



**Single Electricity Market  
(SEM)**

**Capacity Remuneration Mechanism  
T-4 2027/2028 Capacity Auction Parameters**

**Consultation Paper  
SEM-23-006**

**20 January 2023**

## 1. EXECUTIVE SUMMARY

Under the revised SEM arrangements, implemented in October 2018, capacity revenues are allocated by capacity auction for a relevant capacity year. Prior to each capacity auction, a number of capacity auction parameters must be set. The list of parameters to be determined by the Regulatory Authorities is described in paragraph D.3.1.3 of the Capacity Market Code.

This paper describes the SEM Committee's proposals for the relevant parameters to apply in the 2027/2028 T-4 Capacity Auction, scheduled to take place on September 28<sup>th</sup> 2023. Most of the parameters proposed are the same as those used in recent auctions, including the 2026/27 T-4 auction.

The proposed parameters for consultation are:

Parameter	Proposed Value for 2027/2028 T-4 capacity auction
De-Rating Curves, defining De-Rating Factors by unit Initial Capacity and by Technology Class (including Interconnectors)	To be determined by System Operators prior to publication of Initial Auction Information Pack.
Capacity Requirement	To be determined by System Operators prior to publication of Initial Auction Information Pack.
Indicative Demand Curve	The Demand Curve for the 2027/2028 T-4 auction will be set as the following: <ul style="list-style-type: none"><li>• Horizontal at the Auction Price Cap from 0 MW to 92.5% of the adjusted Capacity Requirement.</li><li>• Slopes down in a straight line to 115% of the adjusted Capacity Requirement. The line passes through the point at where the volume is equal</li></ul>

	100% of the adjusted Capacity Requirement and the price equals Net CONE									
Auction Price Cap	1.5 times Net CONE i.e., €146,920 / de-rated MW / year. This value may be subject to change following the outcome of the ongoing BNE study									
Existing Capacity Price Cap	0.5 x current Net CONE i.e. €46,150 / de-rated MW /year. As above. This value is fixed irrespective of the outcome of the current BNE study.									
New Capacity Investment Rate Threshold	€300,000 /de-rated MW / year.									
Annual Stop Loss Limit Factor	1.5									
Billing Period Stop Loss Factor	0.5									
Indicative Annual Capacity Exchange Rate	To be determined by System Operators prior to publication of Initial Auction Information Pack.									
Increase Tolerance and Decrease Tolerance by Technology Class	<table border="1"> <thead> <tr> <th>Technology Class</th> <th>Increase Tolerance (%)</th> <th>Decrease Tolerance (%)</th> </tr> </thead> <tbody> <tr> <td>All Except DSUs</td> <td>0</td> <td>0</td> </tr> <tr> <td>DSUs</td> <td>0</td> <td>100</td> </tr> </tbody> </table>	Technology Class	Increase Tolerance (%)	Decrease Tolerance (%)	All Except DSUs	0	0	DSUs	0	100
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Performance Security Posting Dates / Events	<table border="1"> <thead> <tr> <th>Date / Event</th> <th>Performance Security Rate (€/MW)</th> </tr> </thead> <tbody> <tr> <td>From Capacity Auction completion to 27 months prior to the beginning of the Capacity Year</td> <td>20,000</td> </tr> </tbody> </table>	Date / Event	Performance Security Rate (€/MW)	From Capacity Auction completion to 27 months prior to the beginning of the Capacity Year	20,000					
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	27-13 months prior to the beginning of the Capacity Year	30,000
	From 13 months to beginning of Capacity Year	40,000
	From beginning of Capacity Year	50,000
Termination Charges	<b>Date / Event</b>	<b>Termination Charge Rate (€/MW)</b>
	From Capacity Auction completion to 27 months prior to the beginning of the Capacity Year	20,000
	27-13 months prior to the beginning of the Capacity Year	30,000
	From 13 months to beginning of Capacity Year	40,000
	From beginning of Capacity Year	50,000
Full Administered Scarcity Price and Reserve Scarcity Price Curve	<b>Short Term Reserve (MW)</b>	<b>Administered Scarcity Price (€/MWh)</b>
	Demand Control	25% of VOLL
	0	25% of VOLL
	500	RO Strike Price
Anticipated values to be applied in determining the Strike Price	Current inputs to be re-applied.	

Responses to the proposals within this consultation should be sent to both mailboxes [CRMSubmissions@uregni.gov.uk](mailto:CRMSubmissions@uregni.gov.uk) and [CRMsubmissions@cru.ie](mailto:CRMsubmissions@cru.ie) by February 10<sup>th</sup> 2023.

We intend to publish all responses unless they have been marked as confidential.

