MODIFICATION PROPOSAL FORM			
Proposer *(Company)*	**Date of receipt** *(assigned by System Operator)*	**Type of Proposal** *(delete as appropriate)*	**Modification Proposal ID** *(assigned by System Operator)*
EP UK Investments	**03 September 2025**	**Standard**	**CMC_18_25**

Contact Details for Modification Proposal Originator		
Name	**Telephone number**	**Email address**
Harry Molloy		**Harry.molloy@epuki.ie**

Modification Proposal Title		
Introduction of Modular Generator Unit Types and De-Rating Methodology		
Documents affected *(delete as appropriate)*	**Section(s) Affected**	**Version number of CMC used in Drafting**
Capacity Market Code	**E.8, Glossary, Appendix D**	**v12.0**

Explanation of Proposed Change
(mandatory by originator)

This modification proposes to introduce a new 'Modular Generator Unit' type to the Capacity Market Code and a new de-rating methodology associated with these units. Under this proposal a Modular Generator Unit would be a unit consisting of multiple components which can be dispatched individually. This unit type would be similar to an Aggregated Generator Unit ('**AGU**'), with the distinctions that the components contributing to the unit are not 'generators', and the removal of the 10MW maximum restriction.

This would enable components which are not capable of "*functioning as a single entity*" as per the Capacity Market Code definition of a Generator, can be considered individually within an aggregated Modular Unit.

A common example of such an arrangement would be a Combined Cycle Gas Turbine ('**CCGT**') unit that incorporates a by-pass stack enabling it to operate in either Open Cyle or Closed Cycle mode. Under the current arrangements, this unit could not be considered as an AGU as the Closed Cycle component could not normally function as a single entity and therefore could not be considered a 'generator'.

This means that the Open and Closed components of such a unit would not be considered independently when calculating a relevant de-rated capacity. As a result, the Open Cycle component is de-rated too heavily which is not an accurate reflection of its contribution to system reliability. Further, the Closed Cycle component increases the efficiency of the overall unit, however, under the current rules, the Open Cycle component incurs more heavy de-rating derating due to the added volume of the Closed Cycle component.

This modification would treat de-rating of Modular Generator Units in a similar way as Aggregated Generator Units are currently treated, whereby the individual components of a modular unit will be de-rated separately and then summed. An example of this is illustrated below. This example assumes a 300MW Gas Turbine which feeds a 150MW Steam Turbine through a Heat Recovery Steam Generator (HRSG). The de-rating factors applied in this example are the T-4 2029/2030 de-rating factors.

<u>Current Arrangements</u>

Open Cycle Capacity (MW)	300
Closed Cycle Capacity (MW)	150
Combined Capacity (MW)	450
Gas Turbine DRF at 450MW	0.744
Open Cycle De-Rated Capacity: 300 MW * 0.744 (MW)	223.2
Closed Cycle De-Rated Capacity: 150 MW * 0.744 (MW)	111.6
Total De-Rated Capacity: 450MW * 0.744 (MW)	334.8

Proposed Arrangements

Open Cycle Capacity (MW)	300
Closed Cycle Capacity (MW)	150
Combined Capacity (MW)	450
Gas Turbine DRF at 300MW	0.791
Gas Turbine DRF at 450MW	0.744
Open Cycle De-Rated Capacity: 300 MW * 0.791 (MW)	237.3
Closed Cycle De-Rated Capacity: 150 MW * 0.744(MW)	111.6
Total De-Rated Capacity: (MW)	348.9

The proposed arrangements reflect the fact that the open cycle component of the modular unit can be dispatched independently and as such is less heavily de-rated. The closed cycle component of the unit retains the de-rating factor applicable to the combined capacity of the modular unit. Similar calculations were carried out using the de-rating factor applicable at 150MW, but this was deemed to be inappropriate, as the de-rating for the closed cycle appears unrealistically high. De-rating the closed cycle component based on the overall combined volume is also consistent with the current approach to de-rating non-modular CCGTs. This modification would only amend the treatment of the open cycle portion as it can be independently dispatched.

Legal Drafting Change

*(Clearly show proposed code change using **tracked** changes, if proposer fails to identify changes, please indicate best estimate of potential changes)*

It is proposed that the following definitions are added to the Glossary of the Code:

Modular Generator Unit: A configuration consisting of at least one Generator Unit and at least one Incremental Generator Unit.

