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New Construction/Reconductor 69KV Transmission Line

PROJECT PLAN

Contents

1 Introduction

1.1 PROJECT STATEMENT

Analyze the economic and system viability for reconductoring or new construction of an existing transmission line to meet growing load demand.

1.2 PURPOSE

The current transmission line does not meet the growing load needs, if the line is not improved, some customers will not have power.

1.3 GOALS

1. Deliver a viable, robust, and complete design for each option.

2. Learn from being involved in a major design process.

3. Learn about and research power systems topics that we do not know, but need for the project.

2 Deliverables

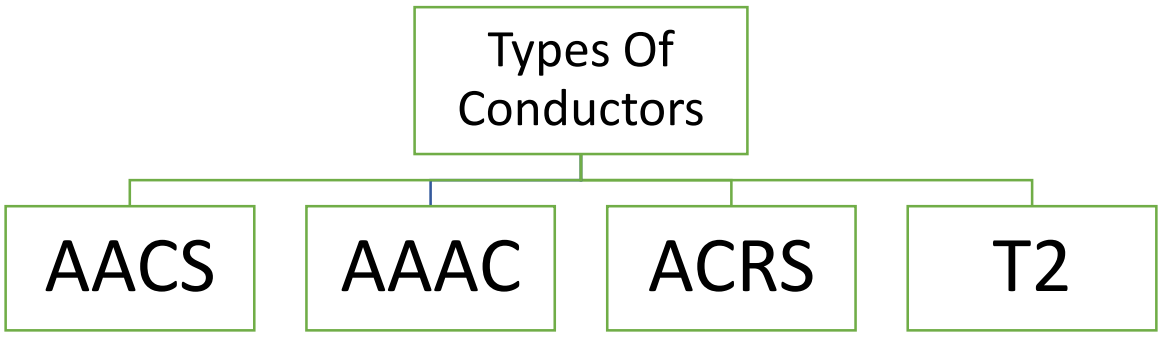
In order to meet the goals outlined in the introduction, the project give these specification:

- Create economic plan with a cost benefit analysis of four type of conductors (T2, ACSR, AAAC, and ACSS).
- Create sag/tension charts for each conductor.
- Construction plane. (next semester deliverable)
- List of equipment required for construction.
- Structure design with material list
- Propose reconductoring line 98 and have an engineering analysis plane done.
- Pole loading with different conductor.
- Budget report.

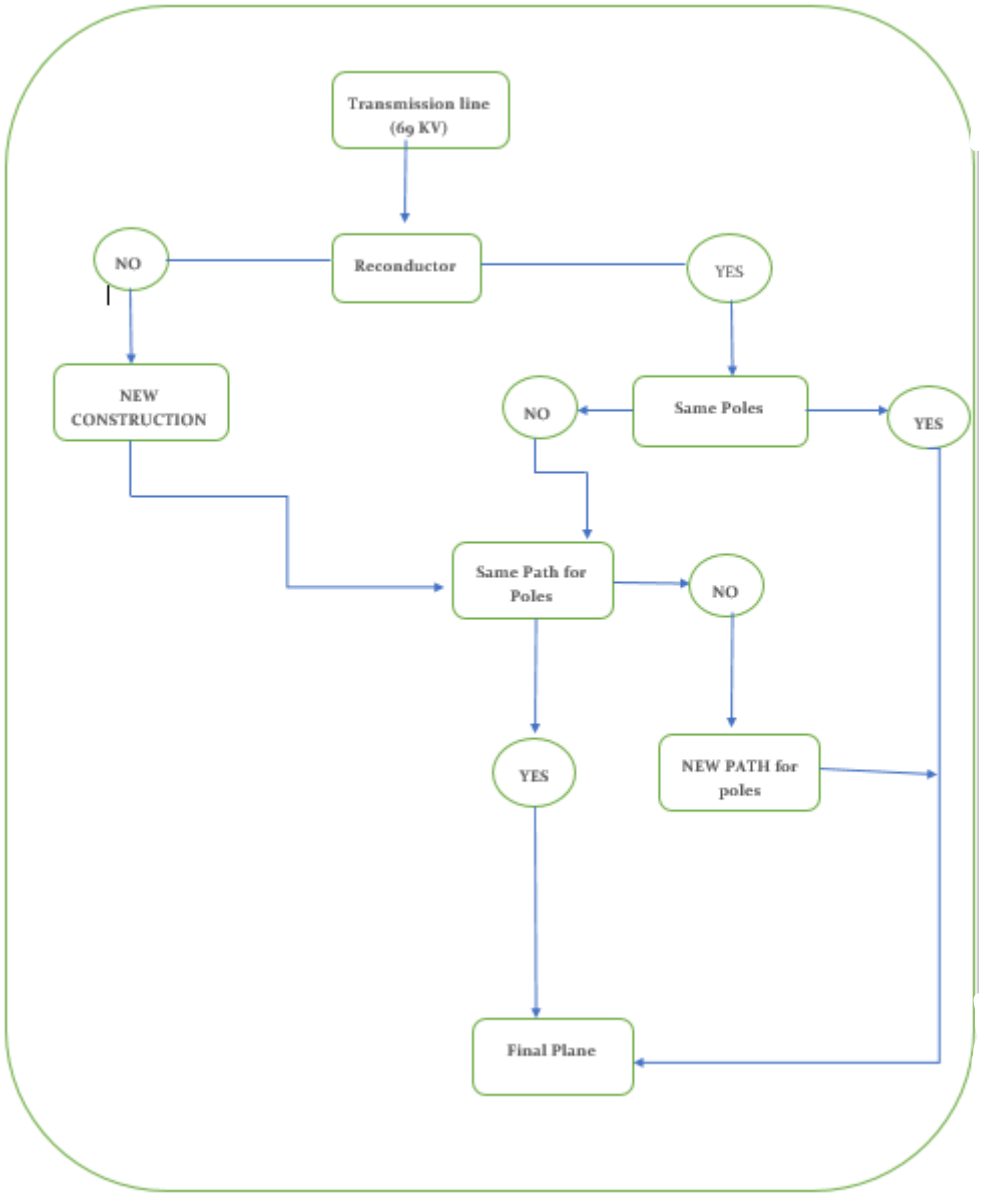
3 Design

3.1 Proposed System Block diagram

First chart represents the selection of conductors that are used in the transmission line. We going to use one of these conductors based on several parameters.



