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nyiso Installed Capacity Manual

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Version History

Version 1:
Installed Capacity manual

Version 2 - Stage 1

Version 3 - Stage 1A

Version 4

More detail and history to be added

Attachment J:

Unforced Capacity for Installed Capacity Suppliers

1.0 Fundamental Formulae

(1-1) $$UCAP = (1 - EFOR_D) \times DMNC$$

(1-2) $$EFOR_D = \frac{f_f \times FOH + f_p \times (EFOH - FOH)}{SH + f_f \times FOH}$$

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

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

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

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

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

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

$EFOR_D$ ..... 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 full GADS Data set is provided will have their UCAP based on $EFOR_D$ 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.

3.1 UCAP based on $EFOR_D$

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

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

where:

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

$UCAP_{gmp}$ is the Unforced Capacity that supplier *g* provides in month *m*;

$EFOR_{Dgm}$ is the Equivalent Demand Forced Outage Rate calculated for supplier *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 *g* which is applicable for month *m*, which shall be the most recent Summer DMNC rating for that supplier 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 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).

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

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 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);

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 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:

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

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 F, 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 had not gone into service at that time, in which case *b* is the time at which that supplier went into service; and

$CEFOR_{Dg}$ is the class-equivalent $EFOR_D$ calculated by the ISO for suppliers of the same class as supplier *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.

Then:

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

where:

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

where:

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

$$ICE_{gm} = \frac{UCAP^{P}_{gm}}{1 - EFOR_{Dgm}};$$

where:

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

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

$EFOR_{Dgm}$ 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)

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

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

where:

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

OF_{gm} is the Outage Factor calculated for supplier *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 *g* which is applicable for month *m*, which shall be the most recent Summer DMNC rating for that supplier 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 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).

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

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

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

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

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

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

MOH_{gm} is the Maintenance Outage Hours reported for Resource *g* for month *m*. 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 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 went into service;

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 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 *g* supplies in month *m*;

$UCAP^{P}_{gm}$ is the amount of Unforced Capacity that supplier *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

$$UCAP^{Q}_{gm} = (APMD_{gm} - CMD_{gm}) \times \frac{\sum_{h \in LRH_{gbe}} \min\left(\frac{APMD_{gh} - AMD_{gh}}{APMD_{gh} - CMD_{gh}}, 1\right)}{NLRH_{gbe}} \times \left(1 + TLF_{g}\right)$$

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 $\frac{\sum_{h \in LRHgbe} \min\left(\frac{APMD_{gh} - AMD_{gh}}{APMD_{gh} - CMD_{gh}}, 1\right)}{NLRH_{gbe}}$ 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 $\frac{\sum_{h \in LRHgbe} \min\left(\frac{APMD_{gh} - AMD_{gh}}{APMD_{gh} - CMD_{gh}}, 1\right)}{NLRH_{gbe}}$ 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

$$UCAP^{Q}_{gm} = DMNC_{gm} \quad X \quad \frac{\sum_{h \in LRHgbe} \min\left(\frac{AGO_{gh}}{CGO_{gh}}, 1\right)}{NLRH_{gbe}} \quad X \quad \left(1 + TLF_{g}\right)$$

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 $\frac{\sum_{h \in LRHgbe} \min\left(\frac{AGO_{gh}}{CGO_{gh}}, 1\right)}{NLRH_{gbe}}$ in the equation above were 1; provided, however, that if Resource g had not begin to serve as a Special Case Resource at time *e,* then the value of $\frac{\sum_{h \in LRHgbe} \min\left(\frac{AGO_{gh}}{CGO_{gh}}, 1\right)}{NLRH_{gbe}}$ 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 Qualifies to Supply

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

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 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:

$$CAF_{cm} = \frac{\sum_{i=b}^{e} \max\left(0,\ ICE_{ci} - (CAP_{ci} + EP_{ci} + LM_{ci} - L_{ci} - ES_{ci} - LS_{ci} - PM_{ci} - FO_{ci} - OR_{ci})\right)}{\sum_{m=B}^{E} ICE_{cm} TH_{m}}$$

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*;

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} is the Installed Capacity Equivalent of the amount of Unforced Capacity provided from a Control Area Resource associated with Control Area *c* during month *m*, and

TH_m is the total number of hours in month *m* 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.

