Attachment J:

Unforced Capacity for Installed Capacity Suppliers

1.0 Fundamental Formulae

(1-1) $\quad$ ~~UCAP $= (1 - EFOR_D) \times DMNC$~~ $UCAP = (1 - EFORd) \times DMNC$

(1-2)

$$\text{~~EFOR}_D = \frac{f_f \times FOH + f_p \times (EFOH\text{ - }FOH)}{SH + f_f \times FOH}~~$$

$$EFORd = \frac{f_f \times FOH + f_p \times (EFOH\text{ - }FOH)}{SH + f_f \times FOH}$$

(1-3) $\quad f_f = \dfrac{\dfrac{1}{r} + \dfrac{1}{T}}{\dfrac{1}{r} + \dfrac{1}{T} + \dfrac{1}{D}}$

(1-3a) $\quad r = $ average forced outage duration $= \dfrac{FOH}{\text{number of forced outages}}$

(1-3b) $\quad T = $ average time between calls for a unit to run $= \dfrac{RSH}{\text{number of attempted starts}}$

(1-3c) $\quad D = $ average run time $= \dfrac{SH}{\text{number of successful starts}}$

(1-4) $\quad f_p = \dfrac{SH}{AH}$

Note: UCAP values will be calculated monthly for each Resource based on a rolling 12-month calculation. The detailed formulae, including treatment where new units are being phased in, are shown in Section 3.

2.0   Definitions

UCAP...................................Unforced Capacity

~~EFOR_D~~EFORd ....Equivalent Demand Forced Outage Rate

DMNC.................................per Tariff definition

ICE ....Installed Capacity Equivalent as defined in the Services Tariff and in Section 3 of this Attachment J.

Net Dependable Capacity ....The gross power level that a unit can sustain during any period of time when there are no equipment, operating or regulatory restrictions and after adjusting for station service and auxiliary loads and ambient conditions.   Average ambient temperature should reflect the average of the daily high temperatures for the month at the plant location.   Only one Net Dependable Capacity for each Resource shall be reported for each month.   That value may be either the Resource's DMNC for the Capability Period containing that month or that Resource's average Net Dependable Capacity for that month, at the discretion of the owner of the Resource.

f_f ....full f-factor (see formula in Section 1.0)

f_p..partial f-factor (see formula in Section 1.0)

FOH.....................................Full Forced Outage Hours

Forced Outage......................An unplanned failure that requires a unit to be removed from service, or the Load on the unit to be reduced before the end of the nearest following Weekend.

EFOH...................................Equivalent Full Forced Outage Hours: Sum of all hours a unit was involved in an outage expressed as equivalent hours of full forced outage at its maximum net dependable capability.

SH ....Service Hours: The time a unit is electrically connected to the system - Sum of all Unit Service Hours.

AH.......................................Available Hours: The time a unit is capable of producing energy, regardless of its capacity level -- Sum of all Service Hours + Reserve Shutdown Hours + Pumping Hours + Synchronous Condensing Hours.

RSH......................................Reserve Shutdown Hours: The time a unit is available for service but not dispatched due to economic or other reasons.

PH ....Period hours equals 24 times the number of days in the reporting period.

Note: For in-depth GADS Data concepts, refer to the NERC Fast Link for GADS Services at www.nerc.com.

3.0 Calculations

In general, all generating Resources with nameplate capacities greater than 10 MWs or plants with aggregated capacities greater than 25 MW are expected to provide the full GADS Data set defined in Attachment K. ~~Units for which the~~ Except as noted below, a Resource that provides a full GADS Data set ~~is provided~~ will have ~~their~~ the amount of UCAP ~~based on EFOR~~_D that it is qualified to supply and an Installed Capacity Equivalent calculated according to Section 3.1 ~~below. All other generating units will be rated based on equivalent GADS Data as described in Section 3.2. Energy Limited Resources that do not want to have their UCAP based on production levels using equivalent GADS Data will have to submit GADS Data to document their available capacity for the minimum 4-hour daily requirement period. Special Case Resources will have their UCAP based on Load reduction determined in Section 3.3.~~. A Resource that provides equivalent GADS Data will have the amount of UCAP that it is qualified to supply and an Installed Capacity Equivalent calculated according to Section 3.2. A Special Case Resource will have the amount of UCAP it can supply calculated according to Section 3.3, a Control Area System Resource will have the amount of UCAP it can supply calculated according to Section 3.4, a wind generator will have the amount of UCAP it can supply calculated according to Section 3.5, and a Resource using UDRs will have its UCAP values calculated according to Section 3.6.

3.1 UCAP based on $EFOR_D$

This Section applies to Resources that submit GADS Data using the GADS reporting format in Attachment K. An Energy Limited Resource that does not want to have its UCAP based on production levels using equivalent GADS Data, using the equations in Section 3.2, will have to submit GADS Data to document its available capacity for the minimum 4-hour daily requirement period.

