



**Single Electricity Market  
(SEM)**

**Capacity Remuneration Mechanism  
2023/24 T-4 Locational Capacity Constraint Areas**

**Consultation Paper  
SEM-19-048**

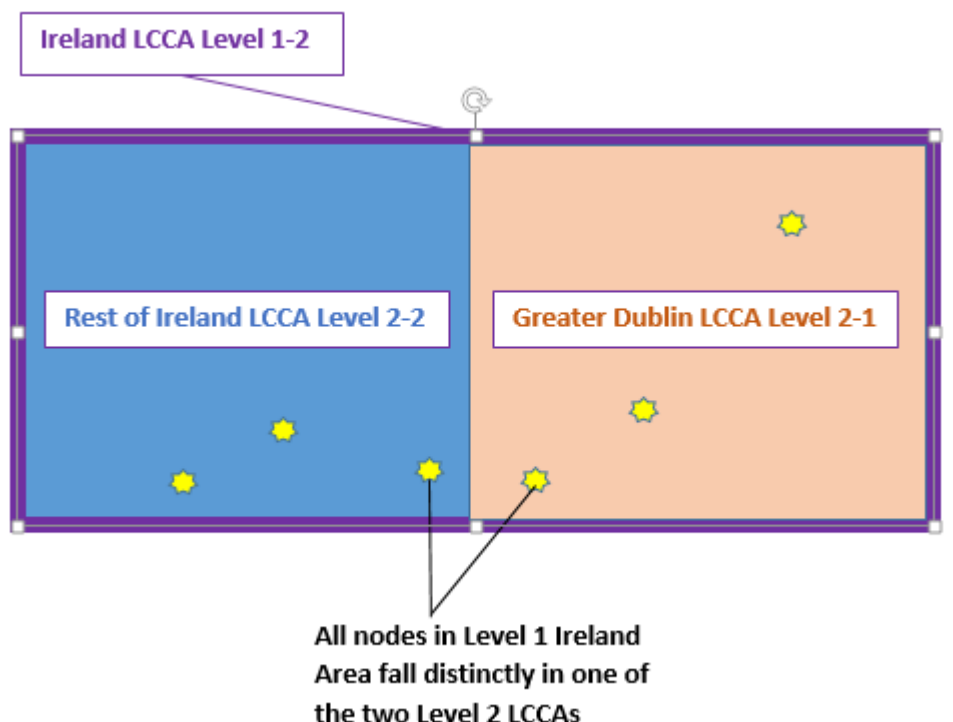
**13 September 2019**

The Capacity Market design acknowledges that significant constraints on the transmission network exist and that in practice the system is not indifferent to the location of capacity required to meet security of supply requirements across the island. The Capacity Market seeks to manage the entry and exit of plant by applying Locational Capacity Constraint Areas in the market to ensure security of supply on an all-island basis and also at a local level.

Within the SEM Capacity Market for the next T-4 auction taking place in March 2020, the Transmission System Operators (TSOs) have proposed the introduction of a new Level 2 “Rest of Ireland” Locational Capacity Constraint Area (LCCA), to be nested within the Level 1 Ireland LCCA. This additional Level 2 LCCA will be presented within the T-4 CY2023/24 Initial Auction Information Pack (IAIP) to be published shortly.

With the Greater Dublin LCCA being nested within the Level 1 Ireland LCCA, the TSOs perceive a risk that the auction could clear with too high a concentration of generation in the Greater Dublin LCCA, at the exclusion of plant outside that area, creating technical and connection challenges.

It is in this context that the TSOs have created an additional Locational Capacity Constraint for this forthcoming T-4 capacity auction, covering the ‘balance’ of the Ireland area. This is termed Level 2 “Rest of Ireland” LCCA. This LCCA would contain all nodes in the Level 1 Ireland LCCA that are not also contained in the Level 2 Greater Dublin LCCA. This is illustrated in Figure 1 below.