## Contents

1. EXECUTIVE SUMMARY .....	2
2. INTRODUCTION AND BACKGROUND .....	7
3. PARAMETERS REQUIRED BY THE CAPACITY MARKET CODE.....	8
5. TREATMENT OF CONSTRAINTS .....	21
6. NEXT STEPS .....	23

## 2. INTRODUCTION AND BACKGROUND

The SEM Capacity Remuneration Mechanism (“**CRM**”) was developed through an extensive series of consultation and decision papers. The CRM allocates capacity payments through ex-ante capacity auctions.

Before 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).

### *Parameters to be determined*

Paragraph D.3.1.3 of the CMC requires the Regulatory Authorities to determine the following parameters for each Capacity Auction, and provide them to the System Operators for inclusion in the applicable Initial Auction Information Pack:

- (a) the De-Rating Curves, defining De-Rating Factors by Technology Class (including for Interconnectors).
- (b) the Capacity Requirement.
- (c) an indicative Demand Curve.
- (d) the Auction Price Cap.
- (e) the Existing Capacity Price Cap.
- (f) the €/MW rate of the New Capacity Investment Rate Threshold.
- (g) the Annual Stop-Loss Limit Factor.
- (h) the Billing Period Stop-Loss Limit Factor.
- (i) the indicative Annual Capacity Payment Exchange Rate.
- (j) the Increase Tolerance and Decrease Tolerance by Tolerance Class that may be applied by a Participant in its Application for Qualification to Capacity Market Unit de-ratings.
- (k) in respect of Performance Securities:

- (i) the final Performance Security Posting Dates/ Events applicable to Awarded Capacity allocated in the Capacity Auction; and
  - (ii) for each Performance Security Posting Date/ Event, the final €/MW rate to be applied in setting Performance Securities applicable to Awarded Capacity allocated in the Capacity Auction.
- (l) the €/MW fee rates for calculating Termination Charges.
- (m) values for the Full Administered Scarcity Price and the Reserve Scarcity Price; and
- (n) anticipated values for the parameters to be applied in determining the Strike Price.

### 3. PARAMETERS REQUIRED BY THE CAPACITY MARKET CODE

As described, the Regulatory Authorities must determine the following parameters:

- (a) *the De-Rating Curves, defining De-Rating Factors by Technology Class (including for Interconnectors).*

A De-Rating Curve is a curve for a Technology Class that represents the De-Rating Factor applicable by unit Initial Capacity and Initial Maximum On Time to be used in a Capacity Auction. A De-Rating Factor describes the proportion of Initial Capacity of a Generator Unit or Interconnector that can contribute towards satisfying the Capacity Requirement to be used in a Capacity Auction.

The System Operators published a methodology for the Calculation of Capacity Requirement and De-rating factors prior to the 2019/20 T-1 capacity auction<sup>1</sup>. This is a least-worst regrets analysis which selects the demand forecast level to be used for the Capacity Market auction. The De-Rating Factors are those that are used to derive the Capacity Requirement selected by the least-worst regrets analysis.

Recently, the RAs worked closely with the TSOs to develop an upgrade to the Adequacy Calculator, responsible for the creation of De-rating Factors. At the November SEM

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<sup>1</sup>SEM-18-030a: <https://www.semcommittee.com/news-centre/i-sem-crm-t-1-cy201920-capacity-auction-parameters-and-enduring-de-rating-methodology>

Committee, the decision to adopt these enhancements was approved, where details of these enhancements can be found in SEM-22-097<sup>2</sup>.

For the T-1 2023/24 IAIP the SEM Committee decided to adopt a “glide path” approach for the DSUs. This took the form of a simple arithmetic mean of two values, for each increasing capacity amount (in successive 10MW tranches) and storage capability (in hours). One value from the TSOs ISAC2 output, and one from the T-4 2026/27 IAIP.

This will not continue for this auction, and the outputs from the TSOs Adequacy Calculator will be formally adopted.

*(b) the Capacity Requirement.*

The Capacity Requirement is the de-rated capacity required to satisfy the SEM Security Standard for a specific Capacity Year to be used in a Capacity Auction. The SEM Security Standard is the standard specified by the Regulatory Authorities for the annual loss of load expectation to be maintained in the SEM, i.e., the number of hours per year for which load curtailment may occur due to demand exceeding available capacity.

In CRM Detailed Design Decision<sup>3</sup> the SEM Committee decided to retain the security standard at 8 hours LOLE. The System Operators published a methodology for the Calculation of the Capacity Requirement and De-rating factors prior to the 2019/20 T-1 capacity auction. The enhanced methodology as outlined in SEM-22-097 will be employed for the purposes of this and future auctions.