(a)   **Determining the Amount of UCAP a ~~Supplier~~Resource Qualifies to Supply**

$UCAP^{Q}_{gm} = (1-\text{~~}EFOR_{Dgm}\text{~~}AEFORd_{gm}) \, DMNC_{gm};$

where:

$UCAP^{Q}_{gm}$ is the amount of Unforced Capacity that ~~supplier~~ Resource *g* is qualified to provide in month *m*;

$UCAP_{gm\cancel{p}}$ is the Unforced Capacity that ~~supplier~~ Resource g provides in month m;

~~$EFOR_{Dgm}$~~$AEFORd_{gm}$ is the Average Equivalent Demand Forced Outage Rate calculated for ~~supplier~~Resource g that will be used to determine the amount of Unforced Capacity that the Resource will be permitted to provide in month m, as defined further below; and

$DMNC_{gm}$ is the DMNC rating for ~~supplier~~Resource g which is applicable for month m, which shall be the most recent Summer DMNC rating for that ~~supplier~~Resource calculated in accordance with ISO procedures if month m is part of a Summer Capability Period, or the most recent Winter DMNC rating for the ~~supplier~~Resource calculated in accordance with ISO procedures if month m is part of a Winter Capability Period, as of the close of business on the last business day preceding the Monthly Installed Capacity Auction that is conducted during the month preceding month m.

~~A rolling, cumulative, 12-month EFOR$_D$ will be calculated for each Resource that submits GADS Data using the GADS reporting format in Attachment K. The EFOR$_D$ for month (m) will be based on GADS Date for months, m-14, through and including month, m-3. (For example, EFOR$_D$ for August will be based on data submitted for June of the prior year through May of the current year).~~
If month m is in the Winter Capability Period, then $AEFORd_{gm}$ will be equal to the average of the EFORd values calculated for Resource g for the 12-month periods ending with the February, March, April, May, June and July that precede month m. If month m is in the Summer Capability Period, $AEFORd_{gm}$ will be equal to the average of the EFORd values calculated for Resource g for the 12-month periods ending with the August, September, October, November, December and January that precede month m. $EFORd_{gn}$, the EFORd value for Resource g for the 12-month period ending in any given month n that is used in the calculation of $AEFORd_{gm}$, will be calculated as follows:

$$EFORd_{gn} = \frac{IST_{ge}}{12} \times \frac{f_{fgbe}FOH_{gbe} + f_{pgbe}(EFOH_{gbe} - FOH_{gbe})}{(SH_{gbe} + f_{fgbe}FOH_{gbe})} + \left(1 - \frac{IST_{ge}}{12}\right)CEFOR_{Dg}$$

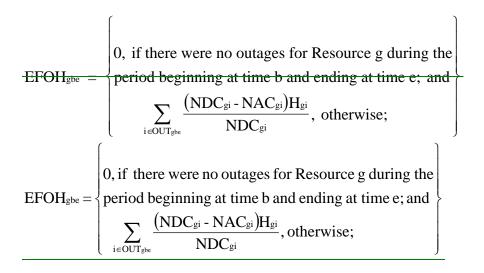where f_{fgbe} and f_{pgbe} are further defined below and:

~~$EFOR_{Dgm}$ as above, is the Equivalent Demand Forced Outage Rate calculated for Resource g that will be used to determine~~IST_{ge} is the number of months that Resource g was in service during the ~~amount of Unforced Capacity that Resource will be permitted to provide in~~ 12-month ~~m;~~

~~IST_{ge} is the number of months that Resource g had been in service~~ period ending as of time e ($IST_{ge} = 0$ if generator g was not in service as of time e; $IST_{ge} = 12$ if Resource g was in service from months m-14 through month m-3);

FOH_{gbe} is the sum of all Full Forced Outage Hours reported for Resource g for the period beginning at time b and ending at time e. The data is the GADS Data

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submitted in accordance with Attachment K, Performance Record 02, columns 40-43 and Event Record 01, NERC Event Types U1, U2, U3, and SF;

$EFOH_{gbe}$ is the sum of all Equivalent Full Forced Outage Hours reported for Resource g for the period beginning at time b and ending at time e. The data is the GADS Data submitted in accordance with Attachment K for NERC Event Types U1, U2, U3, D1, D2, D3 and SF, such that:

$$EFOH_{gbe} = \begin{cases} 0, \text{ if there were no outages for Resource g during the} \\ \text{period beginning at time b and ending at time e; and} \\ \sum_{i \in OUT_{gbe}} \frac{(NDC_{gi} - NAC_{gi})H_{gi}}{NDC_{gi}}, \text{ otherwise;} \end{cases}$$

$$EFOH_{gbe} = \begin{cases} 0, \text{ if there were no outages for Resource g during the} \\ \text{period beginning at time b and ending at time e; and} \\ \sum_{i \in OUT_{gbe}} \frac{(NDC_{gi} - NAC_{gi})H_{gi}}{NDC_{gi}}, \text{ otherwise;} \end{cases}$$

where:

OUT_{gbe} is the set of outages for Resource g during the period beginning at time b and ending at time e:

NDC_{gi} is the Net Dependable Capacity for Resource g applicable for outage i, submitted in accordance with Attachment FK, Performance Record 01, columns 35-38;

NAC_{gi} is the Net Available Capacity for Resource g, applicable for outage i, submitted in accordance with Attachment K, Event Record 01, columns 60-63;

and

H_{gi} is the time accumulated for Resource g applicable for outage i submitted in accordance with Attachment K, columns 20-27 and columns 48-55, (*i.e.*, the positive difference between the start and end of the event).

