

EE/CprE/SE 492 STATUS REPORT 1

End of 491 - Jan 30th

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 Status Report 1 Summary

During the week of January 27, the senior design team met with both Dr. Wang and our client, Burns & McDonnell, to discuss progress and plans for the upcoming semester. Over winter break, the team reviewed our deliverables from the previous semester and devised a plan to determine what needed to be accomplished and how to achieve those goals. In our meeting with Dr. Wang, we provided a recap of the project's scope, team structure, and feedback-driven adjustments. Dr. Wang supported our direction and advised us to deepen our understanding of campus load properties while incorporating improvements like battery storage or detailed solar plans to enhance our design. Later, our substation team met with Burns & McDonnell to review our project schedule, expected timelines, and deliverables from the previous semester, ensuring alignment on goals moving forward.

o Past Week Accomplishments/Milestones Reached

- Transmission Team:
 - Establish key deliverable and project timeline for Spring 2025 semester
 - Engaged with industry professionals to gain insights on project viability
 - Completed Revision 2 of Construction One-Line
 - Started work on General Arrangement (to be completed Feb. 7th)
 - Started work on Bill of Materials (to be completed early February)
- Distribution Planning Team:
 - Post-break catch up between team members
 - Met with our advisor to catch him up on progress from over break
 - Discussed future progress as a team and plan for OpenDSS

o **Pending Issues**

- Transmission Team: Currently no pending issues, awaiting feedback on Construction One-Line.
- Distribution Planning Team: Currently no pending issues.

o **Individual Contributions**

<u>NAME</u>	<u>Individual Contributions</u>	<u>Hours this week</u>	<u>HOURS cumulative</u>
Sean	I finished the second revision of our one line drawing. I also worked on the GA and got the first revision close to be turned in.	6	42
Bethany	I have been working on figuring out the spot loads for each building on campus based on the completed load profile data.	5	42
Thomas	I completed the load profile by compiling all hours of the data, cleaning up date and time exceptions at midnight for each day, and then creating a functional pivot table in Excel. I also spent more time working in OpenDSS, starting to configure the ring network.	11	55
Nathan	I have been working on researching possible options for rooftop solar panels and other opportunities to incorporate Distributed Energy Resources (DER) into the university grid.	5	39
Mina	I attended a meeting with the client this week. I made a BOM template and had an internal meeting with Sean to go over how I should get started. After I got more information on how to get started I started working on it.	6	36
MacKenzie	Reviewed the second revision of our construction one-line drawing and submitted it to our client as well as uploaded the proper documents to the shared Google	4	53

	Drive folder. Met with our client. Took detailed meeting minutes.		
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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 Reporting Period**

- Sean: I plan on finishing the first revision of the GA and picking up any comments on the second revision of the OLD.
- Bethany: I plan on helping with the OpenDSS model and finalizing the spot loads for each building, depending on the seasons.
- Thomas: I plan on continuing to improve the OpenDSS model. I also am going to try and schedule a meeting with our client to update them on the progress and next steps.
- Nathan: I plan to assist Thomas and Bethany with the open DSS Model and spot loads. I also plan on researching data on possible rooftop solar and battery storage facilities.
- Mina: I will focus my contributions on BOM. I will attend all the upcoming meetings and help out if needed.
- MacKenzie: I plan on picking up comments where needed for the construction one-line, continuing taking detailed minutes for when the group meets, as well as prepare for our next deliverable.

o **Substation Deliverable Timeline/Schedule**

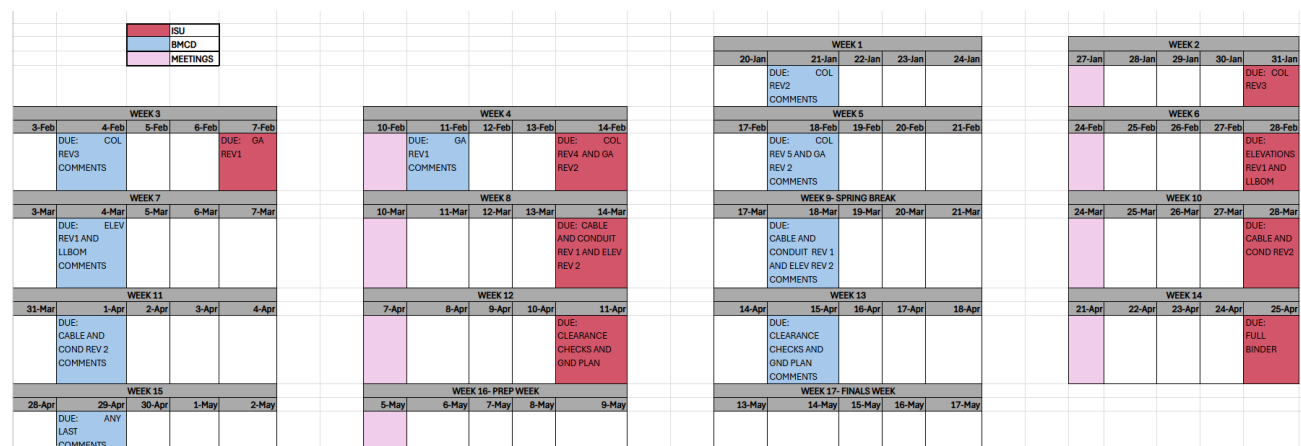


Fig. 1: Substation Deliverable Timeline/Schedule

o Summary of weekly advisor meeting

Monday, January 27th: Substation Team Meeting with Client (Burns & McDonnell)

Key Updates:

- **One-Line & General Arrangement (GA):**
 - Sean has addressed most comments for the third revision.
 - Connections spacing will be eyeballed as long as they appear clean.
 - The GA is on hold until the one-line is finalized to maintain formatting consistency.
 - Goal: GA to be completed by **next Friday**, pending no major one-line changes.
 - Deliverables should be submitted as PDFs, and comments will be provided as fast as Emily and Jenalee can.
- **Project Schedule & Deliverables:**
 - Deliverables due every two weeks, typically the **Friday after meetings**.
 - Major deliverables:
 - **Construction one-line, GA, elevation study, Bill of Materials (BOM), cable conduit layout, clearance checks, grounding plans.**
 - BOM due **end of February** (Mina leading).
 - Burns & McDonnell will provide references for cable conduit layouts when the time comes.
 - Relay functional design is not included in this project but can be added later on.
 - Emily will share the updated project schedule at her soonest availability.

Action Items & Expectations:

- **Rev. 3 to be submitted by EOD today.**
- **GA due next Friday.**
- **Over-communicate project status, challenges, and any needed help.**
- **Come prepared with questions to meetings**—even beyond specific comments—to ensure a full understanding of the project

Monday, January 27th: Whole Team Meeting with Dr. Wang (Advisor)

Our team met with Dr. Wang to recap the first semester progress of senior design. Since it had been a while, we walked him through the entire scope of the project, the team setup that we had come up with from client feedback, and our plans for the upcoming semester. He seemed on board with all our ideas, and recommended that for the distribution side we continue to make sure we understand the different properties that the campus load has. He also challenged us to make sure that we were including novel improvements to our design, such as battery storage or detailed solar plans, to make sure that we had a stretch goal element to the designs and weren't just representing work that had already been done.