**Figure 1: Illustration of Level 1 Ireland LCCA and nesting of both Level 2 LCCAs for the Greater Dublin Area and the Rest of Ireland.**

The TSOs proposal for calculating the minimum MW value for the Level 2 “Rest of Ireland” LCCA is as follows:

$$\text{Level 2 Rest of Ireland LCCA min MW} = \text{Level 1 Ireland min MW} - \text{Dublin Maximum MW}$$

This consultation paper seeks views as to the need for and prudence of the creation of this additional Level 2 LCCA, and the potential calculation approach proposed to generate the minimum MW required for this Level 2 Rest of Ireland LCCA. The LCCA minimum MW values for the upcoming T-4 auction will be set within the Final Auction Information Pack (FAIP) due to be published early March 2020. Of note, while the area will be created within the IAIP, should the SEM Committee conclude on foot of this consultation that the area is not needed, it is possible to set the minimum requirement in the new area to zero within the FAIP; thereby making the constraint dormant in the auction.

Responses to the proposals within this consultation should be sent to Karen Shiels ([karen.shiels@uregni.gov.uk](mailto:karen.shiels@uregni.gov.uk)) by Friday, 25 October 2019. We intend to publish all responses unless they have been marked confidential.

A decision on the T-4 Locational Capacity Constraint Areas will be made to coincide with the publication of the T-4 CY2023/24 Final Auction Information Pack expected on 5 March 2020.

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### 3 INTRODUCTION

In advance of each capacity auction, the Capacity Market Code (CMC) requires a number of auction parameters to be determined by the Regulatory Authorities (RAs (the Utility Regulator in Northern Ireland and the Commission for Regulation of Utilities (CRU) in Ireland)).

On 17 May 2019 the SEM Committee consulted on the values of these parameters for the 2023/24 T-4 capacity auction<sup>1</sup>. A separate decision paper on these parameters was published on 10 September 2019<sup>2</sup>.

This consultation relates to a separate aspect which arose during the construction of the above mentioned parameters Decision, and also in the RAs consideration of the soon to be published Initial Auction Information Pack (IAIP); specifically to the Locational Capacity Constraint Areas (LCCA) applicable to the T-4 CY2023/24 capacity auction.

In advance of the following section, it is useful to provide an overview of the existing framework for the Locational Capacity Constraints associated with each capacity auction within the SEM.

When developing the detailed Capacity Remuneration Mechanism (CRM) the SEM Committee also developed a Locational Capacity Constraint Methodology in conjunction with the TSOs (SEM-17-040 and appendix SEM-17-040a). This methodology is focused on power transfer constraints only i.e. only considers significant capacity related constraints.

As mentioned in the methodology document, the purpose of the assessment carried out by the TSOs is to define a boundary for a constrained area of the transmission system by identifying network capacity constraints which limit power transfer and for which generation in an area would be required to mitigate those constraints.

A summary of the methodology for carrying out the network capacity assessment is best illustrated in Figure 2 below taken from the TSOs Capacity Market Locational Capacity

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<sup>1</sup> <https://www.semcommittee.com/publications/sem-19-023-2023-24-crm-t-4-parameters-consultation>

<sup>2</sup> <https://www.semcommittee.com/news-centre/sem-019-043-crm-202324-t-4-capacity-auction-parameters-decision-paper>

Constraints Methodology (SEM-17-040a). This shows the three main components which input into the assessment and also the source for such inputs. The output of the assessment is the definition of the LCCAs (IAIP stage) and also the minimum MWs (FAIP stage) to be assigned to each LCCA.

