

# EE 491 WEEKLY REPORT 6

October 11th - 17th

Power system reliability in MISO for high wind/solar levels

Group 23

Client: Midcontinent Independent System Operator

Team Members:

Zaran Claes

Shannon Foley

Matt Huebsch

Shelby Pickering

Ian Rostkowski

David Ticknor

## WEEKLY SUMMARY

This week will be focused on calculating capacity credit values for the different types of renewable energy generation at all the different busses (geographic locations). When these are calculated, then the senior design team will create heat maps of the capacity factor for every technology in every provided year. These heat maps will help the design team to make decisions regarding siting of new renewable energy when the team begins to model variations of the grid in PLEXOS. Any heat maps that are not completed in week six will be finished up in week seven.

The senior design team is also getting closer to receiving licenses for PLEXOS and will contact school personnel to discuss possibilities of downloading the program onto school computers so that the design team can have a dedicated lab.

The team also discussed the design document and how creating it helped the team become more organized and have a better plan for the future.

## ACCOMPLISHMENTS FOR THE WEEK

<b>Name</b>	<b>Accomplishments</b>	<b>Hrs this week</b>	<b>Total</b>
<b>Zaran Claes</b>	<ul style="list-style-type: none"> <li>-Met with team, learned about heat-maps</li> <li>-Taught team about how to calculate capacity credit using excel</li> <li>-Calculated capacity credit for my year assigned</li> </ul>	10	26
<b>David Ticknor</b>	<ul style="list-style-type: none"> <li>- Design Document</li> <li>-Taught team about Excel Heat Maps</li> <li>-Split up work needed for data analysis</li> <li>-2017 Wind data analysis and mapping</li> <li>-PLEXOS emailing / preparing for PLEXOS</li> <li>-MISO meeting prep</li> </ul>	12	31
<b>Shannon Foley</b>	<ul style="list-style-type: none"> <li>- Helped team learn how to use a lot of different functions in Excel</li> <li>-Began working on calculating capacity credit for 2008</li> <li>-Worked on the testing plan for the Design Document</li> <li>-Created a living To-Do list</li> </ul>	6	25
<b>Ian Rostkowski</b>	<ul style="list-style-type: none"> <li>-worked with team to learn how to generate heat maps from the given data</li> <li>-generated top 10 and 100 hours of generation plus averages of mid-day generation in July</li> </ul>	10	27
<b>Shelby Pickering</b>	<ul style="list-style-type: none"> <li>-Met with team; learned how to do capacity factor calculations and how to generate heat maps</li> <li>-Calculated capacity factors for given year of data</li> <li>-Met with MISO to discuss next steps and update our timeline</li> </ul>	10	22.5
<b>Matt Huebsch</b>	<ul style="list-style-type: none"> <li>-Heat Maps.</li> <li>-Review/Edit Reports</li> <li>-Minutes</li> <li>-Email Energy Exemplar</li> <li>-Rewrote Report</li> </ul>	11	29

## PENDING ISSUES

- The team is awaiting PLEXOS software, the main software needed to simulate power models for our project.
- The data that we received from MISO had some errors, so it was deleted and we are awaiting new data to use to create new models.

## PLANS FOR NEXT WEEK

Next week the design team would like to have all the capacity credit values calculated. These values and their associated geographic locations will be used to create useful heat maps that will assist the team in making decisions for siting additional generation facilities in the future. We need to set up a work area for PLEXOS and figure out our criteria for siting.

## INDIVIDUAL CONTRIBUTIONS FOR NEXT WEEK

Zaran Claes - Get PLEXOS working on a computer at school if possible. If not, try to get it on a laptop. Finish making heat maps to help team decide on how we are going to site the generators. Do some more research on state policies.

David Ticknor - Make sure PLEXOS licenses are mailed in from all team members. Get PLEXOS working on DESKTOP, start to run some things. Do the data analysis for 2017 UPV and DG solar. Finish up criteria for siting. Make list of what I think should be siting order for both wind and Solar.

Shannon Foley - Finish up working on the heat maps that couldn't get finished during week 6. Teach a PLEXOS how-to so that the rest of the team can immerse themselves in how to use the software and get a basic feel for the program. Possibly scale down the 2024 data to be at 2018 levels. This will make our model ready for 2018 data instead of having it need 2024 data.

Ian Rostkowski – Will assist in conceiving a method for siting generation facilities in PLEXOS when the team begins to make models. Will work with the team in the coming PLEXOS workshop in order to learn how to use the program and be able to better assist in generating the models.

Shelby Pickering – Work with team and ETG to get PLEXOS working on school desktops. Learn PLEXOS. Begin siting for new solar and wind. Continue to run more capacity factor calculations and generate heat maps to begin to determine patterns and help with the siting process.

Matt Huebsch - Write Minutes for meeting number 7. Work on generation data and heat maps for 2009.