



**Single Electricity Market  
(SEM)**

**Capacity Market Code Urgent Working Group 26b**

**Appendix B – CMC\_11\_22**

**Approved Modification Text Drafting**

**SEM-22-063**

**05 September 2022**

## APPROVED MODIFICATION TO CAPACITY MARKET CODE DRAFTING

### **Modify C.1.1.2**

*Modify the following paragraph as shown:*

C.1.1.2(g) a de-rating curve is specific to a technology class and defines the de-rating factor applicable to a specific value of initial capacity and initial maximum on time and initial annual run hours limit. The de-rating curves are determined by the Regulatory Authorities; and

**Add the following sub-section:**

### **C.3.8 Annual Run Hours Limit**

- C.3.8.1 For a Generator Unit (other than a Demand Side Unit or an Aggregated Generator Unit) which generates using combustion, the Initial Annual Run Hours Limit (Existing) for a Capacity Year shall be equal to its Annual Run Hour Limit as set out in the relevant environmental licence or permit.
- C.3.8.2 For a Demand Site, that is comprised in a Demand Side Unit, that achieves demand reduction using combustion the Initial Annual Run Hours Limit (Existing) for a Capacity Year shall be equal to its Annual Run Hour Limit as set out in the relevant environmental licence or permit.
- C.3.8.3 For a Generator, that is comprised in an Aggregated Generator Unit, which generates using combustion, the Initial Annual Run Hours Limit (Existing) for a Capacity Year shall be equal to its Annual Run Hour Limit as set out in the relevant environmental licence or permit.
- C.3.8.4 For a Generator Unit (other than a Demand Site Unit or Aggregated Generator Unit) which generates using combustion, the Initial Annual Run Hours Limit (Total) for a Capacity Year shall be equal to the Participant's expectation of the Generator Unit's Annual Run Hours Limit given the applicable emissions legislation.
- C.3.8.5 For a Demand Site, that is comprised in a Demand Site Unit which achieves demand reduction using combustion, the Initial Annual Run Hours Limit (Total) for a Capacity Year shall be equal to the Participant's expectation of the Annual Run Hours Limit for the relevant combustion plant at the Demand Site given the applicable emissions legislation.
- C.3.8.6 For a Generator, that is comprised in an Aggregated Generator Unit which generates using combustion, the Initial Annual Run Hours Limit (Total) for a Capacity Year shall be equal to the Participant's expectation of the Generator's Annual Run Hours Limit given the applicable emissions legislation.
- C.3.8.7 Where the determination of an Initial Annual Run Hours Limit for a Capacity Year in this section C.3.8 requires consideration of limits that are specified across multiple years, the time-weighted average of the applicable limits over the shorter of

- (a) the period over which the limits apply; and
  - (b) the Maximum Capacity Duration
- shall be used.

**Modify the following paragraph as shown:**

D.3.1.2(a) the final Marginal De-Rating Curves, defining Marginal De-Rating Factors by Technology Class (including for Interconnectors), Initial Capacity and Maximum On Time to be used in the Capacity Auction;

**Add the following paragraph:**

D.3.1.2(aA) the final ARHL De-Rating Factors to be used in the Capacity Auction;

**Modify the following paragraph as shown:**

D.3.1.3(a) the final Marginal De-Rating Curves, defining Marginal De-Rating Factors by Technology Class (including for Interconnectors), Initial Capacity and Maximum On Time to be used in the Capacity Auction;

**Add the following paragraph:**

D.3.1.3(aA) the final ARHL De-Rating Factors to be used in the Capacity Auction;

**Modify the following paragraphs as shown:**

E.7.8.2(g) in determining the Gross De-Rated Capacity (New) of the Capacity Market Unit in the case of Candidate Units (other than Demand Side Units and Generator Units referred to in paragraph E.2.1.1(e) that are Variable Generator Units), the System Operators shall use the methodology set out in sections E.8.2 and E.8.3 except that, in substitution for the value(s) of the Gross De-Rated Capacity (Existing) nominated in the Application for Qualification, they shall use the value determined under paragraph (e) and in substitution for the value of Gross De-Rated Capacity (New) nominated in the Application for Qualification they shall use the product of:

