Calculating Installed Capacity Obligations

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ICAP Obligations and ICAP Equivalents

A generator's ICAP obligation ("ICO") is the amount of capacity it is required to bid into the day-ahead market, if it is an ICAP provider (and is not experiencing an outage). Technical Bulletin 76 calculates the ICO for each generator as:

> **"The ICAP equivalent of [its] UCAP sales less any capacity that has been derated for that day's day-ahead market ("DAM") as defined in the ISO Procedures." [Footnote omitted.]**

The ICAP equivalent ("ICE") for most generators, in turn, is calculated in Sec. 3.1(b) of Att. J of the ICAP Manual as:

- **The amount of UCAP supplied by that generator divided by one minus the EFORd that is used to determine the amount of UCAP that generator qualifies to provide.**

Other formulae intended to yield similar results apply for generators providing equivalent GADS data, special case resources and control area system resources.

ICE for a Hypothetical Generator

Consider a hypothetical generator with a 100 MW DMNC with an EFORd of 0.2

- **It qualifies to provide 100 x (1 – 0.2) = 80 MW of UCAP.**

Suppose that it actually sells all of the 80 MW of UCAP it is qualified to offer.

- **In that case, its ICE is 80 / (1 – 0.2) = 100 MW.**

This is just what one would expect.

- **The unit offered to provide all of the UCAP it was capable of providing, and all of that offer was accepted.**
- **It is therefore obligated to offer all of the energy it is capable of providing into the DAM.**

If the conditions affecting the unit's capacity that are anticipated at the time of the DAM match those that are used to calculate its DMNC, it will be obligated to offer 100 MW into the DAM.

ICO When Ambient Conditions Cause Derating

But if this unit must be derated below its DMNC due to these conditions, its ICO would also be decreased.

- **Suppose, for example, the temperature for the next day is expected to be hotter than the temperature used to determine DMNC.**
  - ***As a result, the hypothetical generator must be derated from its 100 MW DMNC to 90 MW, solely due to these high temperatures.***
  - ***In that case, its ICO would be equal to its 100 MW ICE minus the 10 MW derate, or 90 MW.***
- **This, again, is just what one would expect.**
  - ***The unit is obligated to offer all of the energy it is capable of providing into the DAM.***
  - ***Since it is only capable of generating 90 MW, given the expected conditions, it is only required to offer to produce 90 MW.***

ICO When Ambient Conditions Permit Uprating

Next, consider another day, for which the temperature is expected to be cooler than the temperature used to determine DMNC.

- **As a result, the hypothetical generator is uprated from its 100 MW DMNC to 105 MW.**

Logically, one would expect that its ICO would also increase to 105 MW.

- **This unit sold into the New York market all of the UCAP it was capable of providing.**
- **Since New York consumers are footing the bill for all of this generator's ICAP costs, it should be expected to make all of its capacity available to the New York market.**

But under the procedure set forth in TB 76, this unit's ICO would continue to be 100 MW, even when it is uprated.

- **The procedure set forth there only takes deratings into account.**

ICE for an ICAP Sale Supported by Part of a Unit

Instead of assuming that this generator sold all of the 80 MW of UCAP it was qualified to provide into the New York ICAP market, assume that it only sold 40 MW into New York.

- **The remaining capacity may have been sold elsewhere, or may simply be unsold.**

In that case, its ICE is 40 / (1 – 0.2) = 50 MW. Again, this is just what one would expect.

- **The unit offered to provide all of the UCAP it was capable of providing, but only half of that offer was accepted.**
- **Barring derates, it is therefore obligated to exactly half of the energy it is capable of providing into the DAM.**

ICO for a Partial Unit Sale When Ambient Conditions Cause Derating

Again assume that the temperature for the next day is expected to be hotter than the temperature used to determine DMNC.

- **As a result, the hypothetical generator must be derated from its 100 MW DMNC to 90 MW, solely due to these high temperatures.**

Logically, one would expect that its ICO would be 45 MW.

- **This unit sold into the New York market half of the UCAP it was capable of providing.**
- **Since New York consumers are footing the bill for half of this generator's ICAP costs, it should be expected to make half of its capacity available to the New York market.**

But under the procedure set forth in TB 76, this unit's ICO would be 50 – 10 = 40 MW.

- **The procedure set forth there subtracts *all* of the derating from this unit's ICE to determine its ICO, even though only part of the unit is used to provide ICAP to New York.**

Suggested Changes

We recommend two changes to the procedure for calculating the ICO:

- **The ICO should increase to reflect uprates.**
- **The impact of a derate or uprate on the ICO should be prorated by the proportion of UCAP that unit qualifies to provide in New York that it has actually sold into New York.**

These changes could be accomplished by revising the formula used in TB 76 to calculate the ICO for each generator, so that the ICO is equal to:

> **The ICAP equivalent of [each generator's] UCAP sales, plus or minus the product of (1) any capacity that has been uprated or derated for that day's day-ahead market ("DAM") due to variations in ambient conditions, and (2) the ratio of the amount of UCAP that resource provides to the New York market for month including that day to the amount of UCAP it is qualified to provide for that month.**
>
> – ***Some other minor changes to TB 76 would also be required.***

This language would then be included in either the ICAP Manual or the T&D Operations Manual.