Incremental Generator Unit: Means a power plant or any similar apparatus that generates electricity (including all related equipment) with capabilities for delivering energy to the Transmission System or Distribution System and which is part of a Modular Generator Unit or Connected to the Transmission System or Distribution System, which is not capable of functioning as a single entity.

The following amendment is required to the Glossary:

Unit Type: each of the following types of Unit: Variable Generator Units, Demand Side Units, Interconnectors, Autoproducer Units, Aggregated Generator Units, other Dispatchable

Generator Units, Modular Generator Unit, Incremental Generator Unit, and other Generator Units which are not Dispatchable.

It is proposed that the following section is added to Section E.8.2 of the Code:

E.8.2.9 The System Operators shall determine the Gross De-Rated Capacity (New) of a Modular Generator Unit in accordance with the following formula:

$$GDRCN = Max\Big[0, \sum_{i \neq VU} Min[DRFT_i \times ICT_i \times (1 + INCTOL_i), Max[\, DRFT_i \times ICT_i \times (1 - DECTOL_i), NDRVE_i + NDRVN_i\,]\Big] \times ADRFT + \sum_{i=VU} Min[DRFT_i \times ICT_i \times (1 + INCTOL_i)\,, NDRVE_i + NDRVN_i] - GDRCE \times ADRFT$$

Where:

(a) GDRCN is the Gross De-Rated Capacity (New) of the Modular Generator Unit;
(b) GDRCE is the Gross De-Rated Capacity (Existing) of the Aggregated Generator Unit;
(c) Min [X, Y] is the lesser of values X and Y;
(d) Max [X, Y] is the greater of values of X and Y;
(e) i denotes a Generator or Incremental Generation Unit contributing to the Modular Generator Unit
(f) i = VU denotes Generators or Incremental Generation Units that are Variable Generation Units
(g) i ≠ VU denotes Generators or Incremental Generation Units that are not Variable Generation Units
(h) DRFTi is the Marginal De-Rating Factor applicable to the Technology Class, Initial Maximum On Time (Total), and Initial Capacity of the unit and any other Generator Unit comprising the same Modular Generator, of component i as specified in the relevant Auction Information Pack;
(i) ADRFT is the ARHL De-Rating Factor applicable to the Modular Generator Unit as specified in the relevant Initial Auction Information Pack;
(j) ICTi is the Initial Capacity of Generator or Incremental Generator Unit i;
(k) INCTOL is the percentage Increase Tolerance applicable to the Tolerance Class of the Generator Unit or Incremental Generator Unit as specified in the relevant Initial Auction Information Pack;
(l) DECTOL is the percentage Decrease Tolerance applicable to the Tolerance Class of the Generator Unit or Incremental Generator Unit as specified in the relevant Initial Auction Information Pack;
(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

This formula seeks to replicate the treatment of Aggregated Generator Units as per section E.8.2.8. Two important differences include:

- The ADRFT term has been taken outside of the summation. This is because run hour limits are applicable to Generator Units and thus cannot be applied across components of the Modular Generator Unit.

- The inclusion of the "*and any other Generator Unit comprising the same Modular Generator*" when calculating the size of the unit to be used for determining the appropriate de-rating factor. The reference to an "*other Generator Unit*" means that for the de-rating of the open cycle portion of the Modular Generator will be considered at 300MW (as it is a Generator hence no "other Generator"), while the incremental portion will be de-rated based on a capacity of 450MW (150MW plus 300MW from the Generator unit).

Additional changes are proposed to Section E.8.1.

E.8.1.1 Subject to paragraph E.8.1.2, the System Operators shall determine that the value of the Initial Capacity (Existing) and the value of the Initial Capacity (Total) for a Generator Unit or Interconnector (or a Generator contributing to an Aggregated Generator Unit or Incremental Generator Unit contributing to a Modular Generator Unit) shall be the corresponding value submitted in the relevant Application for Qualification with respect to that Generator Unit or Interconnector (or Generator contributing to an Aggregated Generator Unit, or Incremental Generator Unit contributing to a Modular Generator Unit).

