



**Single Electricity Market  
(SEM)**

**Capacity Remuneration Mechanism  
2023/24 T-4 Locational Capacity Constraint Area –  
Level 2 Rest of Ireland**

**Decision Paper  
SEM-20-020**

**1 April 2020**

## EXECUTIVE SUMMARY

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 contribute to security of supply on an all-island basis and also at a local level.

During the process for the forthcoming T-4 CY2023/24 capacity auction, the Transmission System Operators (TSOs), perceiving a risk that the Greater Dublin Locational Capacity Constraint Area (LCCA) could clear with too high a concentration of generation, created an additional area termed Level 2 “Rest of Ireland” LCCA. This new level was presented within the corresponding Initial Auction Information Pack (IAIP)<sup>1</sup> for the T-4 auction.

In September 2019 the SEM Committee consulted (SEM-19-048)<sup>2</sup> upon whether industry and other interested stakeholders agreed in principle with the need for a Level 2 Rest of Ireland LCCA within the T-4 CY2023/24 capacity auction and also if they had any comments on the proposed calculation for the minimum MW level and if the proposals were appropriate within the bounds of the published and approved Locational Capacity Constraint methodology (SEM-17-040a)<sup>3</sup>.

Eight responses were received of which five had clear concerns with the introduction and application of an additional Level 2 Rest of Ireland LCCA within the T-4 CY2023/24 capacity auction. Two of the three remaining respondents were strongly in favour of the new LCCA although one of them did consider the proposed formula as being flawed and suggested an alternative. The remaining one respondent was more concerned with the continued ‘tweaking’ of the capacity market each year to reflect system constraints, thereby creating unhelpful uncertainty and instability in the capacity market.

Having taken the consultation responses into consideration and following the TSOs decision not to provide a minimum MW value for the Level 2 Rest of Ireland LCCA, the

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<sup>1</sup> [https://www.sem-o.com/documents/general-publications/Initial-Auction-Information-Pack\\_IAIP2324T-4.pdf](https://www.sem-o.com/documents/general-publications/Initial-Auction-Information-Pack_IAIP2324T-4.pdf)

<sup>2</sup> SEM-19-048 <https://www.semcommittee.com/publications/sem-19-048-crm-202324-t-4-locational-capacity-constraint-areas>

<sup>3</sup> SEM-17-040a <https://www.semcommittee.com/publication/sem-17-040-i-sem-crm-locational-capacity-constraints-decision>

SEM Committee has decided, in line with the Capacity Market Code, to set the minimum MW requirement for the Level 2 Rest of Ireland LCCA to zero. This will be reflected in the Final Auction Information Pack to be published by the TSOs by 3 April 2020.

In respect of future auctions, it should not be assumed that this Level 2 Rest of Ireland LCCA will be carried over to future auctions.

For each capacity auction the approved Locational Capacity Constraint (LCC) methodology (SEM-17-040) should be applied to identify the Locational Capacity Constraint Areas associated with that capacity auction. Any proposed changes to the LCCAs or the LCC methodology should be included in the SEM Committee's parameters consultation for that auction, including robust detailed justifications for any proposed new (or removal of any) LCCA and/or the proposed changes required to the LCC methodology.

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The Regulatory Authorities (RAs) consulted on the parameters associated with each capacity auction. The TSOs' proposal for a new Level 2 "Rest of Ireland" LCCA was made after the RAs had consulted on the range of T-4 CY2023/24 parameters and therefore the RAs chose to carry out a separate focused consultation (SEM-19-048) to specifically gather views on the application and appropriateness of a Level 2 Rest of Ireland LCCA and its calculation of minimum MWs within the T-4 capacity auction. This new Level 2 "Rest of Ireland" LCCA was included in the T-4 CY2023/24 Initial Auction Information Pack published by the TSOs on 13 September 2019<sup>4</sup>, however no minimum MW values are determined at that stage. The consultation paper (SEM-19-048) did note that if the SEM Committee concluded on the foot of the consultation that the area is not needed, it is possible to set the minimum requirement in the new area to zero within the Final Auction Information Pack (FAIP); thereby making the constraint dormant in the auction.

