Single Electricity Market
(SEM)

Capacity Remuneration Mechanism

Information Note on the 2023/24 T-4 Capacity Auction Volumes

SEM-20-048

10 August 2020

1. EXECUTIVE SUMMARY

In order to enhance transparency regarding capacity auctions and volumes, this information paper provides a summary of considerations made by the SEM Committee in determining the Demand Curve and Locational Capacity Constraint Required Quantities in advance of the 2023-24 T-4 capacity auction.

The SEM Committee's decision on these values fed into the Final Auction Information Pack (FAIP), which was published by the System Operators on 8 April 2020.

The volumes for the Final Auction Information Pack were determined as follows:

	All-Island	NI	Ireland	Dublin
Initial Capacity Requirement/LCCA minimum MWs	**7,510**	**1,750**	**5,980**	**1,900**
Existing Awarded Capacity	-524	-24	-500	-489
Non-Participating: TSO Estimate	-490	-150	-340	0
Non-Participating: RESS Adjustment	-50	0	-50	0
Required Quantity Less Awarded and Non-Participating	**6,446**	**1,576**	**5,090**	**1,411**
Total reserves, of which….	585	388	535	346
2019 outage statistics	*120*	*40*	*80*	*20*
DSU Run-Hour Limitations	*90*	*10*	*80*	*20*
Operating reserves	*375*	*338*	*375*	*306*
Demand Withholding	-211	-47	-164	-82
DSU Withholding (2% policy)	-150	-35	-120	-38
Total (adjusted Capacity Requirements)	**6,670**	**1,882**	**5,341**	**1,637**

A description as to how each of these adjusted was derived is contained within the body of this information paper.

2. INTRODUCTION

Capacity Requirement and Demand Curve

The final Capacity Requirement for a Capacity Auction must be determined by the Regulatory Authorities and published as part of the Initial Auction Information Pack.

The Demand Curve for an auction is finalised before the publication of the Final Auction Information Pack. Under F.3.1.4 of the Capacity Market Code ("**CMC**"), the Demand Curve shall be based on the Capacity Requirement, adjusted by:

(a) existing Awarded Capacity in respect of the relevant Capacity Year;

(b) an allowance for changes in forecast capacity requirements (as considered appropriate by the Regulatory Authorities);

(c) an allowance for capacity to be procured in later auctions for the Capacity Year (as considered appropriate by the Regulatory Authorities); and

(d) an allowance for the de-rated value of capacity that is forecast to be operational during the Capacity Year but which will not be participating in the Capacity Auction (as considered appropriate by the Regulatory Authorities).

The Capacity Requirement for the 2023/24 T-4 capacity auction, as described in the Initial Auction Information Pack, was 7,510MW.

Locational Capacity Constraints

Under C.2.1.1 of the CMC, the System Operators may determine one or more Locational Capacity Constraints ("**LCCs**") for the purposes of a Capacity Year with a view to ensuring that a minimum capacity is cleared in the Capacity Auctions for that Capacity Year in one or more specific areas of the SEM for the purposes of system security.

Under F.4.1.1(a) of the CMC, for each LCC, the System Operators shall determine the Locational Capacity Constraint Required Quantity, being:

(i) the minimum de-rated capacity quantity that is required to satisfy the Locational Capacity Constraint determined under paragraph C.2.2.2(c); less

(ii) the de-rated value of capacity that is not existing Awarded Capacity for the relevant Capacity Year but which the System Operators forecast to be operational during the relevant Capacity Year and will not participate in the Capacity Auction.

Four LCCAs Locational Capacity Constraint Areas (“**LCCAs**”) were included in the Initial Auction Information Pack for the 2023/24 T-4 capacity auction:

- L1-1: Northern Ireland,
- L1-2: Ireland,
- L2-1: Greater Dublin (associated with the Ireland Level 1 LCCA),
- L2-2: Rest of Ireland (associated with the Ireland Level 1 LCCA).

No Locational Capacity Constraint Required Quantity was ascribed to these LCCAs in the Initial Auction Information Pack, with their value to be provided in the Final Auction Information Pack.

3. ADJUSTMENTS FOR THE DETERMINATION OF THE FINAL DEMAND CURVE AND LOCATIONAL CAPACITY CONSTRAINTS

Rest of Ireland Locational Capacity Constraint Area

After the System Operators proposed the Level 2 LCCA for the Rest of Ireland (i.e. all nodes within Ireland that are outside of the Greater Dublin LCCA) within the Initial Auction Information Pack, the Regulatory Authorities published a consultation on the need for a Level 2 Rest of Ireland LCCA, and the calculation for the minimum MW level for this constraint. Taking into consideration the responses to this consultation, and following the System Operators' decision not to provide a minimum MW value for the Rest of Ireland LCCA, the SEM Committee decided[1] to set the minimum MW requirement for this LCCA to zero.

The remainder of this section describes the adjustments to the All-Island, Northern Ireland, Ireland and Greater Dublin minimum MW requirements.

Existing Awarded Capacity and Non-Participating Capacity (F.3.1.4(a) and (d))

MW	All-Island	NI	Ireland	Dublin
Initial Capacity Requirement/LCCA minimum MWs	**7,510**	**1,746**	**5,975**	**1,900**
Existing Awarded Capacity	-524	-24	-500	-489
Non-Participating: SO Estimate	-490	-150	-340	0
Non-Participating: RESS Adjustment	-50	0	-50	0
Required Quantity Less Awarded and Non-Participating	**6,446**	**1,572**	**5,085**	**1,411**

There were 524MW of capacity awarded for the 2023/24 capacity year within the 2022/23 T-4 capacity auction. The System Operators also advised the Regulatory Authorities that they estimated there to be 490MW of capacity operational during 2023/24 but which will not be participating in the Capacity Auction.