SH_{gbe} is the sum of all Service Hours reported for Resource g for the period beginning at time b and ending at time e in accordance with the GADS Data submitted in accordance with Attachment K, Performance Record 02, columns 16-19;

e is the end of the month occurring three months before month m, (e.g., if month m is September 2001, then e is the end of June 2001);

b is the beginning of the month occurring 14 months before month *m*, unless the ~~supplier~~ <u>Resource</u> had not gone into service at that time, in which case *b* is the time at which that ~~supplier~~<u>Resource</u> went into service; and

$CEFOR_{Dg}$ is the class-equivalent $EFOR_D$ calculated by the ISO for ~~suppliers~~<u>Resources</u> of the same class as ~~supplier~~<u>Resource</u> *g* based on NERC class averages for similar Resources. Where no similar Resource exists, the NYISO will estimate a value based on its best judgment, if a mutually acceptable value cannot be agreed on.

<u>Then:</u>

$$f_{fgbe} = \frac{\dfrac{1}{r} + \dfrac{1}{T}}{\dfrac{1}{r} + \dfrac{1}{T} + \dfrac{1}{D}}$$

<u>where:</u>

r is FOH_{gbe} divided by the total number of GADS Data Forced Outages reported for the period beginning at time *b* and ending at time *e* in accordance with Attachment K;

T is the number of Reserve Shutdown Hours (RSH_{gbe}) divided by the number of attempted starts reported for the period beginning at time *b* and ending at time *e* for Resource *g*. RSH_{gbe} is the sum of all Reserve Shutdown Hours reported for Resource *g* for the period beginning at time *b* and ending at time *e* in accordance with the GADS Data submitted in accordance with Attachment K, Performance Record 02, columns 20-23; and

D is the number of Service Hours (SH_{gbe}) divided by the number of successful starts reported for the period beginning at time b and ending at time *e* for Resource g; and

$$f_{pgbe} = \frac{SH_{gbe}}{AH_{gbe}}$$

<u>where:</u>

AH_{gbe} is the sum of all Available Hours reported for Resource *g* for the period beginning at time *b* and ending at time *e* in accordance with GADS Data submitted under Attachment K, Performance Record 02, Columns 32-35.

These equations shall be modified when necessary as follows in order to avoid dividing by zero:

If RSH = 0 (<1), set f_f =1;

If SH = 0, set f_f =1;

If FOH = 0, set $1/r = 0$ and calculate f_f per its equation; and

If AH = 0, set f_p =1.

(b)   Determining the ICE of the Amount of UCAP Supplied

$$\text{ICE}_{gm} = \frac{\text{UCAP}^P{}_{gm}}{1 - \text{EFOR}_{Dgm}}; \quad \text{ICE}_{gm} = \frac{\text{UCAP}^P{}_{gm}}{1 - \text{EFORd}_{gm}};$$

where:

ICE_{gm} is the Installed Capacity Equivalent of the amount of Unforced Capacity that ~~supplier *g*~~ Resource *g* supplies in month *m*;

~~*$UCAP^P{}_{gm}$*~~*$UCAP^P{}_{gm}$* is the amount of Unforced Capacity that ~~supplier~~Resource *g* supplies in month *m*; and

~~*$EFOR_{Dgm}$*~~*$EFORd_{gm}$* as above, is the Equivalent Demand Forced Outage Rate calculated for Resource *g* that will be used to determine the amount of Unforced Capacity that resource will be permitted to provide in month *m*.

3.2   UCAP based on equivalent GADS Data (capacity factor method)

This Section applies to Resources that submit equivalent GADS Data using the GADS reporting format in Attachment K.

(a)   Determining the Amount of UCAP a ~~Supplier~~Resource Qualifies to Supply

~~$UCAP^Q{}_{gm} = (1 - OF_{gm})DMNC_{gm}$~~ $UCAP^Q{}_{gm} = (1 - AOF_{gm})DMNC_{gm}$;

where:

$UCAP^Q{}_{gm}$ is the amount of Unforced Capacity that ~~supplier~~ Resource *g* is qualified to provide in month *m*;

$\underline{A}OF_{gm}$ is the ~~Outage Factor~~ average outage factor calculated for ~~supplier~~ Resource *g*, as further defined below, that will be used to determine the amount of Unforced Capacity that Resource will be permitted to provide in month *m*; and

$DMNC_{gm}$ is the DMNC rating for ~~supplier~~Resource *g* which is applicable for month *m*, which shall be the most recent Summer DMNC rating for that ~~supplier~~Resource calculated in accordance with ISO procedures if month *m* is part of a Summer Capability Period, or the most recent Winter DMNC rating for the ~~supplier~~Resource calculated in accordance with ISO procedures if month *m* is part

of a Winter Capability Period, as of the close of business on the last business day preceding the Monthly Installed Capacity Auction that is conducted during the month preceding month *m*.