### **Background to Locational Capacity Constraint Methodology**

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 1 below taken from the TSOs' Capacity Market Locational Capacity 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.

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<sup>4</sup> [https://www.sem-o.com/documents/general-publications/Initial-Auction-Information-Pack\\_IAIP2324T-4.pdf](https://www.sem-o.com/documents/general-publications/Initial-Auction-Information-Pack_IAIP2324T-4.pdf)

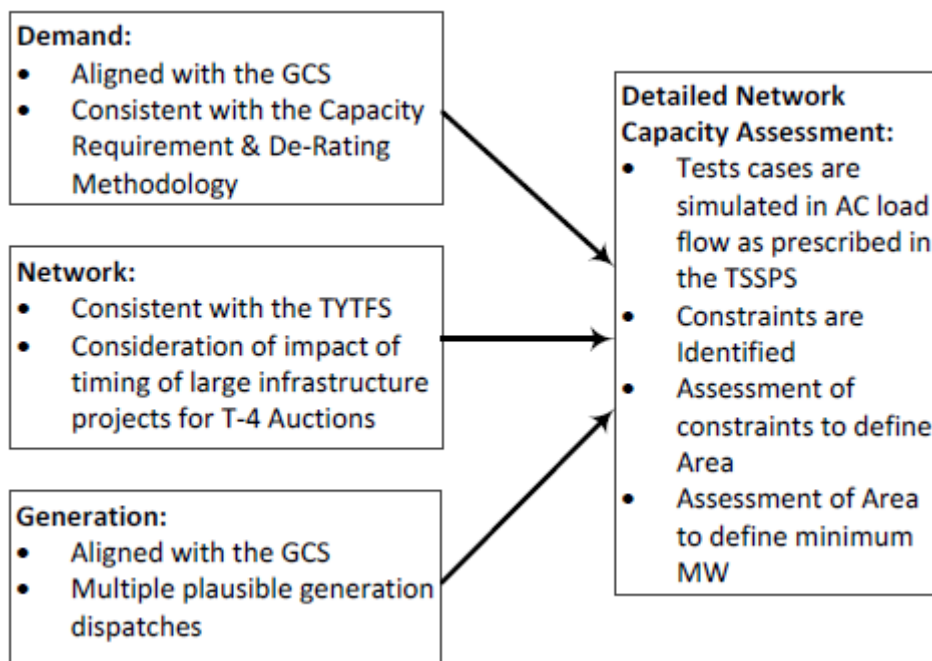


Figure 1: Locational Capacity Constraint Methodology for carrying out network capacity assessment<sup>5</sup>

### TSOs' Rationale and Proposal

The TSOs' rationale for this additional Level 2 Locational Capacity Constraint Area (L2-2 Rest of Ireland) was 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 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 was in this context the TSOs considered a prudent approach be taken for the forthcoming T-4 capacity auction (i.e. CY2023/24). The concern was 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. Furthermore, should a significant concentration of Ireland's

<sup>5</sup> GCS means Generation Capacity Statement; TYTFS means Ten Year Transmission Forecast Statement; TSSPS means Transmission System Security and Planning Standards

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 considered a need to limit the maximum de-rated capacity for the Greater Dublin LCCA, and therefore proposed an additional Level 2 LCCA nested within the Level 1 Ireland LCCA. This LCCA was termed Level 2 Rest of Ireland.

The TSOs proposed 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 then 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 was 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 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 were 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)

The TSOs did not propose changes to the approved Locational Capacity Constraint Methodology (SEM-17-040a).

### **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>6</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.

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<sup>6</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)

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 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.

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 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. The impact however is very much dependent on the final minimum MW LCCA values which will be submitted by the TSOs, for the RAs' approval and inclusion in the T-4 CY2023/24 Final Auction Information Pack.