E.8.1.4 For the purpose of Sections E.8.1 and E.8.2 a Candidate Unit or Generator Unit will be considered to be a Modular Generator Unit where the unit consists of at least one Generator Unit and at least one Incremental Generator Unit.

The addition of paragraph E.8.1.4 aims to restrict the use of the Modular Generator Unit to Sections E.8.1 and E.8.2 of the Code. This would limit the need to make further legal drafting changes throughout the entirety of the Code.

The following change is proposed to Appendix D: Qualification Data

4(q) for each Generator or Incremental Generator Unit within a Candidate Unit that is a Modular Generator Unit:

i. The identity of the Generator or Incremental Generator Unit;
ii. The Technology Class of the Generator or Incremental Generator Unit;
iii. The quantity proposed in respect of each of:
    a. Initial Capacity (Existing) of the Generator or Incremental Generator Unit, and (as applicable);
    b. Initial Capacity (Total) of the Generator or Incremental Generator Unit;

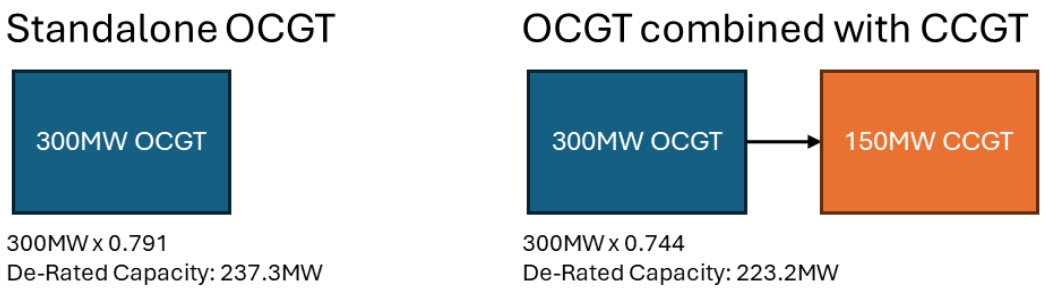
iv. the Gross De-Rated Capacity (Existing) in respect of the Generator or Incremental Generator Unit;
v. the Gross De-Rated Capacity (New) proposed in respect of the Generator or Incremental Generator Unit (such that the sum of (iv) and (v) reflects the Gross De-Rated Capacity (Total) sought for the Generator or Incremental Generator Unit);
vi. where the Modular Generator Unit will be providing New Capacity, evidence that the person who owns or controls the unit has authorised the person submitting the Application for Qualification to include the Generator or Incremental Generator Unit as part of the Modular Generator Unit in the Application for Qualification;
vii. whether the Generator or Incremental Generator Unit is Clean;
viii. the Firm Network Access Capacity of the Generator or Incremental Generator Unit (including an offer of capacity) applicable to the Capacity Year;
ix. the de-rated Firm Network Access Capacity to be applied to that Generator or Incremental Generator Unit based on the de-rating factor applicable to that quantity;

This text largely copies Appendix D – 4(k) which relates to Aggregated Generating Units.

Modification Proposal Justification

(Clearly state the reason for the Modification)

This modification would introduce a more accurate approach to calculating the de-rated capacity of units with different generating components which can be dispatched separately but may not achieve the definition of an Aggregated Generator Unit. The current approach to de-rating curves, whereby larger units incur more significant de-ratings, results in open cycle turbines which can be independently dispatched if necessary, being overly de-rated. This is illustrated in the example below:



In this example, the OCGT is capable of independent dispatch and operation in both cases. However, in the combined case, the OCGT loses 14MW of de-rated capacity, despite the fact that its availability and reliability is identical to the standalone case. The reduction to the de-rating is based purely on the addition of the closed cycle component despite the fact that this does not affect OCGT reliability. This modification would address this contradiction by de-rating the OCGT based on its own capacity.

In the above example, the 150MW CCGT unit would be derated using the factor corresponding to the 450MW de-rating factor for gas turbines. This makes the treatment of the CCGT Component consistent with the existing treatment of non-modular CCGTs.

This modification would support investment in Modular Generator Units, such as modular CCGTs. These unit types offer significant benefit to the grid as they offer both more efficient and less carbon intensive generation when operating in closed cycle mode, and flexible fast dispatch when required by operating in open cycle mode. This supports Security of Supply while aligning with low-carbon objectives associated with the energy transition.