- (i) the applicable Initial Capacity (Total) as determined under section E.8.1; and
- (ii) the De-Rating Factor applicable to that Initial Capacity (Total) (without applying any tolerance) and Initial Maximum On Time (Total) and Initial Annual Run Hours Limit (Total), as applicable,

less the Gross De-Rated Capacity (Existing) determined under subparagraph (e);

E.8.2.3 For the purposes of paragraphs E.8.2.1 and E.8.2.2:



- (a) GRDCE is Gross De-Rated Capacity (Existing);
- (b)  $\text{MIN}[X,Y]$  is the lesser of the values X and Y;
- (c)  $\text{MAX}[X,Y]$  is the greater of the values X and Y;
- (d) DRFE is the Marginal De-Rating Factor applicable to the Technology Class, Initial Capacity (Existing) and Initial Maximum On Time (Existing), as applicable, of the Generator Unit or Interconnector as specified in the relevant Initial Auction Information Pack;
- (e) ICE is the Initial Capacity (Existing) of the Generator Unit or Interconnector;
- (f) INCTOL is the percentage Increase Tolerance applicable to the Tolerance Class of the Generator Unit or Interconnector as specified in the relevant Initial Auction Information Pack;
- (g) DECTOL is the percentage Decrease Tolerance applicable to the Tolerance Class of the Generator Unit or Interconnector as specified in the relevant Initial Auction Information Pack; and
- (h) NDRVE is the Gross De-Rated Capacity (Existing) nominated in the Application for Qualification in respect of Existing Capacity, or such substitute value as the System Operators determine under the Alternative Qualification Process.

E.8.2.4 The System Operators shall determine the Gross De-Rated Capacity (New) of a Generator Unit or Interconnector (other than an Aggregated Generator Unit) which is not a Variable Generator Unit in accordance with the following formula:

$$\text{GDRCN} = \text{MAX}[0, \text{MIN}[\text{DRFT} \times \text{ADRFT} \times \text{ICT} \times (1 + \text{INCTOL}), \text{MAX}[\text{DRFT} \times \text{ADRFT} \times \text{ICT} \times (1 - \text{DECTOL}), \text{NDRVE} + \text{NDRVN}]] - \text{GDRCE}]$$

E.8.2.5 The System Operators shall determine the Gross De-Rated Capacity (New) of a Generator Unit (other than an Aggregated Generator Unit) which is a Variable Generator Unit in accordance with the following formula:

$$\text{GDRCN} = \text{MAX}[0, \text{MIN}[\text{DRFT} \times \text{ADRFT} \times \text{ICT} \times (1 + \text{INCTOL}), \text{NDRVE} + \text{NDRVN}] - \text{GDRCE}]$$

E.8.2.6 For the purposes of paragraphs E.8.2.4 and E.8.2.5:

- (a) GRDCN is Gross De-Rated Capacity (New);
- (b) GRDCE is Gross De-Rated Capacity (Existing);
- (c)  $\text{MIN}[X,Y]$  is the lesser of the values X and Y;
- (d)  $\text{MAX}[X,Y]$  is the greater of the values X and Y;
- (e) DRFT is the Marginal De-Rating Factor applicable to the Technology Class, Initial Capacity (Total) and Initial Maximum On Time (Total), as applicable, of the Generator Unit or Interconnector as specified in the relevant Initial Auction Information Pack;

(eA) ADRFT is the ARHL De-Rating Factor applicable to the Generator Unit (other than a Demand Side Unit) as specified in the relevant Initial Auction

Information Pack and for a Demand Side Unit shall be the value specified in the relevant Qualification Data;

- (f) ICT is the Initial Capacity (Total) of the Generator Unit or Interconnector;
- (g) INCTOL is the percentage Increase Tolerance applicable to the Tolerance Class of the Generator Unit or Interconnector as specified in the relevant Initial Auction Information Pack;
- (h) DECTOL is the percentage Decrease Tolerance applicable to the Tolerance Class of the Generator Unit or Interconnector as specified in the relevant Initial Auction Information Pack;
- (i) NDRVE is the Gross De-Rated Capacity (Existing) nominated in the Application for Qualification in respect of Existing Capacity, or such substitute value as the System Operators determine under the Alternative Qualification Process; and
- (j) NDRVN is the Gross De-Rated Capacity (New) nominated in the Application for Qualification in respect of New Capacity or such substitute value as the System Operators determine under the Alternative Qualification Process.