### **Consultation questions**

As outlined in the Capacity Market Code (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 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 sought comments from interested parties as to whether they agreed in principle with the need for the new Level 2 LCCA, if they had any views on the TSOs' proposed calculation for the minimum MW level and if the proposal was considered appropriate within the bounds of the approved methodology.



#### Consultation Respondents

In response to the consultation paper (SEM-19-048) on the T-4 CY2023/24 Locational Capacity Constraint Areas, eight responses were received from the following stakeholders:

Aughinish Alumina Ltd	Energia
Bord Gáis Energy (BGE)	ESB
Bord na Móna	SSE
Eirgrid/SONI	Tynagh Energy Ltd

#### Summary of Key Points Raised in Responses

Of the eight responses received, five respondents had concerns with the introduction and application of an additional Level 2 Rest of Ireland LCCA within the T-4 CY2023/24 capacity auction. Two of the three remaining respondents were strongly in favour of the new LCCA although one of them did have concerns with the proposed formula. The remaining one respondent was not overly concerned with the detail of this proposal but were much more concerned with the continued ‘tweaking’ of the capacity market each year to reflect system constraints, thereby creating unhelpful uncertainty and instability in the capacity market.

#### Question 1: Agree in principle to the need for a Level 2 Rest of Ireland LCCA for T-4 CY2023/24 capacity auction?

In response to this question, five respondents clearly disagreed and two respondents clearly agreed.

The TSOs consider the introduction of this LCCA as entirely appropriate, necessary and a practical measure to mitigate future system risks especially given the significant increase in new capacity qualifying generation within the Level 2 Greater Dublin LCCA. The TSOs pointed out that this new Level 2 Rest of Ireland LCCA had already been included in the T-4 CY2023/24 Initial Auction Information Pack published in September 2019.

Another respondent, in support of the proposal, considered this consistent with the High Level Design given the risks identified i.e. the over-concentration of capacity within the Greater Dublin area potentially leading to a breach of circuit capacity at some point together with the risk of excessive plant exit in the Rest of Ireland, precipitating an operational shortage.

The key issues raised by the five respondents who did not agree in principle with this additional Locational Capacity Constraint Area were wide ranging, a summary of these are captured below while the full detail is provided in the published responses.

There was a general theme that responses were limited and couldn't provide an informed view due to inadequate detail and insufficient justification provided in the consultation paper. The consultation proposal has the potential to have a significant change on market participants entering the auction for which no rationale was given to this proposal being the best and most effective, or that alternative options were considered.

Most did not believe the Capacity Market was the appropriate place to solve this constraint, and suggested a range of other means available to the TSOs to resolve the risk of high concentration in the Greater Dublin LCCA e.g. the connection and network design avenues. Three of these respondents raised clear concerns that the inclusion of a further LCCA, on the basis of the proposal, could unnecessarily risk distorting the capacity auction, creating further exit signals and further risks an unfair playing field for participants.

Three respondents were concerned with mixed messages being given in respect of the Greater Dublin LCCA e.g. the Demonstrable, Material and Imminent Likelihood of Closure (DMILC) process, locational system services scalars and the connection offer process.

A couple of respondents were disappointed that given LCCAs are an important signal to the market that the new LCCA was included in the published IAIP in advance of the conclusion of the consultation (SEM-19-048) which overlapped with the T-4 qualification period.

Furthermore, the proposal was considered an indirect solution and does not prevent an over-procurement of capacity in the Greater Dublin LCCA (or the system as a whole), which may not be in the consumers' interest and potentially contradicts the context of the State Aid decision in relation to over-procurement and constraints.

Question 2: Any views on the proposed calculation of the Level 2 Rest of Ireland LCCA minimum MW level?

In response to this question, there were concerns from the vast majority of respondents, with the exception of the TSOs and one other respondent who did not specifically comment.