The block diagram below represents different path for the project. Choosing between reconduct the existing transmission line with new type of conductor to meet the minimum requirement of at least 89 MVA on 69 KV transmission line.



3.3 Assessment of Proposed methods

Develop different combinations of conductor and method to increase the transmission line capacity to at least 89 KVA. Either by constructed new transmission line or increase the ampacity by reconduct using new conductor. The cost analysis will determine the best way to achieve the project goal.

3.4 Validation

Basically, this project is based on mounts of calculations in distinct perspective, and so far, we don't have any software suggested from the client for this project. Therefor the major task for this part is that we can only convince our client with our calculations on pole loading, sag/tension calculation, etc. recently we find a software called Osmose O-Calc Pro 5.2, we really think this software will help us in this period.

4 Project Requirements/Specifications

4.1 FUNCTIONAL

The technical requirement:

- Civil and construction requirements that influence the poles
- Protection and control equipment for the transmission line
- Design for the reconductor and reconstruction
- Economic analysis for both cases

4.2 NON-FUNCTIONAL

- Consideration of new locations for poles in case of changed surrounding environment.
- Different properties of pole.
- Budget and phase consideration.

4.3 STANDARDS

Type of conductor: National Electric Code (NEC).
IEEE

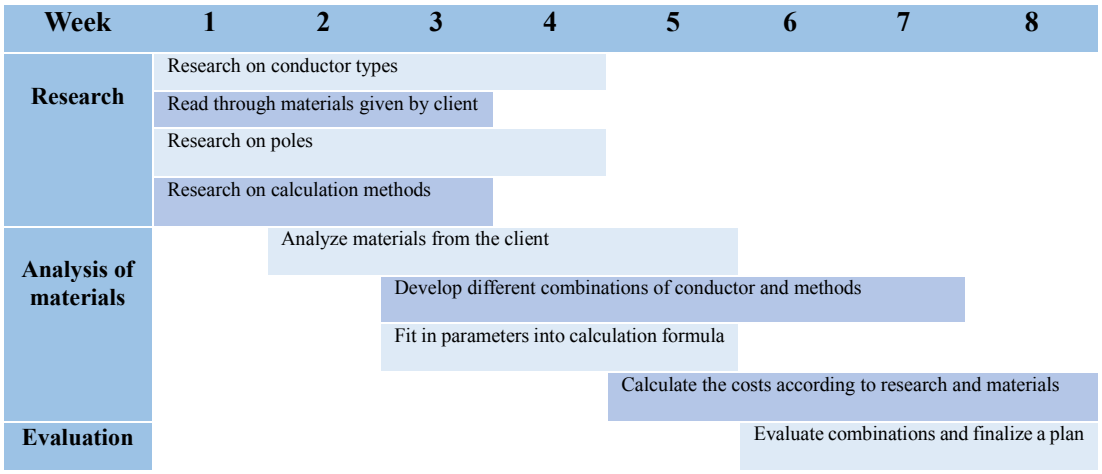
5 Challenges

The most significant challenge for this project that most of the group members have little experience in modeling transmission lines. Therefore, it will take more time for every group members to make deep research in this area to become familiar with the project.

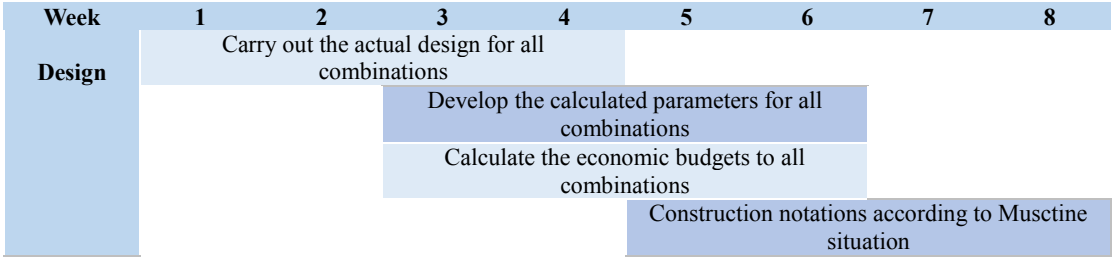
Other concern is the specification for the project is little bit foggy. We need to decide if we are going to module new transmission line or reconductor the existing one.

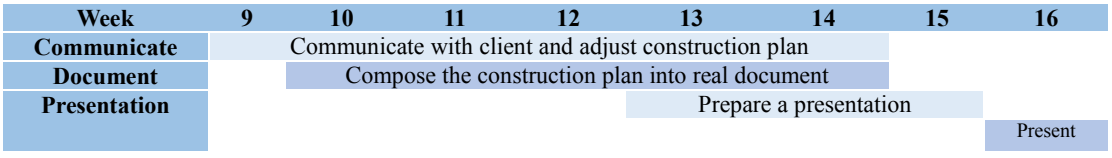
6 Timeline

6.1 First Semester



6.2 Second Semester





7 Conclusions

The goal of this project is to reconducting or new construction of 69kv transmission line with new conductor to deliver at least 89 MVA to meet growing load demand.

8 References

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