Attachment K:

Reportable Operating Data

NERC-GADS Data Reporting Requirements

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.

Maintenance Outage

A scheduled outage or derating that can be deferred beyond the end of the nearest following Weekend but that requires the unit to be removed from service or the Load reduced before the next Planned Outage.

Note: Any Resource that notifies the ISO that it can defer its outage beyond the end of the next following Weekend, but requests a maintenance outage before the end of the next following Weekend, will have its maintenance outage request granted by the ISO unless the ISO has specific reliability concerns that require the ISO to deny such a request.

Weekend

The period of time that begins every Friday at 10:01:00 PM and ends the following Monday at 8:00:59 AM.

NERC-GADS data or data equivalent to GADS Data for each Generator is to be provided to the ISO by the 20th of the month following the month for which the data applies.

See Section 4.4 of this Manual for the general Operating Data reporting requirements and the following pages for detailed Operating Data Reporting Requirements.

The input formats for NERC-GADS data can also be found on the NERC web-site at:

www.nerc.com

Find **GADS Services** in the **GO** link. The reporting manuals are also located there. The NERC-GADS data follows an 82 character fixed format as defined in the NERC GADS manuals.

The form on the following page delineates the Performance File and Event File data layouts. The data must be submitted electronically to the ISO (gads_data@nyiso.com) in standard ASCII Text File format.

The pages following the Performance File and Event File data layouts further define GADS Data or data equivalent to GADS Data. All data will be used for internal ISO reliability studies and for calculating Unforced Capacity ("UCAP") values.

In general, generating Resources with nameplate capacities greater than 10 MW or plants whose total capacity exceeds 25 MW are expected to submit the full GADS dataset. Those Resources will have a UCAP value based on $EFOR_D$. Resources submitting equivalent GADS Data will have a UCAP value based on actual production (or Capacity factor). All UCAP calculations are defined and described in Attachment J.

NERC - GADS (Required for EFORd Calculations)

All NYISO Required Fields are highlighted & identified.

PERFORMANCE FILE LAYOUT

82 Columns per RECORD

RECORD 01

9 5 1 2 3 8 0 1 2 0 0 0 0 1 0 ... 0 8 5 0 0 8 3 0 0 0 3 1 7 8 0 1 0 0 9 0 0 8 ... 0 1

Card Code 1-2
Utility Code 3-5
Unit Code 6-8
Year 9-12
Month 13-14
Revision Code 15
Net Max. Cap. 31-34
Net Dep. Cap. 35-38
Net Actual Gen. 39-45
Unit Loading 46
Att. Unit Starts 47-49
Act. Unit Starts 50-52
(Blank Columns 53-55)
Record Number 81-82

82 Columns per RECORD

RECORD 02

9 5 1 2 3 8 0 1 2 0 0 0 0 1 0 0 1 0 0 0 3 8 8 ... 0 4 8 8 0 2 5 6 ... 0 2 5 6 0 7 4 4 ... 0 2

Card Code 1-2
Utility Code 3-5
Unit Code 6-8
Year 9-12
Month 13-14
Revision Code 15
Unit Service Hrs. 16-19
Reserve Shutdown 20-23
Pumping Hrs. 24-27
Synch. Cond. Hrs. 28-31
Available Hrs. 32-35
Planned Outage Hrs. 36-39
Forced Outage Hrs. 40-43
Maint. Outage Hrs. 44-47
Ext. of Sched. Outages 48-51
Unavailable Hours 52-55
Period Hours 56-59
(Blank Columns 60-80)
Record Number 81-82

** Do not zero-fill or asterisk-fill unused data fields.*
*** Columns 1-15 link the records together as a monthly report.*
**** Columns 81-82 identify the component records.*

