Locational Capacity Requirement Calculation Process

1. Introduction

This document describes the process that NYISO follows to develop the Locational Minimum Installed Capacity Requirements (LCRs) for the Zone J and Zone K Localities (Steps 1-5), and the G-J Locality (Step 6). Until Capability Year 2014/2015, Zone J and Zone K were the only Load Zones identified as Localities. A third Locality consisting of Load Zones G, H, I, and J (the G-J Locality) will be effective beginning with the 2014/2015 Capability Year.

2. Initial Conditions

Initial conditions are established using a Multi-Area Reliability Simulation (MARS) base case, which is adjusted to the established IRM determined by the NYSRC for the upcoming Capability Year. In this base case, the LOLE is equal to or less than 0.100 days/year.

3. Base Case Adjustments

If the NYSRC adds margin to the base case IRM, the resulting lower LOLE (less than 0.100 days/year), will become the target LOLE for establishing the LCRs in the following MARS simulations. The target LOLE is expressed to three decimal places.

3.1 Reset Capacities

3.1.1 Any MW of capacity that have been removed or added for modeling purposes to arrive at the base case for the IRM Study should be reset to the "as found"[1] case before initiating this process.

3.2 Introduce the latest ICAP load forecast and run the MARS model

3.2.1 Remove the capacity[2] in Zones west of Central East that have excess capacity, proportional to the excess, until the NYCA reserve margin equals the established IRM approved by the NYSRC.

3.2.2 With the downstate Zones now at their 'as found' capacity levels, verify that the NYCA LOLE is at or below the target LOLE.

3.3 Identify any material capability changes.

Material capability changes, as used in this process, means individual changes that would increase or decrease generation, CRIS MW, or transmission transfer capability by 200 MW or greater.

3.3.1 Notify the NYSRC of any material capability changes together with the corresponding changed IRM for the NYSRC to consider whether to confirm its original IRM or to approve a changed IRM.

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[1] The 'as found' capacity value in a Zone is the value prior to shifting or removing capacity.

[2] The methodology for removing or adding capacity starts with a value of ICAP. The ICAP is converted to UCAP for each affected Load Zone using the zonal equivalent demand forced outage rate (EFORd). This UCAP value is placed in the MOD-MDMW table in the MARS model.

3.3.2 Introduce any material changes and adjust the capacity in Zones west of Central East that have excess capacity, proportional to the excess, until the reserve margin equals the established IRM.

3.3.3 Verify that the NYCA LOLE is at or below the target LOLE.

4. Determination of the initial target capacities for Zone J and Zone K Localities.

With the base case as adjusted in Section 3, freeze the NYCA reserve margin at the IRM level and perform the following steps for the Zone J and Zone K Localities, one at a time. Note that the target LOLE remains the same as that found in Section 3 above.

4.1 Remove a trial amount of ICAP from the study Locality.

4.2 The equivalent UCAP amount to be removed from the Locality is entered in the respective entry for the Locality in the MOD-MDMW table of the MARS database.

4.3 To maintain the established IRM, the same trial amount of ICAP is added to the Zones west of Central East that have excess capacity.

4.4 Run the MARS simulation for a minimum of 1000 iterations and until the standard error of the LOLE index is less than or equal to 0.05.

4.5 If the NYCA LOLE is not at the target value, adjust the trial amount of ICAP until the NYCA LOLE is at the target value.

4.6 Record the total amount of ICAP removed from the study Locality. This is the initial target capacity removed for the Locality.

4.7 Return the adjusted capacity to the original values from Section 3 (e.g., the Localities are returned to the 'as found' condition). Repeat steps 4.1 through 4.6 for the remaining Locality. These are the initial target capacities removed for each respective Locality.

4.8 Return the adjusted capacities in the Localities to the 'as found' condition and the adjusted capacities in the excess Zones to the original values from Section 3. Using the initial target capacities removed as determined in 4.6 and 4.7 above, repeat steps 4.1 through 4.6 using the ratio of the initial target capacities removed [ex. Zone J ratio = Zone J MW/ (Zone J MW + Zone K MW)] to remove a trial amount of ICAP from Zones J and K simultaneously until the NYCA LOLE reaches the target LOLE value.

5. Determination of the Locational Minimum Installed Capacity Requirement for Zone J and Zone K.

5.1 The LCR is the ratio, expressed as a percentage, of the remaining amount of ICAP for each Locality, found in Section 4.8, divided by the Locality's forecast peak Load.

5.1.1 If needed, use engineering judgment and adjust the LCRs in $\pm$ 0.1 or 0.2% increments to get values to the nearest 0.5% point.

5.1.2 If rounding is utilized, test these resulting values by running the MARS model and verifying the LOLE is at or below the target LOLE value in Section 3.

5.2 The resulting LCRs for Zones J and K are proposed to the NYISO Operating Committee.

6. Determination of the LCR for the G-J Locality.

6.1 Ensure the database has been adjusted to arrive at the established statewide IRM and the proposed LCRs for Zone J and Zone K.

6.2 While freezing the Zone K locality at its LCR value, return the Zone J capacity to its 'as found' value.

6.3 Remove capacity from Zones G-J and add to the Zones west of Central East that have excess capacity until the NYCA LOLE reaches the target LOLE value.

   6.3.1 Remove a trial amount of ICAP from Zones G-J proportional to their existing UCAP.

   6.3.2 The equivalent UCAP amount to be removed from each Zone is entered in the respective entry for the Zone in the MOD-MDMW table of the MARS database.

   6.3.3 To maintain the established IRM, the same trial amount of ICAP is added to the Zones west of Central East that have excess capacity.

   6.3.4 Run the MARS simulation for a minimum of 1000 iterations and until the standard error of the LOLE index is less than or equal to 0.05.

   6.3.5 If the NYCA LOLE is not at the target value, adjust the trial amount of ICAP and rerun step 6.3 until the NYCA LOLE is at the target value.

6.4 Calculate the G-J locality LCR.

   6.4.1 The G-J Locality LCR is the ratio, expressed as a percentage, of the remaining amount of ICAP in Zones G, H, I and J, determined in Section 6.3, divided by the forecast non-coincident peak load of the G-J Locality.

      a. If needed, use engineering judgment and adjust the G-J Locality LCR in + 0.1 or 0.2% increments to get values to the nearest 0.5% point.

      b. If rounding is utilized, test these resulting values by running the MARS model and verifying the LOLE is at or below the target LOLE value in Section 3.

   6.4.2 The resulting LCR for Zone G-J Locality are proposed to the NYISO Operating Committee.