The TSOs clarified that for Level 2 LCCA analysis the boundary of the constraint area is first defined as per the methodology, where detailed network assessments are carried out to identify network capacity constraints within the meshed network. Similar detailed analysis is then used to determine the minimum MW through iteratively increasing generation capacity in the identified area until the constraints are resolved. As a result of this the Level 2 Greater Dublin LCCA was defined.

However, the TSOs did recognise, in their response, that no clear Level 2 LCCAs were identified outside of Greater Dublin but placing a limit on the amount of de-rated generation capacity that can be successful in the Level 2 Greater Dublin LCCA would ensure that no capacity limits are breached within that LCCA. Therefore, in the TSOs view, the introduction of the Level 2 Rest of Ireland LCCA is as such a limit to ensure a minimum level of generation outside Greater Dublin and effectively put a limit on the maximum amount of generation in Greater Dublin that is successful in the auction.

Six respondents had concerns with this proposed calculation, one of which was very strongly in favour of the inclusion of the Level 2 Rest of Ireland LCCA but considered the calculation as fundamentally flawed and therefore provided an alternative calculation based on the Greater Dublin LCCA volume instead of Dublin maximum MW.

A general theme was that the proposed calculation doesn't achieve the real target of capping the generation that can clear in the Greater Dublin LCCA. Therefore a suggestion was to propose a Capacity Market Code modification to allow a maximum MW parameter for LCCAs upon which the SEM Committee would consult on the magnitude of that maximum level for each auction.

Others suggested that in addition to the need for the LCC methodology to allow for the calculation of a maximum MW value, the auction solution methodology would also need amendment to facilitate such a maximum limit to be put in place and therefore bind in the auction results. However, these suggestions were not necessarily supported as the direction of travel to take, but were illustrating the amendments which would be needed before the introduction of such a proposal could be progressed.

Question 3: Any views on the Level 2 Rest of Ireland LCCA being appropriate within the approved SEM Committee Locational Capacity Constraint (LCC) methodology (SEM-17-040)?

The TSOs consider the proposal to be consistent with the intention of the LCC methodology and that no modification to the methodology is required and also that the application of the proposal is also consistent with the methodology.

Two other respondents did not see the proposed approach as contrary to the LCC methodology particularly given the output of the methodology is to provide a minimum MW calculation.

Five respondents had concerns with the calculation of a maximum MW value particularly as the approved LCC methodology doesn't specifically reference such a calculation.

Three of these respondents were generally concerned with the introduction of this new LCCA as it appears to be based upon a concern of over-supply in one area rather than identifying network capacity constraints which limit power transfers and for which generation in an area would be required to mitigate those concerns. One of these respondents mentioned that this proposal appears to contradict the context of the State Aid decision in relation to over-procurement and constraints, referencing the State Aid approval was based on certain conditions being fulfilled which give an expectation that over-procurement will be addressed and transmission constraints will also be resolved over time.

One respondent was of the view that if there is a legitimate concern regarding security of supply for the rest of Ireland then the minimum MW generation requirement should be calculated using the established LCC Level 2 methodology which has been subject to consultation and approval by the SEM Committee. Ultimately in their view the following criteria should be met to merit this issue being addressed within the Capacity Market:

- The issue relates to local security of supply issues based on “power transfer constraints” or significant circuit capacity issues (and not other “technical or connection challenges”)
- The locational need should be “clear and significant”.

## 4. SEM COMMITTEE RESPONSES

The SEM Committee acknowledge that, as with any new market, adjustments may be necessary in the early stages to align the market with the design expectation. However, the SEM Committee would also share the concern raised about continued ‘tweaking’ of the capacity market and have a desire that only necessary amendments are made as the capacity market continues to evolve.

The consultation was raised due to the TSOs having alerted the RAs to a concern regarding increasing concentration of generation in the Greater Dublin LCCA which could in time create technical and connection challenges e.g. may lead at some point to a breach in circuit capacity limits. The consultation reflected the information that the RAs had received and therefore the SEM Committee would share the concerns raised by some respondents in respect of the lack of detail and insufficient justification for the inclusion of this significant Level 2 Rest of Ireland LCCA. The SEM Committee notes that no further detail was provided in the TSOs’ consultation response.

