EE/CprE/SE 492 WEEKLY REPORT 9

2/24/2020 – 2/27/2020

Group number: 21

Project title: New Simulation Methods to More Effectively Integrate High Levels of Renewable Energy Resources

Client &/Advisor: MISO and James McCalley

Team Members/Role: Jared Rickard, Collins Ntwali, Nidhi Rawell, Jeremy Nash

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o **Weekly Summary** – The team is running Plexos on each of the three virtual machines. Each VM has a different cluster number (VM 1 is for 2 representative weeks, VM 2 is for 3 representative weeks, VM 3 is for 4) and the results will be compared very soon. A GUI is being researched and will be developed soon to go with the Python code.

o **Past week accomplishments**

✦ Jared Rickard: Finished spatial metadata calculations, compiled code additions into one master script, and developed basic test script to see that it's clustering the way we hope.

✦ Collins Ntwali: Created plots of total fixed solar hourly generation per monthly subset. Read up more on docstring for python so as to implement them in our code.

✦ Nidhi Rawell: Ran Plexos simulations on 1 cluster in virtual machine 1. Working on Python coding for K-medoids.

✦ Jeremy Nash: Successfully ran Plexos for each of the three clusters in virtual machine 3. Combined all percent differences for each node into one box and whisker plot.

o **Pending issues**

✦ Jared Rickard: Research UI creation in Python. Design code diagram to explain what all the different parts do.

✦ Collins Ntwali: Find ways to visually represent attributes of the data profiles through graphs for easier interpretation. Add more DocStrings to our code.

✦ Nidhi Rawell: Run all 3 clusters in virtual machine 1 for test ST 1 week no MT.

✦ Jeremy Nash: Need to combine Plexos data into a presentable manor for the MISO group to look over. Need to comment out the code in a presentable manor.

o **Individual contributions**

Name	Individual Contributions	Hours This Week	Hours Cumulative
Jared Rickard	Spatial metadata, test script	12	104
Collins Ntwali	Data interpretations, DocStrings	10	94
Nidhi Rawell	Plexos simulations,Python coding	8	90
Jeremy Nash	Plexos runs, data presentability, code commenting	8	97

o   Comments and extended discussion –

o   **Plans for the upcoming week**

✦ Jared Rickard: Look into Tcl/Tk module for window creation that shows user choices. Create code diagram or basic user manual.

✦ Collins Ntwali: Start with main codes and add docstrings to them. Expand techniques/methods to characterize the data profiles to multiple data sets.

✦ Nidhi Rawell: Work on K-medoids in Python and Plexos simulations.

✦ Jeremy Nash: Determine what went wrong/right with the initial Plexos runs. Correct/add on to this with the next few runs. Update the main code for readibility.

o   **Summary of weekly advisor meeting –**

Develop User Manual of the code, running independent weeks in Plexos simulations, and look at transmission flow regionally using spatial code were topics discussed in the weekly advisor meeting.