

Modeling Improvements for Capacity Accreditation: Correlated Derates

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Agenda

- Review
- Ambient Adjustments
- Emergency Capacity
- Proposed Methods for Evaluation of Correlated Derates
- Next Steps

Previous Discussions

Date	Working Group	Discussion Points and Links to Materials
January 23, 2023	ICAPWG	Modeling Improvements for Capacity Accreditation: Project Kick Off: https://www.nyiso.com/documents/20142/35880057/2023-01-26%20ICAPWG%20Modeling%20Improvements%20-%20Kick%20Off.pdf/c7ac6b6e-c90b-54b4-832d-ec6ecfc8f7ff
February 28, 2023	ICAPWG	Modeling Improvements for Capacity Accreditation: Correlated Derates https://www.nyiso.com/documents/20142/36499713/Correlated_Derates_MIWG_022823_FINAL.pdf/35eaab46-740e-aed0-9e2d-2207c06a0659

Ambient Adjustments

Review

- **Currently, DMNC tests on internal combustion, combustion units and combined cycle units must be temperature adjusted**
 - The Average Ambient Temperature used for the temperature adjustment is the average of the ambient temperatures recorded at the time of the Transmission District's seasonal peak during the previous four like-Capability Periods
 - These units correct their DMNC test MW value to a curve, usually reducing the amount of capacity that can be sold
- **The MMU has noted a “significant amount” of ICAP from fossil-fuel and nuclear generators is qualified but functionally unavailable due to ambient conditions and recommends more units be temperature adjusted**
- **This project to consider a methodologies to calculate seasonal capacity ratings that are adjusted for ambient water, air temperature and humidity conditions for affected generators**

Potential Ambient Adjustment Process

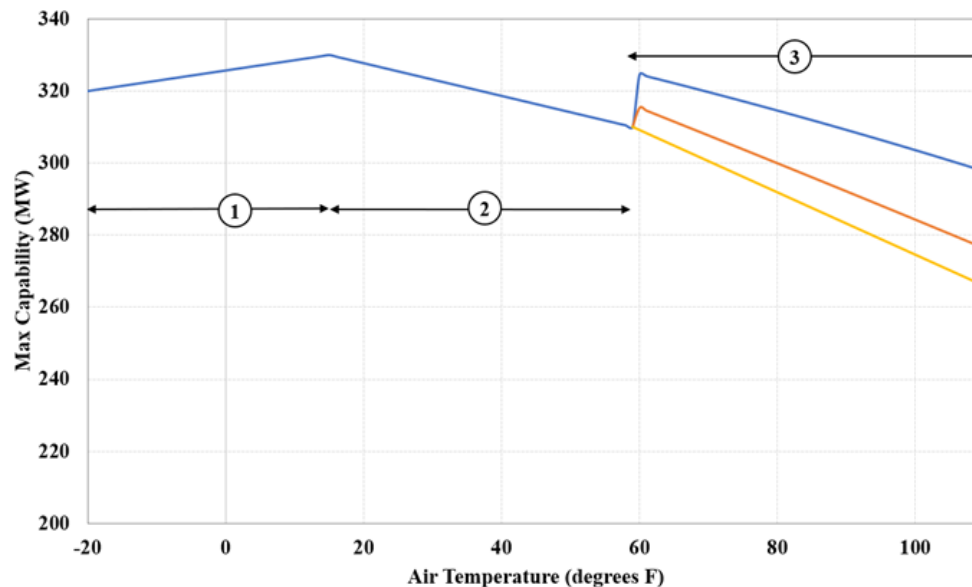
- **Develop a questionnaire for thermal generators to describe their cooling systems**
- **Generators would be categorized based on their responses**
 1. Air Temperature Adjusted (as currently done for CTs and CCs)
 2. Air Temperature and Humidity Adjusted
 3. Air and Water Temperature Adjusted
- **Based on the category, each generator would then provide a curve, such as the one on the next slide.**

Temperature and Humidity Curve

- In this example the unit's output is adjusted as function of both air temperature and relative humidity (RH). In area 3 of the curve the unit turns on an evaporative inlet cooler to boost output. The three curves represent output at 20% RH, 60% RH and with the inlet cooler turned off.

(Curve provided by MMU)

Capability Curves for Air Temperature & Relative Humidity dependent units



DMNC Correction for Temperature and Relative Humidity

- Consider replacing the average of four like capability method with an ICAP design criteria method that better aligns with the ICAP market

Ambient Water Adjustment

- **For once-through water-cooled units evaluating the use of ambient adjustment curves based on inlet water temperature**
 - Evaluate the accuracy and feasibility of adjusting DMNCs using historical water temperature data for the design day
 - Evaluate whether public water temperature data can be used effectively to provide accurate validation points

Other Reporting Issues

- **Cooling systems for steam units are non-standardized and may be affected by a variety of factors other than water temperature, such as:**
 - System configuration (fans, re-circulators and pumps)
 - Permit limits on discharge temperatures
- **Requesting feedback on the ability to provide output curves for all types of thermal generators**

Emergency Capacity

Review

■ MMU Recommendation #2021-4

- NYISO currently overestimates the installed capacity of certain generators. This includes resources with emergency capacity that is virtually never committed in practice
- Recommends developing procedures to more accurately determine the ICAP of units with functionally unavailable capacity

■ Proposing to require Capacity Limited Resources to be available to their full range during peak load periods

- A Capacity Limited Resource (CLR) is an ICAP supplier that is able to take extraordinary measures to increase its output above its Normal Upper Operating Limit (UOL_N) and can sell UCAP based on taking those extraordinary measures
- Currently, a CLR's Bid/Schedule/Notify requirement is based on their Emergency Upper Operating Limit (UOL_E)

NYISO Recommendation

- Require Capacity Limited Resources to set their **UOL_N equal to their full ICAP obligation** during hours when capacity zone load is forecast to be near ICAP peak
 - This change would make a CLR's full ICAP obligation MWs available to be economically dispatched in the Day-Ahead Market
 - Capacity zone load based on 2-day-ahead forecast

Next Steps

Next Steps

- **Requesting feedback from Market Participants**
 - Methods for water temperature data and corrections
 - Ways to minimizing administrative burden
- **Targeting June 2023 to report additional analysis with stakeholders**

Our Mission & Vision



Mission

Ensure power system reliability and competitive markets for New York in a clean energy future



Vision

Working together with stakeholders to build the cleanest, most reliable electric system in the nation