NYCA Peak Weather Normalization – The Need to Incorporate Peak Hour Data

Presented to the December 20, 2018 NYISO Load Forecast Task Force

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The Issue

- The New York ISO's Peak Load Weather Normalization models (and presumably the TO's models) are based on defining the daily peak loads in terms of Peak Daily Temperatures
- This year, on the NYCA peak day there were storms that came through the western part of the state
- When presenting the summer hot weather operations the NYISO operations department stated they believed that in the absence of the storms the NYCA peak would have been 400 – 600 MW higher than occurred.
- The impact of the weather change is evident in the some of the Peak Day Zonal Loads

2018 Peak Day Load Profile for Zone A



West Zone Load 2018 Peak Day

2018 Peak Day Load Profile for Zone C



Central Zone Load 2018 Peak Day

The impact on Zone A

- The peak for the NYISO occurred in the 1600 hour.
- For the Western Zone, the NYCA peak coincident load was 215 MW below the zone's own peak for the day.
- The peak day peak temperature at the Dunkirk Chautauqua Co Airport was 88 degrees.
- By the beginning of the 1600 hour the temperature had dropped to 78 degrees.
- Since the NYISO Weather Normalization is based upon peak daily temperature data, the weather normalization treats the lower 1600 hour load as if it was consistent with the daily peak weather conditions

The impact on Zone A

- The peak for the NYISO occurred in the 1600 hour.
- For the Central Zone, the NYCA peak coincident load was 137 MW below the zone's own peak for the day.
- The peak day peak temperature at the Syracuse Airport was 92 degrees.
- By the beginning of the 1600 hour the dry bulb temperature had dropped to 80 degrees.
- Since the NYISO Weather Normalization is based upon peak daily temperature data the weather normalization treats the lower 1600 hour load as if it was consistent with the daily peak weather conditions

How does this Inaccuracy in Weather Normalization Affect NYISO Processes

- Assume that the Operators are correct and the peak would have been 400 – 600 MW higher without the storms.
 - Assume it is 500 MW lower
- The NYISO Peak Load forecast is based on the weather normalized data plus Regional Load Growth Factors
 - Not correcting for the weather change means that the peak forecast for next year is also several hundred MW below what it should be and that the NYISO will procure almost 600 MW less capacity than is appropriate
 - It also means that the NYISO long term forecast will be ~500 MW low and that this underforecast will translate to all the NYISO planning studies

What should be done

- The NYISO and the Transmission Owners should look at incorporating peak hour weather data into their weather sensitivity models
- This will enable the models to recognize the impact of weather changes within the day on the daily peak loads
 - While such occurrences may be relatively infrequent on peak days, it is likely to be more frequent on other days that are used to determine the weather/load models
- When the weather changes on Peak Summer days, such as it did this summer, it will allow the weather normalization to make a more accurate adjustment to the peak loads

What Specifications Should be Considered

- It will be critical to capture both the temperature at the time of the peak along with the impact of higher temperatures earlier in the day since both will impact the load at the time of peak
- I suggest that modelers consider the following:
 - Adding peak hour weather to the models so that the peak day includes both daily peak and peak hour data.
 - Representing the peak day weather as an average of several hours ending at the peak hour rather than using the peak daily temperature.

Questions/Comments?