~~A rolling, cumulative 12-month, outage factor (OF) will be calculated for each Resource that submits the basic data (equivalent GADS Data) using the GADS Data form in Attachment K. The OF for month (m) will be based on GADS Data for months, m-14 through month m-3. (For example, EFOR_D for August will be based on data submitted for June of the prior year through May of the current year).~~

If month *m* is in the Winter Capability Period, then AOF_{gm} will be equal to the average of the OF values calculated for Resource *g* for the 12-month periods ending with the February, March, April, May, June and July that precede month *m*. If month *m* is in the Summer Capability Period, AOF_{gm} will be equal to the average of the OF values calculated for Resource *g* for the 12-month periods ending with the August, September, October, November, December and January that precede month *m*. OF_{gn}, the OF value for Resource *g* for the 12-month period ending in any given month *n* that is used in the calculation of AOF_{gm}, will be calculated as follows:
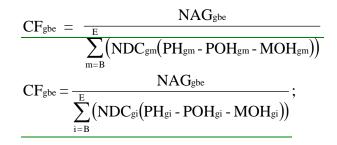
$$\cancel{OF_{gn} = \frac{IST_{ge}}{12} \times (1 - CF_{gbe}) + \left(1 - \frac{IST_{ge}}{12}\right)(1 - CCF_g)}$$

$$OF_{gn} = \frac{IST_{ge}}{12} \times (1 - CF_{gbe}) + \left(1 - \frac{IST_{ge}}{12}\right)(1 - CCF_g)$$

where:

~~*OF_gm* is the Outage Factor for Resource *g* that will be used to determine the amount of Unforced Capacity that Resource will be permitted to provide in month *m*;~~

IST_{ge} is the number of months that Resource *g* had been in service as of time *e* (0 if generator *g* was not in service as of time *e*; 12 if Resource *g* was in service from months m-14 through month m-3); ~~and~~

CCF_g is the class-equivalent Capacity Factor for Resources of the same class as Resource *g* based on NERC class averages for similar Resources. Where no similar Resource exists, the NYISO will estimate a value based on its best judgment if a mutually acceptable value cannot be agreed on; and

$$CF_{gbe} = \frac{NAG_{gbe}}{\sum_{m=B}^{E}\left(NDC_{gm}(PH_{gm} - POH_{gm} - MOH_{gm})\right)}$$

$$CF_{gbe} = \frac{NAG_{gbe}}{\sum_{i=B}^{E}\left(NDC_{gi}(PH_{gi} - POH_{gi} - MOH_{gi})\right)};$$

where:

CF_{gbe} is the Capacity Factor for Resource g for the period beginning at time b and ending at time e;

NAG_{gbe} is the Net Actual Generation for Resource g for the period beginning at time b and ending at time e. The data is the GADS Data submitted in accordance with Attachment K, Performance Record 01, columns 39-45;

~~NDC_{gm}~~NDC_{gi} is the Net Dependable Capacity for Resource g for month ~~m.~~i. The data is the GADS Data submitted in accordance with Attachment K, Performance Record 01, columns 35-38;

~~PH_{gm}~~PH_{gi} is the Period Hours reported for Resource g for month ~~m.~~i. The data is the GADS Data submitted in accordance with Attachment K, Performance Record 02, columns 56-59;

~~POH_{gm}~~POH_{gi} is the Planned Outage Hours reported for Resource g for month ~~m.~~i. The data is from the GADS Data submitted in accordance with Attachment K, Performance Record 02, columns 36-39;

~~MOH_{gm}~~MOH_{gi} is the Maintenance Outage Hours reported for Resource g for month ~~m.~~i. The data is from the GADS Data submitted in accordance with Attachment K, Performance Record 02, columns 44-47;

~~CCF_g is the class-equivalent Capacity Factor for suppliers of the same class as supplier g based on NERC class averages for similar Resources. Where no similar~~

b is the beginning of the month occurring 14 months before month n, unless the Resource ~~exists, the NYISO will estimate a value based on its best judgment if a mutually acceptable value cannot be agreed on;~~

~~b is the beginning of the month occurring 14 months before month m, unless the supplier~~ had not gone into service at that time, in which case b is the time at which that ~~supplier~~Resource went into service;

e is the end of the month occurring three months before month ~~m~~n, (*e.g.*, if month ~~m~~n is September 2001, then e is the end of June 2001);

B is the month containing time *b*; and

E is the month containing time *e*.