EVENT FILE LAYOUT

82 Columns per RECORD

RECORD 01

9 7 1 2 3 8 0 1 2 0 0 0 0 0 0 1 0 P O 0 1 1 5 0 0 0 1 ... 0 1 2 5 1 6 3 0 ... 0 1

Card Code 1-2
Utility Code 3-5
Unit Code 6-8
Year 9-12
Event Number 13-16
Revision Code 17
Event Type 18-19
Start of Event 20-27
(Blank Columns 28-47)
End of Event 48-55
Gross Avail. Cap 56-59
Net Avail. Cap 60-63
(Blank Columns 64-80)
Record Number 81-82

** Do not zero-fill or asterisk-fill unused data fields.*
**** Columns 81-82 identify the component records.*

03/15/2002

Required Fields for NYISO GADS Data

	Performance Record (01) Columns	Performance Record (02) Columns	Event Record (01) Columns
Card Code	1-2	1-2	1-2
Utility Code	3-5	3-5	3-5
Unit Code	6-8	6-8	6-8
Year	9-12	9-12	9-12
Revision Code	15	15	17
Record Number	81-82	81-82	81-82
(Performance Only)			
Month	13-14	13-14	
Net Max. Capacity	31-34		
Net Dependable Capacity	35-38		
Net Actual Generation	39-45		
Unit Loading	46		
Attempted Unit Starts	47-49		
Actual Unit Starts	50-52		
Service Hours		16-19	
Reserve Shutdown Hours		20-23	
Pumping Hours		24-27	
Synch. Condensing Hours		28-31	
Available Hours		32-35	
Planned Outage		36-39	
Forced Outage		40-43	
Maintenance Outage		44-47	
Ext. of Sched. Outages		48-51	
Unavailable Hours		52-55	
Period Hours		56-59	
(Event Only)			
Event Number			13-16
Event Type			18-19
Start Date/Time			20-27
End Date/Time			48-55
Net Available Capacity			60-63

ISO NERC-GADS Reporting Requirements

Data marked with an * is the minimum dataset for data equivalent to GADS Data and will result in UCAP based on actual production, with allowance for scheduled outages. The full dataset will result in UCAP based on $EFOR_D$. See Attachment J for the actual calculation methodology.

Performance Data

Card 01

*Card Code	Required
*Utility Code	Required if known,
*Unit Code	Required if known,
*Year	Required
*Report Period (Month)	Required
*Record Revision Code	Required
Gross Maximum Capacity	-
Gross Dependable Capacity	-
Gross (MWhr) Actual Generation	-
*Net Maximum Capacity	Required
*Net Dependable Capacity	Required
*Net (MWhr) Actual Generation	Required
Typical Unit Loading Characteristics	Required
Attempted Unit Starts	Required
Actual Unit Starts	Required
*Record Number	Required

Card 02

*Card Code	Required
*Utility Code	Required if known,
Unit Code	Required if known,
*Year	Required
*Report Period (Month)	Required
*Record Revision Code	Required
*Unit Service Hours (SH)	Required
*Reserve Shutdown Hours (RH)	Required
*Pumping Hours (if applicable)	Required
*Synchronous Condensing Hours (if applicable)	Required
*Available Hours (AH)	Required
*Planned Outage Hours (POH)	Required
Forced Outage Hours & Startup Failure Hours	Required

*Maintenance Outage Hours (MOH)	Required
*Extension of Scheduled Outage Hours (SEH)	Required
Unavailable Hours (UH)	Required
*Period Hours	Required
*Record Number	Required

Card 03 — Not Required

Card 04 — Not Required

Event Report Data

Card 01

Card Code	Required
Utility Code	Required if known,
Unit Code	Required if known,
Year	Required
Event Number	Required
Record Revision Code	Required
Event Type	Required
Start of Event	Required
End of Event	Required
Gross Available Capacity as Result of Event	-
Net Available Capacity as Result of Event	Required
Record Number	Required

Cards 02 –99 Provide data on system component events — Not Required

Special Case Resource (SCR) Commitment/Verification

SCR End-Use Customer: _____

Address: _____

_____

LBMP Zone: _____

Check one: NYC_____ LI_____ ROS_____

Transmission Owner _____ Service Voltage_____

Meter Number/Account: _____

Permanent Recording Meter on Generator/Curtailable Load: YES / NO ID#_____

Method of Load Curtailment (check where appropriate):