[1] SEM-20-020

In addition to these adjustments, the RAs made a further adjustment to the Demand Curve to reflect somewhat the likely capacity contribution of new capacity to be built by 2023/24 as a result of the RESS-1 auction. This adjustment is made to the Ireland and all-island requirements.

Allowance for forecast capacity changes, under F.3.1.4(b)

Adjustment for 2019 Outage Statistics

The System Operators' Capacity Requirement methodology requires them to base the calculation on the average of the last five years' outage statistics. At the time the IAIP was approved by the SEM Committee, the last five years' statistics were 2014 – 2018. 2019 statistics are now available, and consistent with the ageing plant mix, the average of 2015-2019 statistics are worse than the 2014-2018 average. Incorporating the 2019 outage statistics into the five year average results in the following required increases in required capacity:

	All-Island	NI	Ireland	Dublin
Adjustments for 2019 Outage Statistics	120	40	80	20

Adjustment for DSU run-hour limitations

Despite the majority of DSUs having a maximum run-time of two hours, the System Operators' model assumes that all DSUs can run continuously for 24 hours. The System Operators' estimations of the resulting under-estimates in the Capacity Requirement are set out as follows:

	All-Island	NI	Ireland	Dublin
DSU Run Hour Limitation Adjustment	90	10	80	20

The approach taken by the System Operators to create the de-rating factors for the 2024/25 T-4 capacity auction more accurately takes account of the adequacy contributed by energy limited units. This has resulted in lower de-rating factors for pumped storage hydro, other storage and demand side units with a maximum down time ≤ 6 hours.

Operating Reserves

The System Operators proposed that 500MW of operating reserve should be included, based on the Largest Single Infeed (LSI), the East-West Interconnector, and that this operating reserve volume be apportioned to the Level 1 LCCAs (Ireland and Northern Ireland) pro-rata to demand.

ENTSO-E and ACER have been consulting the standardising European Capacity Requirement methodologies, including via the Energy Resource Adequacy Assessment consultation process. Based on the likelihood that the standardised methodology will result in the incorporation of primary and secondary operating reserve requirements, the SEM Committee decided to incorporate 75% of the Largest Single Infeed on both an all-island and LCCA basis. The adjustment for Operating Reserves is therefore:

	All-Island	**NI**	**Ireland**	**Dublin**
Operating Reserves	375 (75% of EWIC)	337.5 (75% of Moyle)	375 (75% of EWIC)	306 (75% of largest Dublin CCGT)

Summary

	All-Island	**NI**	**Ireland**	**Dublin**
Required Quantity Less Awarded and Non-Participating	**6,446**	**1,572**	**5,085**	**1,411**
Total reserves, of which….	585	388	535	346
2019 outage statistics	*120*	*40*	*80*	*20*
DSU Run-Hour Limitations	*90*	*10*	*80*	*20*
Operating reserves	*375*	*338*	*375*	*306*

DSU and Demand Withholding (F.3.1.4(c))

For the 2022/23 T-4 capacity auction, the SEM Committee withheld 2% of the Capacity Requirement for the T-1 auction, on the grounds that DSUs do not have certainty of availability and costs at the T-4 stage. The SEM Committee retained this policy for the 2023/24 T-4 auction.

The SEM Committee withheld 300MW of capacity from the all-island requirement for the 2022/23 T-4 auction. This was based upon the difference between the demand scenario selected under the least-worst regrets analysis and the median scenario. This policy was retained for the 2023/24 T-4 capacity auction, although the volume withheld was lower than in the 2022/23 T-4 auction as there were smaller differences between the median and least worst regrets demand forecasts. However, instead of allocating all of the demand uncertainty within Ireland to the Greater Dublin Locational Capacity Constraint (as in the 2022/23 T-4 auction), this is now allocated equally across Dublin and the rest of Ireland, reflecting a more refined estimate of the allocation of demand uncertainty.

The resulting application of these existing policies is:

	All-Island	NI	Ireland	Dublin
Demand Withholding	-211	-47	-164	-82
DSU Withholding (2% policy)	-150	-35	-120	-38

4. CONCLUSION

Based on the above adjustments, the volumes in the Demand Curve and for each LCCA were determined as follows:

	All-Island	NI	Ireland	Dublin
Initial Capacity Requirement/LCCA minimum MWs	**7,510**	**1,750**	**5,980**	**1,900**
Existing Awarded Capacity	-524	-24	-500	-489
Non-Participating: TSO Estimate	-490	-150	-340	0
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It should be noted that the figures in the last line of the table above, that were used to determine the Final Auction Information Pack are **net** of Existing Awarded Capacity. However, under F.4.1.1(a) of the Capacity Market Code, the Locational Capacity Constraint Required Quantity for each LCC is calculated as:

(i) the minimum de-rated capacity quantity that is required to satisfy the Locational Capacity Constraint; less

(ii) the de-rated value of capacity that is not existing Awarded Capacity for the relevant Capacity Year but which the System Operators forecast to be operational during the relevant Capacity Year and will not participate in the Capacity Auction.

F.4.1.1(a) implies that the LCC Required Quantity should be calculated on a **<u>gross</u>** basis (i.e. including any requirement that is covered by previously awarded capacity).

The 2023/24 T-4 capacity auction is the first auction for which there is previously awarded capacity and is therefore the first time this discrepancy has become pertinent. This issue was observed by the System Operators in advance of the Capacity Auction Run Start and clarified with the Regulatory Authorities. It was also notified to the Capacity Auction Monitor in advance of the Capacity Auction Run Start. The Regulatory Authorities have submitted a modification to the CMC Modification working group to add clarity on this issue.