(b) **Determining the ICE of the Amount of UCAP Supplied**

$$ICE_{gm} = \frac{UCAP^P{}_{gm}}{1 - OF_{gm}}$$

where:

ICE$_{gm}$ is the Installed Capacity Equivalent of the amount of Unforced Capacity that ~~supplier~~Resource *g* supplies in month *m*;

UCAP$^P{}_{gm}$ is the amount of Unforced Capacity that ~~supplier~~Resource *g* supplies in month *m*; and

OF$_{gm}$, as above, is the Outage Factor for Resource *g* that will be used to determine the amount of Unforced Capacity that Resource will be permitted to provide in month *m*.

3.3 UCAP based on Load/Demand Reduction applicable to Special Case Resources

The amount of UCAP that can be provided by a Special Case Resource that provides capacity wholly or partially by means of non-generator based load reduction shall be calculated using the equations specified in subsection (a). The amount of UCAP that can be provided by a Special Case Resource that provides capacity solely by means of load reductions achieved through operation of one or more generators may be calculated using the equations specified in either subsection (a) or subsection (b). The Installed Capacity Equivalent of Special Case Resources shall be as specified in subsection (c).

(a) **Determining the Amount of UCAP for a Non-Generator Based Special Case Resource**

$$UCAP^Q{}_{gm} = (APMD_{gm} - CMD_{gm}) \ \times \ \frac{\sum_{LRgbe}(APMD_{gh} - AMD_{gh})}{\sum_{LRgbe}(APMD_{gh} - CMD_{gh})} \ \times \ \left(1 + TLF_g\right)$$

where:

UCAP$^Q{}_{gm}$ is the Unforced Capacity that Resource *g* is qualified to provide in month *m*;

APMD$_{gm}$ is the Average of Peak Monthly Demands for Resource *g* applicable to month *m*, using data submitted in accordance with Attachment K, Special Case

Resource Certification; if month m is in the Summer Capability Period, the Average of Peak Monthly Demands is calculated using the peak monthly demands for that supplier for the most recent consecutive months of June, July, August and September that had occurred as of the beginning of month m (e.g., if month m is August 2001, then the peak monthly demands to be counted would be for the months of June, July, August and September of 2000); and if month m is in the Winter Capability Period, the Average of Peak Monthly Demands is calculated using the peak monthly demands for that supplier for the most recent consecutive months of December, January, February and March that had occurred as of the beginning of month m;

CMD_{gm} is the Contract Minimum Demand for Resource g applicable to month m, using data submitted in accordance with Attachment K, Special Case Resource Certification;

LRH_{gbe} is the set of hours (each an hour h) in the period beginning at time b and ending at time e in which Resource g was requested to reduce load;

$APMD_{gh}$ is the applicable Average of Peak Monthly Demands for Resource g applicable to hour h, using data submitted in accordance with Attachment K, Special Case Resource Certification; if hour h is in the Summer Capability Period, the Average of Peak Monthly Demands is calculated using the peak monthly demands for that supplier for the most recent consecutive months of June, July, August and September that had occurred as of time e; and if hour h is in the Winter Capability Period, the Average of Peak Monthly Demands is calculated using the peak monthly demands for that supplier for the most recent consecutive months of December, January, February and March that had occurred as of time e;

AMD_{gh} is the Average Minimum Demand for Resource g for hour h, using data submitted in accordance with Attachment K, Figure 2, Special Case Resource Minimum Load Demonstration;

CMD_{gh} is the Contract Minimum Demand for Resource g applicable to hour h, using data submitted in accordance with Attachment K, Special Case Resource Certification;

$NLRH_{gbe}$ is the number of hours during the period beginning at time b and ending at time e in which Resource g was requested to reduce load (including any hour in which Resource g was requested to reduce load by the ISO as part of a test);

b is the beginning of the month occurring 14 months before month m, unless Resource g had not begun at that time to serve as a Special Case Resource available to reduce load, in which case b is the earlier of time e or the time at which Resource g began to serve as a Special Case Resource available to reduce load;

e is the end of the month occurring three months before month *m* (e.g., if month *m* is September 2001, then *e* is the end of June 2001); and

TLF_g is the applicable transmission loss factor for Resource *g,* expressed in decimal form (i.e. a loss factor of 8% is equal to .08). The applicable transmission loss factor shall be the loss factor for deliveries of Energy by the relevant TO to the retail customer where the Resource *g* is located as reflected in the TO's most recent rate case.

If $NLRH_{gbe} = 0$, then the calculation of $UCAP^Q_{gm}$ shall be performed as though the value of $\dfrac{\sum\limits_{h \in LRHgbe} \min\left(\dfrac{APMD_{gm} - AMD_{gh}}{APMD_{gm} - CMD_{gh}}, 1\right)}{NLRH_{gbe}}$ in the equation above were 1; provided, however, that if Resource *g* had not begun to serve as a Special Case Resource at time *e,* then the value of $\dfrac{\sum\limits_{h \in LRHgbe} \min\left(\dfrac{APMD_{gm} - AMD_{gh}}{APMD_{gm} - CMD_{gh}}, 1\right)}{NLRH_{gbe}}$ in the equation above shall be set equal to an average historical performance factor calculated by the ISO for all Special Case Resources. Until such a calculation is performed and posted by the ISO, this factor shall equal 1.