The SEM Committee appreciate that the timing of the consultation was less than ideal and ideally would have been included in the parameters decision for the same auction (SEM-19-043), however the consultation was published as soon as possible after having been made aware of the new Rest of Ireland LCCA and the SEM Committee were of the view that it remained important to have the consultation to inform the Final Auction Information Pack.

On that basis, the SEM Committee were aware that the Level 2 Rest of Ireland LCCA would be included by the TSOs in the IAIP, however in the knowledge that should the SEM Committee conclude that the LCCA is not appropriate at this time, it is possible for the minimum MW requirement to be set to zero (CMC F.4.1.8) within the Final Auction Information Pack, thereby making the constraint dormant in the auction.

Overall, the SEM Committee are of the view that the Level 2 Rest of Ireland LCCA is a significant new constraint area. As can be seen from the responses there is uncertainty and mixed opinions as to whether this Rest of Ireland LCCA fits within the current approved methodology and particularly the majority of respondents raised concerns regarding the proposed calculation of the minimum MWs for the Rest of Ireland LCCA.

It is worth reiterating that 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 the minimum MW values have been met within each of the Locational Capacity Constraint Areas. This together with having received State Aid approval for the inclusion of capacity constraint areas, the SEM Committee are mindful that great care is needed if any additional LCCA with a minimum MW requirement is to be included in the capacity auction. By doing so this could potential risk over-procurement of capacity and directly impact the cost of the capacity auction borne by the all-island consumer.

Within the SEM Committee's LCC methodology decision (SEM-17-040) the SEM Committee decision identified a number of key principles which would be appropriate for any locational capacity framework within the Capacity Market. This principles are worth repeating and have also helped inform this decision:

- Any locational constraints taken into account within the Capacity Market would only be used to represent local capacity deliverability constraints.
- A locational need would only be included in the Capacity Market where the need is clear and significant.
- The means by which local capacity deliverability constraints are identified and quantified would be simple and transparent to the maximum extent practicable.

The SEM Committee, from a capacity market perspective, are aware of a number of other measures in the wider context which are focused on generation in the Dublin area and therefore will continue to be aware of the evolving nature of the existing constraint areas and the network constraints which inform these constraint areas, as part of the LCC methodology, to apply in the capacity auctions.

The RAs expect the T-4 CY2024/25 capacity auction, scheduled for January 2021, will be the first auction to apply the full combinatorial auction format (known as Format D) and it is understood by the RAs that this combinatorial auction format will be designed to allow a maximum LCCA MW value to be reflected in the auction configuration.

More recently and in addition to the above, it is worth noting that the TSOs provided the RAs with both provisional and final LCCA minimum MW values, as required under section F.4 of the Capacity Market Code, within which the TSOs chose not to include the Level 2 Rest of Ireland LCCA nor provide a minimum MW value for this LCCA.

In respect of the T-4 CY2023/24 capacity auction the SEM Committee has decided, in accordance with the Capacity Market Code section F.4.1.8, to set the minimum MW requirement for the Level 2 Rest of Ireland LCCA to zero for the reasons set out in the above section. This will be reflected in the Final Auction Information Pack to be published by the TSOs by 3 April 2020.

In respect of future auctions, it should not be assumed that this Level 2 Rest of Ireland LCCA will be carried over to future auctions.

For each capacity auction the approved Locational Capacity Constraint (LCC) methodology (SEM-17-040a) should be applied to identify the Locational Capacity Constraint Areas associated with that capacity auction. Any proposed changes to the LCCAs or the LCC methodology should be included in the SEM Committee's parameters consultation for that auction, including robust detailed justifications for any proposed new (or removal of any) LCCA and/or the proposed changes required to the LCC methodology.