team (Substation)**

### **o Weekly Summary**

This week, both the distribution and transmission teams made significant progress despite a scheduling setback. The distribution team completed the load profile data in preparation for presenting it to the client and transitioning it into the OpenDSS model, though a scheduled meeting with Adam Arnold on 10/22 was postponed to 10/29 due to a conflict, delaying the distribution model development by a week. Meanwhile, the transmission team continued refining project requirements, designing detailed visuals and one-line diagrams for the microgrid and substation, and planning substation upgrades to increase redundancies. These upgrades will ensure that the substation remains operational even if a component fails. Both teams are aligning tasks and moving forward with client meetings to keep the project on track.

### **o Past week accomplishments**

- **Transmission Team:** We focused on designing detailed visuals and one-line diagrams for the microgrid and substation aspects of the project. These diagrams are critical for ensuring clarity in the system design. The team also worked on finalizing the scope of the project, particularly identifying potential substation upgrades to increase system redundancies, which will enhance the substation's ability to remain operational in case of failures. Additionally, we scheduled a meeting with our client to dive deeper into substation improvements, ensuring that the project stays aligned with both client needs and system reliability goals.
- **Distribution Planning Team:** This week the distribution team had an individual meeting to discuss what we have been working on and what we will be working on in the future. We all worked on finishing the load profile data to present to our industry client. We also set up a meeting with Adam on Tuesday, 10/22, but we had to move this meeting to Tuesday, 10/29.

o **Pending issues**

- Transmission Team: First, we need to finalize our scope of the project in consultation with our advisor and client to ensure that all proposed substation upgrades are feasible and aligned with the project's goals. Additionally, there is the challenge of determining which specific upgrades will best increase system redundancies to maintain substation operation during failures. Another pending issue is coordinating the upcoming meeting with Jenalee to confirm these design decisions and ensure we meet the project's technical and operational objectives.
- Distribution Planning Team: This week, we were supposed to meet with our client, Adam, but this had to be rescheduled due to a conflict. This has set us back by a week on building the distribution model.

o **Individual contributions**

<b><u>NAME</u></b>	<b><u>Individual Contributions</u></b>	<b><u>Hours this week</u></b>	<b><u>HOURS cumulative</u></b>
Sean	This week, I coordinated with the client to narrow down our deliverables. We needed to change some aspects of our original deliverables after some fact finding with the university. I also worked on a model for the current substation.	5	19
Bethany	This week, I helped finish up the load portfolio data. We have this ready to present to our industry client and get feedback on further steps.	3	24
Thomas	I helped develop the load profile data from the given data by the ISU Utilities. I also Spent more time developing the website.	3	23
Nathan	This week I helped Bethany and Thomas develop the load profile data and prepare it for a meeting with our industry client. I also spent a little time tinkering around with OpenDSS.	3	20
Mina	This week I have contributed with attending all the meetings times and helping out with class assignments. I have also been researching on different ideas that we can	3	21

	implement in the project.		
MacKenzie	I have been actively involved in refining the project scope, particularly focusing on substation upgrades to enhance redundancies. I also contributed to the design of the one-line diagrams and visuals for the substation, ensuring they are clear and technically accurate. In addition, I take detailed minutes for all meetings, ensuring that these records are promptly shared with the team for documentation and clarity. My efforts in task breakdown and overall project organization have been crucial in keeping the team aligned and progressing smoothly.	5	28

o **Comments and extended discussion** *(Optional)*

Regarding non-technical concerns, there are currently no issues. Our team is collaborating effectively, and communication has been smooth across meetings and tasks. We feel confident in our ability to continue working together successfully as we move forward with the project.

o **Plans for the upcoming week**

- Sean: I plan on continuing to coordinate with the client and coming up with a clear set of deliverables that we can start delegating the bulk of the work.
- Bethany: I'm going to be at the meeting with Adam on Tuesday to make plans and the next steps for the distribution team. This will be more data collecting or building our model in OpenDSS.
- Thomas: I plan on attending the meeting with Adam Arnold on Tuesday 10/29, and then taking advice from him on what further information is needed to help build the model and potentially start using OpenDSS if we have enough information to begin.
- Nathan: I plan on further exploring OpenDSS and learning how to use the program. I also plan on attending our meeting with Adam Arnold on 10/29 to lay out the next steps for the distribution team.
- Mina: For the next week I will attend all the meeting times. I also plan to create a calendar invite to meet with Jennalee so me, Sean, and MacKenzie discuss out project scope.
- MacKenzie: In the upcoming week, I plan to focus on refining the project scope, particularly regarding substation upgrades, and ensuring smooth progress across all tasks. I will be meeting with Jennalee, alongside Mina and Sean, to finalize the project's scope and determine the most effective substation upgrades to increase redundancies. Additionally, I will begin working on the development of three-line diagrams, building on the one-line diagrams to provide more detailed and comprehensive technical designs for the substation.

Maintaining project organization and alignment with the team on key deliverables will continue to be a priority.

o **Summary of weekly advisor meeting**

Neither part of the team met with the client or advisor this week. The transmission team has plans to meet with Jennalee soon to finalize the scope of the project and see what is reasonable to accomplish, and figure out potential substation upgrades that can be done to reduce redundancies in the system. The distribution team had a meeting scheduled with Adam Arnold on Tuesday, 10/22 that was canceled due to a work conflict on the clients' side that has been rescheduled for 10/29. The purpose of this meeting is to look at the work done by our team on building a load profile for the ISU campus based on FP&M data, and discussing how to transition this into the OpenDSS model.