(b)   Determining the Amount of UCAP for a Generator-Based Special Case Resource

$$UCAP^Q_{gm} = DMNC_{gm} \quad X \quad \frac{\sum\limits_{h \in LRHgbe} \min\left(\dfrac{AGO_{gh}}{CGO_{gh}}, 1\right)}{NLRH_{gbe}} \quad X \quad \left(1 + TLF_g\right)$$

where:

$UCAP^Q_{gm}$ is the Unforced Capacity that Resource *g* is qualified to provide in month *m*;

$DMNC_{gm}$ is the total of DMNC ratings for all generators used to reduce load at Resource *g* which are applicable for month *m*, which shall be the most recent Summer DMNC ratings for the generators calculated in accordance with ISO procedures if month *m* is part of a Summer Capability Period, or the most recent Winter DMNC ratings for the generators calculated in accordance with ISO procedures if month *m* is part of a Winter Capability Period, as of the close of business on the last business day preceding the Monthly Installed Capacity Auction that is conducted during the month preceding month *m*.

LRH_{gbe} is the set of hours (each an hour *h*) in the period beginning at time *b* and ending at time *e* in which Resource *g* was requested to reduce load;

$NLRH_{gbe}$ is the number of hours during the period beginning at time b and ending at time

e in which Resource g was requested to operate in order to offset system load (including any hour in which Resource g was requested to operate by the ISO as part of a test);

AGO_{gh} is the average output of the generator(s) located at Resource g during an hour h using data submitted in accordance with Attachment K, Figure 2, Special Case Resource Generator Output Performance;

CGO_{gh} is the Contracted Generator Output for the generator(s) located at Resource g applicable to an hour h, using data submitted in accordance with Attachment K, Special Case Resource Certification;

b is the beginning of the month occurring 14 months before month m, unless Resource g had not begun at that time to serve as a Special Case Resource available to reduce load, in which case b is the earlier of time e or the time at which Resource g began to serve as a Special Case Resource available to reduce load;

e is the end of the month occurring three months before month m (e.g., if month m is September 2001, then e is the end of June 2001; and

TLF_g is the applicable transmission loss factor for Resource g, expressed in decimal form (i.e. a loss factor of 8% is equal to .08). The applicable transmission loss factor shall be the loss factor for deliveries of Energy by the relevant TO to the retail customer where the Resource g is located as reflected in the TO's most recent rate case.

If $NLRH_{gbe} = 0$, then the calculation of $UCAP^{Q}_{gm}$ shall be performed as though the value of $\dfrac{\displaystyle\sum_{h \in LRHgbe} \min\left(\dfrac{AGO_{gh}}{CGO_{gh}}, 1\right)}{NLRH_{gbe}}$ in the equation above were 1; provided, however, that if Resource g had not begun to serve as a Special Case Resource at time e, then the value of $\dfrac{\displaystyle\sum_{h \in LRHgbe} \min\left(\dfrac{AGO_{gh}}{CGO_{gh}}, 1\right)}{NLRH_{gbe}}$ in the equation above shall be set equal to an average historical performance factor calculated by the ISO for all Special Case Resources. Until such a calculation is performed and posted by the ISO, this factor shall equal 1.

(c)   Determining the ICE of the Amount of UCAP Supplied

    (1)   ICE for a Non-Generator Based Special Case Resource

The ICE of a Special Case Resource g that provides capacity wholly or partially by means of non-generator based load reduction shall be calculated as follows:

$$ICE_{gm} = APMD_{gm} - CMD_{gm}$$

where:

ICE_{gm} is the Installed Capacity Equivalent of the amount of Unforced Capacity that Resource g supplies in month m;

$APMD_{gm}$ is the Average of Peak Monthly Demands for Resource g applicable to month m, using data submitted in accordance with Attachment K, Special Case Resource Certification, as calculated in subsection (a) above; and

CMD_{gm} is the Contract Minimum Demand for Resource g applicable to month m, using data submitted in accordance with Attachment K, Special Case Resource Certification.

(2)   ICE for a Generator Based Special Case Resource

The ICE of a Special Case Resource that provides capacity solely by means of load reductions achieved through operation of one or more generators shall be as follows:

$$ICE_{gm} = CGO_{gm}$$

where:

ICE_{gm} is the Installed Capacity Equivalent of the amount of Unforced Capacity that Resource g supplies in month m; and

CGO_{gm} is the Contracted Generator Output for the generator(s) located at Resource g applicable for month m, using data submitted in accordance with Attachment K, Special Case Resource Certification.