E.8.2.8 The System Operators shall determine the Gross De-Rated Capacity (New) of an Aggregated Generator Unit is determined in accordance with the following formula:

$$\begin{aligned} \text{GDRCN} = & \text{MAX}\{0, \\ & \sum_{i \neq \text{VU}} \text{MIN}[\text{DRFT}_i \times \text{ADRFT}_i \times \text{ICT}_i \times (1 + \text{INCTOL}_i), \text{MAX}[\text{DRFT}_i \times \text{ADRFT}_i \times \text{ICT}_i \times (1 - \\ & \text{DECTOL}_i), \text{NDRVE}_i + \text{NDRVNi}]] \\ & + \sum_{i = \text{VU}} \text{MIN}[\text{DRFT}_i \times \text{ADRFT}_i \times \text{ICT}_i \times (1 + \text{INCTOL}_i), \text{NDRVE}_i + \text{NDRVNi}] - \text{GDRCE}\} \end{aligned}$$

where:

- (a) GRDCN is Gross De-Rated Capacity (New) of the Aggregated Generator Unit;
- (b) GRDCE is Gross De-Rated Capacity (Existing) of the Aggregated Generator Unit;
- (c) MIN[ X,Y] is the lesser of the values X and Y;
- (d) MAX[ X,Y] is the greater of the values X and Y;
- (e) i denotes a Generator contributing to the Aggregated Generator Unit;
- (f) i=VU denotes those Generators that are Variable Generator Units;
- (g) i≠VU denotes those Generators that are not Variable Generator Units;
- (h) DRFT<sub>i</sub> is the Marginal De-Rating Factor applicable to the Technology Class, Initial Capacity (Total) and Initial Maximum On Time (Total), as applicable, of Generator i as specified in the relevant Initial Auction Information Pack;
- (hA) ADRFT<sub>i</sub> is the ARHL De-Rating Factor applicable to Generator i as specified in the relevant Initial Auction Information Pack;
- (i) ICT<sub>i</sub> is the Initial Capacity (Total) of Generator i;

- (j) INCTOL is the percentage Increase Tolerance applicable to the Tolerance Class of the Generator Unit or Interconnector as specified in the relevant Initial Auction Information Pack;
- (k) DECTOL is the percentage Decrease Tolerance applicable to the Tolerance Class of the Generator Unit or Interconnector as specified in the relevant Initial Auction Information Pack;
- (l) NDRVEi is the Gross De-Rated Capacity (Existing) nominated in the Application for Qualification in respect of Existing Capacity, or such substitute value as the System Operators determine under the Alternative Qualification Process, for Generator i; and
- (m) NDRVNi is the Gross De-Rated Capacity (New) nominated in the Application for Qualification in respect of New Capacity, or such substitute value as the System Operators determine under the Alternative Qualification Process, for Generator i; [and](#)
- ~~(n) DRFEi is the De-Rating Factor applicable to the Technology Class, Initial Capacity (Existing) and Initial Maximum On Time (Existing), as applicable, of Generator i as specified in the relevant Initial Auction Information Pack;~~
- (~~n~~e) ICEi is the Initial Capacity (Existing) of Generator i.

**Modify the following paragraphs as shown:**

- E.8.5.3 For each Capacity Market Unit, the De-Rated Firm Network Access Capacity shall be:
- (a) in the case of an Aggregated Generator Unit, the sum, for all of the Generators that form part of that Aggregated Generator Unit, of the Firm Network Access Capacity of the Generator multiplied by the De-Rating Factor applicable to a unit of the Technology Class and Initial Maximum On Time (Total) and Initial Annual Run Hours Limit (Total) of that Generator with an Initial Capacity equal to the Firm Network Access Capacity of that Generator; and
  - (b) in all other cases, the Firm Network Access Capacity of the Generator Unit or Interconnector multiplied by the De-Rating Factor applicable to a unit of the Technology Class and Initial Maximum On Time (Total) [and Initial Annual Run Hour Limit \(Total\)](#) of that Generator Unit or Interconnector and with an Initial Capacity equal to the Firm Network Access Capacity of that Generator Unit or Interconnector.
- I.1.3.1(b) at all times during the Capacity Year the cumulative de-rated capacity provided by the mix of Generators (based on each Generator's individual Initial Capacity and the De-Rating Factor applicable to its Technology Class [and Initial Maximum On Time \(Total\) and Initial Annual Run Hours Limit \(Total\)](#) at the time the Aggregated Generator Unit last Qualified) equals or exceeds the Awarded Capacity provided by that Aggregated Generator Unit applicable to that Capacity Year (except to the extent the System Operators agree);



