

EE/CprE/SE 491

WEEKLY REPORT 5 (11/4/19 – 11/14/19)

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 - ;

o Weekly Summary -

We continued research of clustering algorithms. We also continued brainstorming possible attributes. We made the code much more modular to allow for as much user choice as possible. We finally heard back from Energy Exemplar and were given EULAs to sign before we could obtain Plexos licenses.

o Past week accomplishments

- **Jared Rickard:** Presented code step by step to client. Revamped code to fit the client's expectations better, added functionality to make running tests with the code easier.
- **Collins Ntwali:** Worked on a Python script to compute attributes from some of the wind profiles. Reviewed research on 'Representative time periods selection' to see if we can incorporate some of the techniques in our study.
- **Nidhi Rawell:** Evaluated different analytic methods from Heuristic methods, selection algorithms, and hierarchical clustering. Further researched advantages and disadvantages through the evaluation of these methods. Summarized the research in the "Representative time periods selection". This is contributing to the analytical design of the project because the goal is to build a criterion for judging the different methods for identifying representative weeks, days, or months.
- **Jeremy Nash:** Developed a Python script to input all the 8670 profiles in one output file and output the capacity factor and the total energy for each in another excel file. Also compared our estimated output with these outputs to get an average percent error over many profiles.

o Pending issues

- **Jared Rickard:** Add more attribute options to the code
- **Collins Ntwali:** Plexos license.
- **Nidhi Rawell:** Obtaining Plexos licenses
- **Jeremy Nash:** Fixing these codes to work with the new output given to us by MISO

o Individual contributions

Name	Individual Contributions	Hours This Week	Hours Cumulative
Jared Rickard	Python code, code presentation and documentation	10	58
Collins Ntwali	Python code, research and documentation	10	54
Nidhi Rawell	Research, documentation, evaluation	10	56
Jeremy Nash	Python code, research on code output	10	56

o Plans for the upcoming week

- **Jared Rickard**: Continue adding attribute options, research UI for client, finish EULAs for plexos.
- **Collins Ntwali**: Continue building on my Python knowledge and code. Research about python tools that we can use to simplify our code.
- **Nidhi Rawell**: Finding example code for different clustering algorithms in Python and continuing research on the analytical design of project. Finding different studies done on projects similar to our project.
- **Jeremy Nash**: See code changes, research how the changes affect the output

o Summary of weekly advisor meeting –

Discussed our current list of attributes and what we could add to it. Presented what the code does and got feedback from the client to determine if we were on the track. Presented continuing clustering algorithm research and discussed ways to evaluate each algorithm. Presented attribute importance research and discussed ways to improve the process.