

## BI-WEEKLY REPORT 2

FEBRUARY 8, 2021 – FEBRUARY 21, 2021

SDMAY21-37

115/34.5KV SOLAR POWER PLANT & SUBSTATION DESIGN

CLIENT: BLACK & VEATCH

FACULTY ADVISOR: DR. VENAKATARAMANA AJJARAPU

GROUP MEMBERS:

**CHRISTOF BARRIER**

**LOGAN HINKLE**

**KEVE HUGHES**

**BRIAN LEMKE**

**CORTLAND POLFLIET**

**NOLAN ROGERS**

**ERIC SCHULTZ**

### SUMMARY

Over the last two weeks our group met with our mentors a couple times to exchange information regarding the trench fill tool, one-line diagram, and upcoming power substation plan view layout. Completion of an initial one-line diagram is ready to present to our mentors at our next meeting

### ACCOMPLISHMENTS

- Trench Fill Tool – Nolan, Brian, Logan, Keve, Christof, and Cortland
  - Received an NEC table with wire sizes for typical cable dimensions used in substation cable trenches
- Substation Bus Layout Research - All
  - Black and Veatch team gave us feedback and the green light on our choice of a ring bus layout
- One-Line Diagram – Eric, Christof, Brian, and Cortland
  - Started work on the ring bus network layout one-line diagram
  - We had questions about what different components are for, such as the current transformers and potential transformers
  - Completed a preliminary one-line diagram, ready to present on February 22

| Group Member | Bi-Weekly Hours | Cumulative Hours |
|--------------|-----------------|------------------|
| Christof     | 10              | 22               |
| Logan        | 8               | 20               |

|          |    |    |
|----------|----|----|
| Keve     | 8  | 20 |
| Brian    | 10 | 22 |
| Cortland | 8  | 20 |
| Nolan    | 10 | 22 |
| Eric     | 12 | 26 |

## PENDING ISSUES

- Trench Fill Tool –
  - Put on the back burner for now because it will not be utilized until later in the semester
  - Also still waiting on some more wire sizing cutsheets
  - Visual presentation needs to be improved as well
- One-Line Diagram –
  - Generate naming convention for components

## PLANS FOR UPCOMING WEEKS

- Trench Fill Tool –
  - Put on hold for now as we work on more pertinent tasks
- One-Line Diagram –
  - Give names to all components on high and low sides of transformer, make sure to follow a single convention for readability
- Plan View Diagram -
  - After the one-line diagram is completed, we will go into the plan view of the substation
  - Includes control house and fencing as well as component spacing
  - B&V will give us Bluebeam models for all components

## SUMMARY OF MEETINGS

The last two meetings with our mentors we have discussed about different substation bus layout design and purposes. We also talked about the functionality and need for potential and current transformers for protective purposes in substations.