## **Glossary**

### ***Add the following definitions:***

**Annual Run Hour Limit** in respect of capacity which generates using combustion shall be the maximum number of hours per Capacity Year during which the relevant combustion plant, in whole or in part, may operate in compliance with all applicable legislation, licences, authorisations, consents and permits including compliance with the CO<sub>2</sub> Limits.

**ARHL De-Rating Factor** means a factor between zero and one describing the reduction in the contribution of a Generator Unit to satisfying the Capacity Requirement to be used in a Capacity Year.

For New Capacity which is produced using combustion plant, this factor shall be as determined by the Regulatory Authorities and provided to the System Operators under paragraph D.3.1.3. For all other capacity this factor shall be set to one.

**ARHL De-Rating Factor (Existing)** means the ARHL De-Rating Factor associated with Existing Capacity.

**ARHL De-Rating Factor (Total)** means the ARHL De-Rating Factor associated with the sum of Existing Capacity and New Capacity. The ARHL De-Rating Factor (Total) for a unit with no New Capacity shall be set to one.

**Initial Annual Run Hour Limit (Existing)**

has the meaning given in paragraphs C.3.8.1 to C.3.8.3.

**Initial Annual Run Hour Limit (Total)**

has the meaning given in paragraphs C.3.8.4 to C.3.8.6.

**Marginal De-Rating Factor** means a factor between zero and one describing the proportion of Initial Capacity of a Generator Unit or Interconnector, taking account of its Technology Class, Initial Capacity and Maximum On Time, that can contribute to the satisfying the Capacity Requirement to be used in a Capacity Auction.

**Maximum On Time**

means for a Demand Side Unit means the Maximum Down Time under the Applicable Grid Code and for all other units shall be the Maximum On Time under the applicable Grid Code.

**Modify the following definition:**

**Marginal De-Rating Curve** means a curve for a Technology Class that represents the Marginal De-Rating Factor applicable by unit Initial Capacity and Initial Maximum On Time to be used in a Capacity Auction and is determined by the Regulatory Authorities and provided to the System Operators under paragraph D.3.1.3.

**New Capacity**

means, in respect of the Qualification Process and its associated Capacity Auction, the planned capacity of a new Generator, Generator Unit or Interconnector forming the whole or part of a Capacity Market Unit or proposed Capacity Market Unit, or the incremental increase in the capacity of an existing Generator, Generator Unit or Interconnector forming the whole or part of a Capacity Market Unit or proposed Capacity Market Unit (which has yet to complete Commissioning under the relevant Grid Code), and the planned capacity or incremental increase in capacity of the Capacity Market Unit that comprises them. Where a Demand Site would otherwise be considered New Capacity for the sole reason of a change of its registered Demand Side Unit then it shall be considered Existing Capacity under this Code.

**Appendices**

**Modify the following sub-paragraphs as shown:**

Appendix D, 4(m) the quantity proposed in respect of each of:

- (i) Initial Maximum On Time (Existing) of the Candidate Unit
- (ii) Initial Maximum On Time (Total) of the Candidate Unit
- (iii) where the Candidate Unit is not a Demand Side Unit, Initial Annual Run Hours Limit (Existing) of the Candidate Unit
- ~~(iv) where the Candidate Unit is not a Demand Side Unit, Initial Annual Run Hours Limit (Total) of the Candidate Unit~~
- (v) where the Candidate Unit is a Demand Side Unit, the expected value of ARHL De-Rating Factor (Existing)
- ~~(vi) where the Candidate Unit is a Demand Side Unit, the expected value of ARHL De-Rating Factor (Total)~~