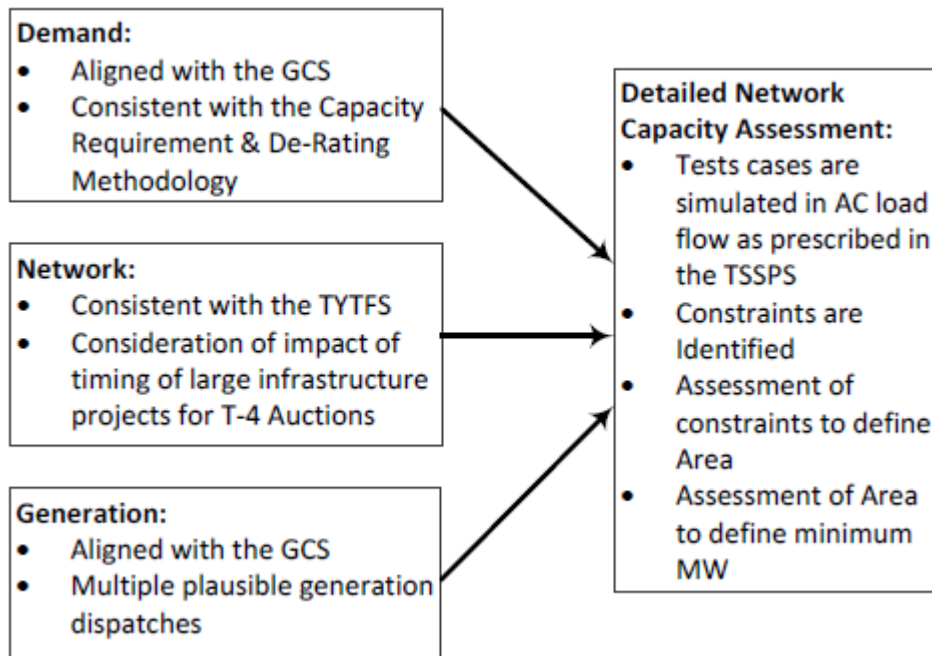


Figure 2: Locational Capacity Constraint Methodology for carrying out network capacity assessment<sup>3</sup>

The LCCAs identified in previous SEM capacity auctions have been well understood and accepted given where the transmission system tends to bind.

The following section sets out in more detail the rationale for the creation of the Level 2 Rest of Ireland LCCA and also the proposed calculation of the associated minimum MW value.

All MW values in this paper are in de-rated terms unless otherwise stated.

<sup>3</sup> GCS means Generation Capacity Statement; TYTFS means Ten Year Transmission Forecast Statement; TSSPS means Transmission System Security and Planning Standards

## 5 LOCATIONAL CAPACITY CONSTRAINT AREAS T-4 CY2023/24

### Overview

The tables below are an illustration of how the LCCAs, including the new Level 2 Rest of Ireland LCCA, will be presented in the Initial Auction Information Pack.

Level	LCCA Name	Associated Level 2 Locational Constraint Area	LCCA Nodes
1	L1-1 Northern Ireland	-	All nodes within Northern Ireland
1	L1-2 Ireland	L2-1 Greater Dublin L2-2 Rest of Ireland	All nodes within Ireland

Level	LCCA Name	Associated Level 1 Locational Constraint Area	LCCA Nodes
2	L2-1 Greater Dublin	L1-2: Ireland	Specific nodes in Greater Dublin area as specified in the Final Auction Information Pack for each auction held to date
2	L2-2 Rest of Ireland	L1-2: Ireland	All nodes with Ireland except those specific nodes associated with the Greater Dublin LCCA

### TSOs Rationale and Proposal

The TSO's rationale for this additional Level 2 Locational Capacity Constraint Area (L2-2 Rest of Ireland) is linked to the anticipated significant demand growth within the greater Dublin area and the volume of new capacity which entered the T-4 capacity auction for capacity year 2022/23. A total of 3,038 de-rated MWs of new capacity qualified for the T-4 CY2022/23 auction with the majority related to the Greater Dublin area. Within this Greater Dublin area LCCA, 526 de-rated MW of new capacity was successful in that



auction. 489 de-rated MW of new capacity was awarded a 10 year Reliability Option, the vast majority of which is located in the Greater Dublin LCCA.

It is in this context the TSOs consider that a prudent approach be taken for the forthcoming T-4 capacity auction (i.e. CY2023/24). The concern is that an excessive amount of new generation in the Greater Dublin LCCA could create technical and connection challenges. In that the concentration occurs in the same timeframe and such a concentration of generation in the Greater Dublin LCCA may at some point breach circuit capacity limits. Further, should a significant concentration of Ireland's capacity be served in Dublin, there could be a risk of excessive plant exit in the Rest of Ireland, precipitating an operational shortage of resources in that region.

As a means to manage this risk the TSOs consider there to be a need to limit the maximum de-rated capacity for the Greater Dublin LCCA, and therefore are proposing an additional Level 2 LCCA nested within the Level 1 Ireland LCCA. This LCCA is termed Level 2 Rest of Ireland.

The TSOs propose to model scenarios by increasing generation in the Greater Dublin LCCA to test the constraints and circuit capacity limits in order to determine a maximum de-rated MW value. This maximum de-rated MW value would be subtracted from the Level 1 Ireland minimum de-rated MW value to determine the minimum de-rated MW value to apply to the Level 2 Rest of Ireland. In summary, the proposal is as follows with all MW values in de-rated terms:

*Level 2 Rest of Ireland LCCA min MW = Level 1 Ireland min MW – Dublin Maximum MW*

The TSOs have provided an indicative range for the Level 2 Rest of Ireland minimum MW based upon the Final Auction Information Pack associated with the T-4 CY2022/23 capacity auction (Level 1 Ireland LCCA minimum de-rated MW value of 5,537 MW).

