

## **Team Name Ames Substation Group 2**

### **Team Members:**

- 1) Patrick Musoy 2) Derek Elkins
- 3) Mackenzie Ray 4) Matthew Wells
- 5) Nathan Tegeler

### **Team Procedures**

1. Day, time, and location (face-to-face or virtual) for regular team meetings:

We will hold weekly meetings on Monday's from 8:30 – 9:30 pm in the TLA in Coover Hall.

2. Preferred method of communication updates, reminders, issues, and scheduling (e.g., e-mail, phone, app, face-to-face):

We will use Discord or Email as our main form of communication. We will use the "General" section on Discord or Email for basic communication updates. We will be making different server names in Discord so communication regarding those specific tasks can occur in those sections. Regarding Scheduling, everyone will be held accountable for remembering scheduled events as we all use different scheduling formats, but Derek will send reminders for meetings with our client. Meetings with our client have been scheduled via Outlook Calendar.

3. Decision-making policy (e.g., consensus, majority vote):

Majority Vote

4. Procedures for record keeping (i.e., who will keep meeting minutes, how will minutes be shared/archived):

Kenzie will take notes during meetings. We will use a Google Document/Folder to keep the minutes shared/archived.

### **Participation Expectations**

1. Expected individual attendance, punctuality, and participation at all team meetings:

We expected attendance at every team meeting and client meeting. As many people as possible will attend meetings with our advisor, but we understand that few have class. If you are to be late, send a message in the team Discord. During meetings, everyone can speak their thoughts, no one person should control the meeting's ideas.

2. Expected level of responsibility for fulfilling team assignments, timelines, and deadlines:

We are expecting everyone to take responsibility for their roles and tasks. Everyone will update their share of the weekly reports. Everyone must be coming to our team, client, and advisor meetings with their material prepared and updates ready. Each person is responsible for tracking the time spent on tasks (estimation is okay).

3. Expected level of communication with other team members:

Ideally, we expect responses as soon as possible but we are setting a guideline to respond within a day or two. We are expected to communicate progress in each meeting and challenges that we may be facing.

4. Expected level of commitment to team decisions and tasks:

We expect full commitment to the teams' decisions and tasks. We want each member to put the same amount of commitment into the project as they would at a full-time job.

### **Leadership**

1. Leadership roles for each team member (e.g., team organization, client interaction, individual component design, testing, etc.):
  - a. Derek – Project Lead:
    - I will keep track of the progress of the project, keep the team on track, and make sure the quality of our work is prestige.
  - b. Patrick – Research & Simulation Leader- Create research documents based on IEEE standards. Develop simulations in PSCAD.
  - c. Nathan – Research & Simulation Leader- Create research documents based on IEEE standards. Develop simulations in PSCAD.
  - d. Matthew – Report Manager – Synergize the material from our pilot scheme and IEEE standard research team. Finalize weekly reports.
  - e. Mackenzie – Recorder and Client Correspondent – Will keep track of minutes throughout all meetings and will be the main contact between Client and Advisor.

2. Strategies for supporting and guiding the work of all team members:

During each meeting, we will check the progress of each deliverable. No one will be working alone on a deliverable, so each person will have at least one other person to lean on for support or guidance. However, everyone is willing to help with a different deliverable if asked. We will communicate with each other if we are struggling with a task. If a deliverable is looking to miss a deadline, that group working on it needs to inform everyone on the team at least 2 weeks before the deadline, so we have adequate time to assist.

3. Strategies for recognizing the contributions of all team members:

In our weekly report, we will indicate what each member contributed to and the amount of time for that week. We will create a shared folder where we can view each other's progress and keep track of an individual's work.

### **Collaboration and Inclusion**

1. Describe the skills, expertise, and unique perspectives each team member brings to the team.

Derek: I have taken Energy Systems and Power Electronics (EE 303), Power System Analysis 1 (EE 456), and I am currently enrolled in Analysis of Energy Systems (EE 351), Introduction to Energy Distribution Systems (EE 455), and Power System Analysis 2 (EE 457). I had an internship with Burns and McDonnell previously, so I have some knowledge regarding substations. I was tasked with completing field lighting designs, wiring diagrams, and voltage drop calculations for multiple substations. I completed and reviewed documents like Bill of Materials, Issue for Construction, and Issue for Record. I also found power consumptions for equipment and completed AC load calculations. However, I do not know how much will transfer over to this project.