This modification would provide a more accurate representation of the reliability of modular units. This amendment would also ensure consistency between the treatment of Aggregated Generator Units and similar technology types which do not constitute individual Generators.

Code Objectives Furthered

(State the Code Objectives the Proposal furthers, see Sub-Section A.1.2 of the CMC Code Objectives)

(c) to facilitate the participation of undertakings including electricity undertakings engaged or seeking to be engaged in the provision of electricity capacity in the Capacity Market;

(g) through the development of the Capacity Market, to promote the short-term and long-term interests of consumers of electricity with respect to price, quality, reliability, and security of supply of electricity across the Island of Ireland.

Implication of not implementing the Modification Proposal

(State the possible outcomes should the Modification Proposal not be implemented)

Failure to implement this modification would result in inaccurate de-rating calculations for Modular units, which fails to reflect the actual contribution of these units to the grid and to Security of Supply. If this is not addressed, the de-rated capacity of such units will continue to be artificially low. This may result in a gap to the capacity requirement which will not be addressed by the procurement of additional capacity, which would otherwise not be required if the proposed modification was implemented.

Additionally, the current arrangements represent an irrationality whereby identical OCGT units would receive separate de-rating factors on account of the addition to a closed-cycle component to the output of one of the units.

Impacts

(Indicate the impacts on systems, resources, processes and/or procedures)

This modification would require an additional calculation for Modular Units. It is expected that this will be of minor impact given the low number of such units and the fact that the calculation mirrors a lot of the calculations which already exist for Aggregated Generator Units.
Please return this form to the System Operators by email to CapacityModifications@sem-o.com

Notes on completing Modification Proposal Form:

1. **If a person submits a Modification Proposal on behalf of another person, that person who proposes the material of the change should be identified on the Modification Proposal Form as the Modification Proposal Originator.**
2. **Any person raising a Modification Proposal shall ensure that their proposal is clear and substantiated with the appropriate detail including the way in which it furthers the Code Objectives to enable it to be fully considered by the Regulatory Authorities.**
3. **Each Modification Proposal will include a draft text of the proposed Modification to the Code unless, if raising a Provisional Modification Proposal whereby legal drafting text is not imperative.**
4. **For the purposes of this Modification Proposal Form, the following terms shall have the following meanings:**

CMC / Code:	**means the Capacity Market Code for the Single Electricity Market**
Modification Proposal:	**means the proposal to modify the Code as set out in the attached form**
Derivative Work:	**means any text or work which incorporates or contains all or part of the Modification Proposal or any adaptation, abridgement, expansion or other modification of the Modification Proposal**

The terms "System Operators" and "Regulatory Authorities" shall have the meanings assigned to those terms in the Code.

In consideration for the right to submit, and have the Modification Proposal assessed in accordance with the terms of Section B.12 of the Code, which I have read and understand, I agree as follows:

1. **I hereby grant a worldwide, perpetual, royalty-free, non-exclusive licence:**

   1.1 **to the System Operators and the Regulatory Authorities to publish and/or distribute the Modification Proposal for free and unrestricted access;**

   1.2 **to the Regulatory Authorities to amend, adapt, combine, abridge, expand or otherwise modify the Modification Proposal at their sole discretion for the purpose of developing the Modification Proposal in accordance with the Code;**

   1.3 **to the System Operators and the Regulatory Authorities to incorporate the Modification Proposal into the Code;**

   1.4 **to all Parties to the Code and the Regulatory Authorities to use, reproduce and distribute the Modification Proposal, whether as part of the Code or otherwise, for any purpose arising out of or in connection with the Code.**

2. **The licences set out in clause 1 shall equally apply to any Derivative Works.**

3. **I hereby waive in favour of the Parties to the Code and the Regulatory Authorities any and all moral rights I may have arising out of or in connection with the Modification Proposal or any Derivative Works.**

4. **I hereby warrant that, except where expressly indicated otherwise, I am the owner of the copyright and any other intellectual property and proprietary rights in the Modification Proposal and, where not the owner, I have the requisite permissions to grant the rights set out in this form.**

5. **I hereby acknowledge that the Modification Proposal may be rejected by the Regulatory Authorities and that there is no guarantee that my Modification Proposal will be incorporated into the Code.**