Discussion on Adjusting for Precipitation in ICAP Weather Normalization

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Effect of Precipitation on Summer Peak Loads

- Previously, the LFTF discussed whether the weather normalization may be understating the true weather adjustment necessary to accurately weather normalize the TD peaks in years in which there is precipitation during the NYCA peak day.
- Currently, the daily Cumulative Temperature & Humidity Index (CTHI) is used to weather normalize the Transmission District (TD) peak loads.
- CTHI is based on a weighted average of daily maximum dry bulb and wet bulb temperatures.
- On summer days with thunderstorms or other afternoon precipitation, the actual dry bulb and wet bulb temperatures during the hour of the NYCA peak could be significantly lower than the temperatures used in the CTHI calculation.

3 Potential Adjustment Methods

- **Method 1 & Method 2**
  - Weather Adjustment Methods to account for Precipitation Impacts

- **Method 3**
  - Load Adjustment Method to account for Precipitation Impacts

Potential Weather Adjustment Methods to account for Precipitation Impacts

- **Method 1: Adjust the weather variable used in the regression in order to better represent the weather conditions during the NYCA peak hour.**
  - Calculated "Afternoon CTHI" based on 3 hours leading up to and including the typical summer peak hour (Hour Beginning 16). Use Afternoon CTHI rather than CTHI for the TD weather normalization.
  - This method had little impact during initial testing. Further testing will be done in the future.

- **Method 2: Include a precipitation binary variable in the TD weather normalization model.**
  - Assuming precipitation is a negative driver of summer peak loads, including a precipitation binary variable in the regression should capture the average impact of precipitation on summer weekday TD peak loads.
  - This method had greater impact during initial testing. Further testing will be done in the future.

Potential Load Adjustment Method to account for Precipitation Impacts

- **Method 3: Reconstitute the load to account for precipitation impacts**
  - Adjust the observed load on the NYCA peak day to account for the impact of thunderstorms or precipitation.
  - Reconstitute the weather to approximate what the CTHI (or dry bulb and wet bulb temperatures) would have been in the absence of precipitation impacts.
  - Using the reconstituted weather, reconstitute the TD load to approximate what the TD load would have been in the absence of precipitation impacts.
  - The reconstituted load could be calculated using the Day-Ahead forecast models estimated with the reconstituted weather data.
  - The NYISO currently employs similar methods to estimate Demand Response load impacts.
  - On days when both demand response and thunderstorm impacts are present, a joint reconstitution would be performed.
  - This method has yet to be tested.

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Potential Implications of Load Method (Method 3)

- The TD ICAP weather normalizations would be based on estimates of load reconstituted for both demand response and thunderstorm impacts.
- Load reconstitution adjustments for precipitation impacts would always be positive. Thus, in the long run, there could be a positive bias in the weather normalized loads.

Next Steps

- Solicit feedback from LFTF members
- Determine whether the level of impact on TD loads warrants a change in the weather adjustment method
- Future discussion with LFTF on best practice to account for precipitation impacts

Questions?

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