Patrick: I took Energy Systems and Power Electronics (EE 303), Power System Analysis I (EE 456), and am currently taking Power System Analysis II (EE 457). Those courses familiarized me to understand the fundamentals of power systems, per unit system, load flow analysis, short circuit analysis, introduction to power system protection, transient stability analysis, dynamic system analysis, advanced load flow analysis, and the understanding of basics of load flow to the advanced dynamics of transient stability and the integration of modern technologies like renewable energy and energy management systems. Through those courses, I became knowledgeable about PSS/E, Matlab for simulation, and PSCAD simulation.

Nathan: Taken Energy systems and power electronics EE 303, Power systems Analysis 1 EE 456, I am taking Power Systems Analysis 2 EE457, and Energy Distribution Systems EE455. These classes will be useful for this project as I learned about 3 phase power flow analysis, PSS/E, MATLAB, and PSCAD. I have interned at the City of Ames power plant. During this job I updated protective relaying drawings in AutoCAD, so I have a general understanding of creating wiring diagrams, schematics, and layouts.

Mackenzie: I took and successfully passed 303. This summer I also had an internship in substation design, although it was focused on protection and controls it gave me a good understanding of the working parts of a substation.

Matthew: I took EE 303 Power System Analysis and am currently taking EE 455 Distribution Systems. I'm familiar with the fundamentals of power flow and bus configuration. I also worked in a manufacturing plant where I built and repaired relay systems for automated systems using wiring schematics. There I also installed a 3-phase step-up transformer to power large machinery in the plant.

2. Strategies for encouraging and supporting contributions and ideas from all team members:

Focus on listening to understand rather than listening to respond. Before moving on in Team Meetings, Derek will ensure everyone is given a chance to speak.

3. Procedures for identifying and resolving collaboration or inclusion issues (e.g., how will a team member inform the team that the team environment is obstructing their opportunity or ability to contribute?)

If it regards a specific person, talking to them individually before calling them out in the group is the first step. However, at every meeting, we will check in to give everyone a chance to speak up if they feel they are not doing enough. One can also send a message in Discord. The tracking of time worked per week on our weekly reports will also indicate if someone is working less than the rest of the group.

### **Goal-Setting, Planning, and Execution**

1. Team goals for this semester:
  - Meet our clients' deliverables.
  - Impress the client with our work.
  - Finish work in advance if possible
  - Learn as much as possible

2. Strategies for planning and assigning individual and teamwork:

When deciding individual work and teamwork, we will rely mostly on what one wants to do. Our client made it clear that he wanted this to be a learning experience and we may add more deliverables on what we personally want to learn. This way each team member gets to decide what they want to learn. We will segment the project into its individual deliverables and plan according to those.

3. Strategies for keeping on task:

Having time set aside in weekly meetings for task updates will allow the team to understand where we are. It will also indicate if we are not on schedule.

**Consequences for Not Adhering to Team Contract**

1. How will you handle infractions of any of the obligations of this team contract?

Communicate with instructors about the issue. If the issue continues discredit people from the project and remove them from the team.

2. What will your team do if the infractions continue?

We will talk to both our advisor and 491 professors/TAs’.

\*\*\*\*\*

a) *I participated in formulating the standards, roles, and procedures as stated in this contract.*

b) *I understand that I am obligated to abide by these terms and conditions.*

c) *I understand that if I do not abide by these terms and conditions, I will suffer the consequences as stated in this contract.*

- 1) Derek Elkins DATE 1/29/24
- 2) Nathan Tegeler DATE 1/29/2024
- 3) Matthew Wells DATE 1/29/24
- 4) Patrick Musoy DATE 1/29/24
- 5) Mackenzie Ray DATE 01/29/2024
- 6) \_\_\_\_\_ DATE \_\_\_\_\_
- 7) \_\_\_\_\_ DATE \_\_\_\_\_
- 8) \_\_\_\_\_ DATE \_\_\_\_\_