These are as follows:

Greater Dublin max MW range between 2,100 – 2,300 MW (de-rated)

Level 2 Rest of Ireland min MW range 3,200 MW – 3,400 MW (de-rated)

## Impacts for Consideration

For comparison purposes it is useful to note that the T-4 CY2022/23 Level 2 Greater Dublin LCCA minimum de-rated MW value was 1,682 MWs. It is also important to bear in mind that 489 de-rated MWs<sup>4</sup> (new capacity awarded in the T-4 CY2022/23 auction) is already classed as awarded capacity in the Level 1 Ireland LCCA (vast majority is also within the Level 2 Greater Dublin LCCA) for the forthcoming T-4 CY2023/24 capacity auction, as these capacity units possess 10 year Reliability Options.

The Locational Capacity Constraint Methodology as set out in SEM-17-040a does not contain specific details regarding the above proposal. However, the proposal could be considered pragmatic in light of experience and an evolving situation within the Greater Dublin LCCA.

While the maximum MW for the Greater Dublin LCCA may be determined, it is still nevertheless possible that the capacity auction could clear more capacity than this maximum MW in the Dublin area, e.g. if the bids for units in Dublin were all low. While the Greater Dublin LCCA maximum MW value contributes to the calculation of the Level 2 Rest of Ireland LCCA, it is not binding within the capacity auction.

As mentioned earlier in the paper, the Capacity Requirement is an unconstrained all-island value which informs the demand curve associated with each capacity auction. However, in practice, the auction results seek to ensure that the minimum MW values have been met within each of the Locational Capacity Constraint Areas which to date, for two of the three auctions, has led to more capacity being procured above the Capacity Requirement. Therefore the RAs are mindful that great care is needed if an additional LCCA with a minimum MW requirement is to be included in the T-4 CY2023/24 capacity auction. By doing so this could directly impact the cost of the capacity auction borne by the all-island consumer and therefore there is a balance to be weighed up. The impact however is very much dependent on the final minimum MW LCCA values which will be submitted by the TSOs, for RAs approval and inclusion in the T-4 CY2023/24 Final Auction Information Pack due to be published on 5 March 2020.

As outlined in the CMC C.2.3.2, upon the TSOs annual review of the Locational Capacity Constraints, any updated Locational Capacity Constraints will be subject to the RAs approval. Furthermore, within the CMC the RAs when considering the approval of

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<sup>4</sup> Final Auction Results T-4 CY2022/23 Appendix B [https://www.sem-o.com/documents/general-publications/Final\\_Auction-Results\\_T-4\\_22-23\\_Appendix-B.xlsx](https://www.sem-o.com/documents/general-publications/Final_Auction-Results_T-4_22-23_Appendix-B.xlsx)

the minimum MWs for each LCCA submitted by the TSOs, can either approve the minimum MW value submitted or alternatively set the value to zero (CMC F.4.1.8) and provide the reasons for this in writing to the TSOs.

As part of the RAs consideration of this proposal, to include an additional Level 2 Rest of Ireland LCCA for the reasons above, the RAs are keen to receive comments from interested parties to this consultation.

## 5 CONSULTATION QUESTIONS

Q1. Do you agree in principle with the need for a Level 2 Rest of Ireland LCCA within the T-4 CY2023/24 capacity auction (being proposed by the TSOs in the T-4 CY2023/24 Initial Auction Information Pack and referenced in the RAs T-4 Parameters decision paper published 10 September 2019 (SEM-19-043)? Please provide rationale.

Q2. Do you have any views as to the proposed calculation of the Level 2 Rest of Ireland LCCA minimum MW level?

Q3. Do respondents view the addition of a Level 2 Rest of Ireland LCCA as being appropriate within the methodology set out in SEM-17-040a? Please explain.

## 5 NEXT STEPS

Responses to the proposals within this consultation should be sent to Karen Shiels ([karen.shiels@uregni.gov.uk](mailto:karen.shiels@uregni.gov.uk)) by Friday, 25 October 2019. We intend to publish all responses unless they have been marked confidential.

A decision on the T-4 Locational Capacity Constraint Areas will be made to coincide with the publication of the T-4 CY2023/24 Final Auction Information Pack expected on 5 March 2020.