

sdmay19-46: Impact of High Photovoltaic Penetration on Distribution Systems

Advisor: Dr. Ajjarapu

Week 4 Report

September 29 - October 4

Team Members

Daniel Tott - Team Leader

Nathan McGlaughlin - Webmaster

Jasleen Grover - Key Concept Holder 1

Minsung Jang - Key Concept Holder 2

Summary of Progress this Report

We studied voltage regulators and downloaded GridLAB-D. Found how voltage regulators work, and how we are able to add a voltage regulator to our 4 node distribution system. Also learned the basics of GridLab, and found how we will implement our original 4 node distribution system in GridLab.

Past Week Accomplishments

Everyone:

- Researched voltage regulators.
 - Need to add a voltage regulator to our 4 node distribution system that we solved a power flow for earlier.
 - Studied voltage regulators, and how they work with transformers in distributions systems.
 - Began looking into how a voltage regulator would work with our 4 node distribution system.
 - Began learning GridLAB-D.
 - Went through a powerpoint presentation on GridLab-D in order to gain an understanding of how GridLab works.
 - Found how we could implement our 4 node distribution system in GridLab by using the power flow module, and defining the nodes, lines, line configuration, transformer, transformer configuration, and load. By defining the initial values, and constants, we would be able to allow the program to go through the power flow, without spending the several hours it took to go through the power flow by hand.
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Pending Issues

Everyone:

- Need to get comfortable with coding in GridLab.
- Learn more about voltage regulators and how they affect a distribution system.

Nathan and Jasleen:

- Find how to install GridLAB-D onto a MacBook.
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Plans for Upcoming Reporting Period

We will work to solve the IEEE 4 bus system with a voltage regulator in between node 3 and 4. We will be meeting during the next week to solve these problems. We will be studying the coding for GridLab on our own as well. We plan to have code for our 4 node distribution system written in GridLab by next week.

Individual Contributions

Team Member	Contributions	Weekly Hours	Total Hours
Daniel Tott	<ul style="list-style-type: none"> -Read about voltage regulators in the textbook "Distribution System Modeling and Analysis" by William Kersting. -Went through a powerpoint on an introduction to GridLAB-D. -Read about the powerflow module and its associated objects on a wiki for GridLAB-D. 	4	35
Nathan McGlaughlin	This week I researched how to use GridLab. I also researched voltage regulators and how they could be used in our 4 bus problem. I also looked into how I could get GridLab on my laptop.	4	32
Jasleen Grover	Read about how to use voltage regulators in my textbook. Also started to learn how to use GridLab D.	5	30
Minsung Jang	<ul style="list-style-type: none"> -Studied more about the 4 bus system. -Learned about voltage regulators. -Researched how to use the GridLab D program. 	5	25

Gitlab Activity Summary

Gitlab Report

- Nothing to report.