On-Site Generator:_____ Curtailable Load:_____ Combination: _____

Generator Type: Diesel_____ Gas_____ Oil_____ Other _____

If other, describe: _____

Generator Nameplate Rating: _____

The Special Case Resource Customer is in compliance with any New York State Department of Environmental Conservation regulations that are applicable to it.: YES / NO

Disclaimer: It is the responsibility of the Customer to comply with all local, state and federal air emissions regulations. Questions concerning compliance should be forwarded to the respective regulating authority.

Method of Calculating Load Curtailment (check one)

Customer Load Reduction under Section 3.3(a) of Attachment J: _____

Generator Output under Section 3.3(b) of Attachment J: _____

Responsible Interface Party Information

Type of RIP (circle one): TO LSE Aggregator Direct Customer

Name of RIP: _____

Contact: _____

Address: _____

_____

Phone (1 hour e-mail response required): _____

Fax: _____

E-mail (1-hour e-mail response required): _____

Steps:

1. SCRs calculating load reduction based on generator output under Section 3.3.(b) of Attachment J shall submit the appropriate DMNC test form with this commitment and skip to Step 7. All others shall continue with the steps below.

2. Record the SCR End-use Customer maximum monthly one hour integrated demand for the two most recent Capability Periods (Figure 1).

Figure 1
Actual Maximum Monthly One-Hour Integrated Demand

Year_____	June	July	August	September	Summer Average
Date/Time					N/A
Demand (MW)					

Years_____	December	January	February	March	Winter Average
Date/Time					N/A
Demand (MW)					

3. Capability Period for which commitment is requested (circle one):

   Summer Winter

4. Determine the average peak monthly demand ($APMD_{gm}$) for the last like Capability Period selected in step 3: _____

5. Level of demand to which customer commits during SCR implementation (Customer Minimum Demand (CMD_{gm})): _____

6. Determine the amount of Load customer is willing to reduce its demand by during SCR implementation ($APMD_{gm} - CMD_{gm}$ = Installed Capacity Equivalent (ICE_{gm})): _____

7. For SCRs using Section 3.3(b) of Attachment J **only**, generator output to which SCR commits during SCR implementation (Contracted Generator Output (CGO_{gm}) = ICE_{gm}) _____ and Capability Period for which commitment is requested (circle one):

   Summer Winter

8. Transmission Loss Adjustment: _____ kW

9. Sum of ICE_{gm} and Transmission Loss Adjustment amount: _____ kW*

10. Dates SCR may be called upon to curtail Load:
    Starting: Ending (if applicable): _____

11. Report actual Load/generator output from meter readings covering the time period of the SCR implementation request (Figure 2) by the 20th of the month following the month in which the request occurs.

---

* The entry on this line will be adjusted by the ISO in accordance with a historic performance factor as specified in Section 3.3 of Attachment J to determine the UCAP for the Resource in question (i.e., to determine the amount that can be claimed by an LSE towards its Unforced Capacity Requirement or that can be sold in an ISO administered auction).

IN WITNESS WHEREOF. this Unforced Capacity commitment has been submitted on this, the _____ day of _____, 20_____.

Name of Certifying Entity: _____

By: _____

Title: _____

Figure 2
Minimum Load/Generator Output Verification
Demonstrated Load Reduction During Special Case Resource Implementation
(Operating Data as required by Section 4.4 of the Installed Capacity Manual)
One completed form required for each event

Event #		
Requested Start Date/Time		
Requested End Date/Time		
Date/Time*	Meter Reading	Cumulative Energy

IN WITNESS WHEREOF. this Unforced Capacity Verification has been submitted on this, the ___ day of _____, 20_____.

Name of Certifying Entity: _____

By: _____

Title: _____

* Entries shall be made according to the increments measured by the interval meter in question (e.g., In the case of an interval meter that measures on a 15 minute basis, four entries shall be made for each hour of SCR implementation).