3.4   Calculation of UCAP for Control Area System Resources

(a)   Determining the Amount of UCAP a ~~Supplier~~Control Area System Resource Qualifies to Supply

$$UCAP^{Q}_{cm} = NPC_{cm} \times (1 - \underline{A}CAF_{cm})$$

where:

$UCAP^{Q}_{cm}$ is the Unforced Capacity that the Control Area System Resource located in ~~the~~ Control Area c is qualified to supply in the NYCA during month m;

NPC_{cm} is the Net Projected Capacity for the Control Area System Resource located in Control Area c for month m, calculated pursuant to the formula set forth in Section 4.10.3 of this Manual, repeated below for clarity:

$$NPC_{cm} = CAP_{cm} + EP_{cm} + LM_{cm} - PL_{cm} - ES_{cm} - LS_{cm} - PM_{cm} - PR_{cm};$$

and

~~CAF_{cm} is the derating factor applicable to the Control Area System Resource providing Installed Capacity from Control Area c for month m, representing the average proportion of its Installed Capacity Equivalent that that Control Area System Resource was able to provide during months m-14 through and including m-3, calculated as follows:~~

~~where:~~

~~i is an hour in which the Control Area System Resource provided Installed Capacity to the NYCA;~~

~~b is the beginning of the month 14 months before month m, or the time at which Capacity began to be provided from Control Area c under the terms of this section, if later;~~

~~e is the end of the month 3 months before month m;~~

~~ICE_{ci} is the Installed Capacity equivalent of the amount of Unforced Capacity supplied from a Control Area System Resource providing Installed Capacity from Control Area c during the month containing hour i;~~

$ACAF_{cm}$ is the average derating factor calculated for the Control Area System Resource located in Control Area c that will be used to determine the amount of Unforced Capacity that the Resource will be permitted to provide in month m, as defined further below.

If month m is in the Winter Capability Period, then $ACAF_{gm}$ will be equal to the average of the CAF values calculated for Resource g for the 12-month periods ending with the February, March, April, May, June and July that precede month m. If month m is in the Summer Capability Period, $ACAF_{gm}$ will be equal to the average of the CAF values calculated for Resource g for the 12-month periods ending with the August, September, October, November, December and January that precede month m. CAF_{gn}, the CAF value for Resource g for the 12-month period ending in any given month n that is used in the calculation of $ACAF_{gm}$, will be calculated as follows:

$$CAF_{cn} = \frac{\sum\limits_{i=b}^{e} \max\left(\begin{array}{l} 0,\ ICE_{ci} - (CAP_{ci} + EP_{ci} + LM_{ci} - L_{ci} \\ - ES_{ci} - LS_{ci} - PM_{ci} - FO_{ci} - OR_{ci}) \end{array}\right)}{\sum\limits_{j=B}^{E} ICE_{cj}TH_j}$$

where:

i is an hour in which the Control Area System Resource located in Control Area c provided Installed Capacity to the NYCA;

b is the beginning of the month 14 months before month n, or the time at which Capacity began to be provided from Control Area c under the terms of this section, if later;

e is the end of the month 3 months before month n;

ICE_{ci} is the Installed Capacity equivalent of the amount of Unforced Capacity supplied from the Control Area System Resource providing Installed Capacity from Control Area c during the month containing hour i;

CAP_{ci} is the actual maximum total generating Capacity in hour i in Control Area c;

EP_{ci} is the actual External firm Capacity purchases in hour i by Control Area c, other than purchases from Resources in the NYCA;

LM_{ci} is the actual amount of load management (*i.e.,* interruptible load) in hour i in Control Area c;

L_{ci} is the Load in hour i for Control Area c, including system losses;

ES_{ci} is the actual External firm Capacity sales in hour i by Control Area c, other than firm capacity sales to NYCA;

LS_{ci} is the actual losses, up to the border of the NYCA, that would have been incurred in hour i on transactions corresponding to sales of Unforced Capacity by that Control Area System Resource outside the Control Area;

PM_{ci} is the amount of generating Capacity in Control Area c that was actually unavailable in hour i due to planned maintenance;

FO_{ci} is the amount of generating Capacity in Control Area c that was actually unavailable in hour i due to forced outages;

OR_{ci} is the amount of operating reserve that was actually available for Control Area c in hour i;

E is the month containing e;

B is the month containing b;

~~ICE_{cm}~~ICE_{cj} is the Installed Capacity Equivalent of the amount of Unforced Capacity provided from ~~a~~ the Control Area Resource associated with Control Area c during month ~~m~~j, and

~~TH_m~~TH_j is the total number of hours in month ~~m~~j in which the Control Area System Resource provided Installed Capacity to the NYCA.

(b) **Determining the ICE of the Amount of UCAP Supplied**

$ICE_{cm} = UCAP^P_{cm} / (1 - CAF_{cm})$,

where:

ICE_{cm} is the Installed Capacity equivalent of the amount of Unforced Capacity supplied from Control Area c in month m;

$UCAP^P_{cm}$ is the amount of Unforced Capacity supplied from Control Area c in month m; and

CAF_{cm} is the Capacity Adjustment Factor for Control Area c for month m, as calculated above.

3.5   Calculation of UCAP for Wind Generators

This section describes the general procedure for calculating Unforced Capacity values for wind generators. Also see Section 4.5 of this Manual and 5.12.6(a) of the Market Administration and Control Area Services Tariff.

