

EnerNoc's Proposed Attachment J Changes (in ~~redline~~/strikeout) NYPA is in agreement

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 or Aggregation of such Resources 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 or Aggregation of such Resources 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 Non-Generator Based Special Case Resources and Aggregations of Special Case Resources

UCAP for **individual** Special Case Resources

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

Where:

$UCAP_{Qgm}$ 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 required to reduce load (including any hour in which Resource g was required 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 $UCAP_{Qgm}$ shall be performed as though the value of

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

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

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

in the equation above shall be set equal to an average

historical performance factor calculated by the ISO for all Special Case Resources **enrolled by the relevant RIP**. Until such a calculation is performed and posted by the ISO, this factor shall equal 1.

UCAP for Aggregations of Special Case Resources

$$UCAP_{agm} = \frac{\min\left(\frac{\sum_{h \in LRH_{gbe}} APMD_{gh} - AMD_{gh}}{NLRH_{gbe}}, 1\right)}{N} \times \sum_{g=1 \text{ to } N} ((APMD_{gm} - CMD_{gm}) \times (1 + TLF_g))$$

There should probably be "a"s in these subscripts

Where:

N =number of resources in Aggregation a

$UCAP_{agm}$ is the Unforced Capacity that Aggregation a is qualified to provide in month m from resources g ;

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 in Aggregation a was requested to reduce load;

$APMD_{gm}$ is the Average of Peak Monthly Demands for Resource g in Aggregation a 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 in Aggregation a 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 in Aggregation a was requested to reduce load;

$APMD_{gh}$ is the applicable Average of Peak Monthly Demands for Resource g in Aggregation a 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 in Aggregation a 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 in Aggregation a 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 in Aggregation a was required to reduce load (including any hour in which Resource g was required 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 in Aggregation a , 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.

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

$$UCAP_{Qgm} = DMNC_{gm} \times \frac{\sum_{h \in LRH_{gbe}} \min\left(\frac{AGO_{gh}}{CGO_{gh}}, 1\right)}{NLRH_{gbe}} \times (1 + TLF_g)$$

Where:

$UCAP_{Qgm}$ 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 required 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 required to operate in order to offset system load (including any hour in which Resource g was required 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 $UCAP_{Qgm}$ shall be performed as though the value of

$$\frac{\sum_{h \in LRH_{gbe}} \min\left(\frac{AGO_{gh}}{CGO_{gh}}, 1\right)}{NLRH_{gbe}}$$

in the equation above were 1; provided, however, that if Resource g had not begun to serve as a Special Case Resource at time e , then the value of

$$\frac{\sum_{h \in LRH_{gbe}} \min\left(\frac{AGO_{gh}}{CGO_{gh}}, 1\right)}{NLRH_{gbe}}$$

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.

(b) Determining the Amount of UCAP for an Aggregation of Generator-Based Special Case Resources

$$UCAP_{agm} = \min \left(\frac{\sum_{h \in LRH_{gbe}} \frac{AGO_{gh}}{CGO_{gh}}}{NLRH_{gbe}}, 1 \right) \times \sum_{g=1 \text{ to } N} (DMNC_{gm} \times (1 + TLF_g))$$

There should probably be "a"s in these subscripts

Where:

N = number of resources in Aggregation *a*

UCAP_{agm} is the Unforced Capacity that Resource *g* in Aggregation *a* 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* in Aggregation *a* 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* in Aggregation *a* was required 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* in Aggregation *a* was required to operate in order to offset system load (including any hour in which Resource *g* was required to operate by the ISO as part of a test);

AGO_{gh} is the average output of the generator(s) located at Resource *g* in Aggregation *a* 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* in Aggregation *a* 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* in Aggregation *a* 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* in Aggregation *a*, 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_{Qgm}* shall be performed as though the value of

$$\min \left(\frac{\sum_{h \in LRH_{gbe}} \frac{AGO_{gh}}{CGO_{gh}}}{NLRH_{gbe}}, 1 \right)$$

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

$$\min\left(\frac{\sum_{h \in LRH_{gbe}} \frac{AGO_{gh}}{CGO_{gh}}}{NLRH_{gbe}}, 1\right)$$

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 Control Area System Resource Qualifies to Supply

$$UCAP_{Qcm} = NPC_{cm} \times (1 - ACAF_{cm})$$

Where:

$UCAP_{Qcm}$ is the Unforced Capacity that the Control Area System Resource located in 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

$ACAF_{cm}$ 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:

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

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

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

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

$$ICE_{cm} = UCAP_{pcm} / (1 - CAF_{cm}),$$

Where:

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

$UCAP_{pcm}$ 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.

$UCAP_{Qgm}$, the amount of Unforced Capacity that Resource g is qualified to provide in month m , is calculated as follows:

$$UCAP_{Qgm} = ProdF_{gm} \times NC_{gm},$$

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:

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

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.

$UCAP_{Qgm}$, 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:

$$UCAP_{Qgm} = (\text{Resource}_{ICAP} - \text{Loss}_{FL}) * P_{\text{resource}} * P_{\text{cable}}$$

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.