(a) Definitions

For purposes of this Section 3.5:

"Wind Farm" means a collection of wind turbines with its electrical output metered at the interconnection with the NYCA transmission system and that determines the Wind Farm's delivery to the NYCA.

"Wind Farm Unforced Capacity" means that amount of generating capacity, expressed to the nearest tenth of a MW, that a Wind Farm can reasonably be expected to contribute during summer or winter peak hours, as applicable.

"Production Factor" for a Wind Farm means a factor based on historic operating data, and for facilities without historic operating data, initial Wind Farm Unforced Capacity will be determined using the factors defined in Section 4.5 of the ICAP Manual and in this Section 3.5.

"Wind Farm Installed Capacity" means the sum of the nameplate ratings of the wind turbines in the Wind Farm.

"Hourly Output" means the metered output of the Wind Farm expressed to the nearest tenth of a MW and integrated over a one-hour period.

"Summer Peak Hours" means the hours beginning 14, 15, 16, and 17 during the three-month period from June 1 through August 31, inclusive.

"Winter Peak Hours" means the hours beginning 16, 17, 18 and 19 during the three-month period from December 1 through the last day of the immediately succeeding February.

(b) Calculation Procedure

Generally, the calculation of the Production Factor for a particular Wind Farm for a particular Capability Period is based on its operating data for the Prior Equivalent Capability Period. For facilities with less than sixty (60) days of historic operating data in the Prior Equivalent Capability Period, the initial Wind Farm Unforced Capacity will use the factors in Section 4.5 of the Installed Capacity Manual. The Production Factor, when multiplied by the current Wind Farm Installed Capacity yields the Wind Farm Unforced Capacity for that Wind Farm. This two-step process accommodates any changes in the Wind Farm Installed Capacity that may have occurred during the prior or current year of operation.

$UCAP^Q_{gm}$, the amount of Unforced Capacity that Resource g is qualified to provide in month m, is calculated as follows:

$$UCAP^Q_{gm} = ProdF_{gm} \times NC_{gm},$$

where:

$ProdF_{gm}$ is the production factor used in the calculation of the amount of Unforced Capacity that supplier g is qualified to provide in month m; and

NC_{gm} is the nameplate capacity of Resource g that is applicable when determining the amount of Unforced Capacity that Resource g is qualified to provide in month m.

$ProdF_{gm}$, in turn, is calculated as follows:

$$ProdF_{gm} = \frac{\displaystyle\sum_{h \in CPPH_{gm}} E_{gh}}{\displaystyle\sum_{h \in CPPH_{gm}} NC_{gh}},$$

where:

$CPPH_{gm}$ is the set of all Summer Peak Hours during the most recent Summer Capability Period preceding the Capability Period containing month m (if month m is part of a Summer Capability Period) during which Resource g was available for commercial operation, or the set of all Winter Peak Hours during the most recent Winter Capability Period preceding the Capability Period containing month m (if month m is part of a Winter Capability Period) during which Resource g was available for commercial operation;

E_{gh} is the amount of energy delivered to the NYCA transmission system by Resource g during hour h; and

NC_{gh} is the nameplate capacity of Resource g that was applicable when determining the amount of Unforced Capacity that Resource g was qualified to provide in hour h;

except that for new Wind Farms for which less than sixty (60) days of production data are available to calculate $ProdF_{gm}$ using the equation above, $ProdF_{gm}$ instead will be calculated in accordance with Section 4.5 of the Installed Capacity Manual.

3.6   Calculating UCAP for Installed Capacity Delivered over UDR Facilities

The amount of UDRs assigned by the NYISO to each new incremental transmission facility, and any future adjustments thereto, will be based on the transmission capability, reliability, and availability of the facility, and appropriate NYSRC reliability studies.

The NYISO may request additional information as necessary and will grant UDRs to the requestor, or designated rights holder, quantified as the Installed Capacity Equivalent of the Unforced Capacity to be delivered to the Interconnection Point in MW, throughout its project life.

The amount of UDRs awarded to a particular project may be adjusted periodically by the NYISO. Adjustments to such an award will reflect changes in physical characteristics and availability of the associated project.

$UCAP^{Q}_{gm}$, the amount of Unforced Capacity that Resource g is qualified to provide in a Locality in month m through the use of UDRs, is calculated as follows:

$$UCAP^{Q}_{gm} = (Resource_{ICAP} - Loss_{FL}) * P_{resource} * P_{cable}$$

where:

$Resource_{ICAP}$ = the sum of the applicable DMNCs for month *m* of the Resources (or portions thereof) used to supply ICAP to Resource *g* in association with a given set of UDRs;

$Loss_{FL}$ = cable and converter station losses at the rated UDR level;

$P_{resource}$ = one minus a weighted average of the EFORds calculated for the Resources used to supply ICAP to Resource *g* in association with a given set of UDRs, with the weights proportional to the DMNC of each Resource (or portion thereof) thereby used to supply ICAP; and

P_{cable} = one minus the cable outage rate, including cable and converter station unavailability.