*(c) an indicative Demand Curve.*

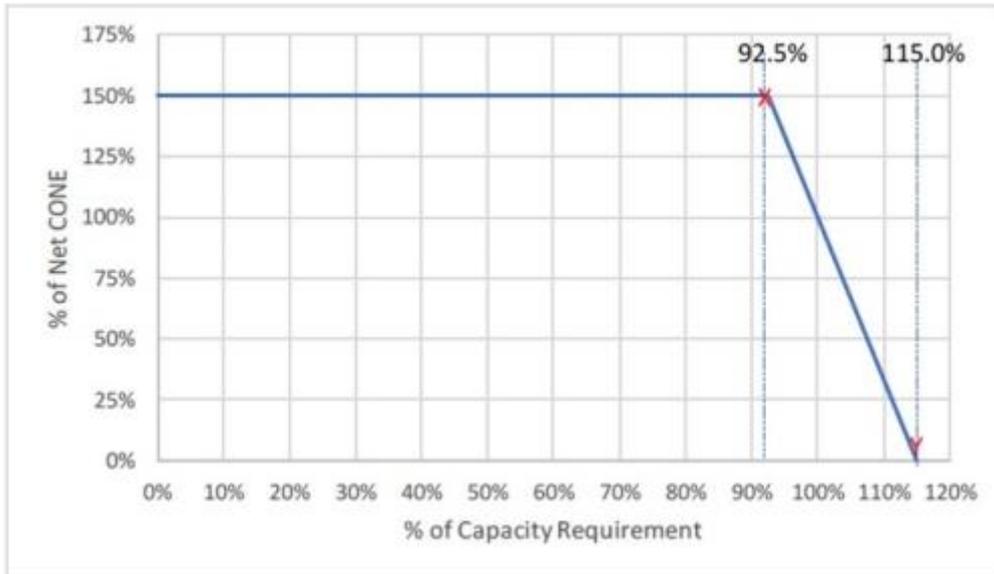
The Demand Curve is a curve determined by the Regulatory Authorities representing the deemed per MW value of each level of capacity that could be awarded in the Capacity Auction. The Demand Curve for the T-4 2027/2028 auction will be set as the following:

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<sup>2</sup> See [SEM-22-097 CRM Capacity Requirement and Associated De-Rating Factors | SEM Committee](#) for details.

<sup>3</sup> [SEM-15-103](#), section 2.2.16

- Horizontal at the Auction Price Cap from 0 MW to 92.5% of the adjusted Capacity Requirement.
- Slopes down in a straight line to 115% of the adjusted Capacity Requirement. The line passes through the point at where the volume is equal 100% of the adjusted Capacity Requirement and the price equals Net CONE.



The above curve has the potential to under-procure compared to the adjusted Capacity Requirement, however, any under-procurement in a T-4 auction can be resolved in a subsequent T-1 auction.

The demand curve for the auction will also include adjustments for reserves and demand withholding. Decisions on these volumes will be made prior to the publication of the Final Auction Information Pack.

The Capacity Requirement described above will be adjusted to account for these volumes. In accordance with paragraph F.3.1.4 of the Capacity Market Code, other adjustments to the Capacity Requirement will include:

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

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

(d) *the Auction Price Cap.*

The Auction Price Cap is the maximum bid price allowed in a Capacity Auction. The SEM Committee propose to continue to initially apply a multiplier of 1.5 times Net CONE in setting the Auction Price Cap for the 2027/28 T-4 capacity auction, along with an inflationary adjustment upwards as set out in SEM-21-110.

This sets APC at €146,920/MW. Net CONE is currently €92,300 / de-rated MW / year, as used in recent auctions to date<sup>4</sup>

(e) *the Existing Capacity Price Cap.*

The Existing Capacity Price Cap (“**ECPC**”) is the price cap applicable to Existing Capacity in a Capacity Auction. It is a uniform non-technology specific cap on the price that Existing Generators and interconnectors can offer volume at unless they apply to the RAs for a Unit Specific Price Cap (“**USPC**”) <sup>5</sup>. New Capacity and DSUs are not subject to the ECPC, and may bid up to the Auction Price Cap.

ECPC performs two key functions:

- Firstly, it limits the ability of generators with market power (but low Net Going Forward Costs (“**NGFCs**”)) to exercise their market power through making high offers. Given the significant concerns about market power in the CRM (see SEM-16-010), it is important that the ECPC is not set at a level significantly above where the market is expected to clear in current market conditions.

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<sup>4</sup> This is subject to any outcomes of the new BNE study

<sup>5</sup> Or submit an Opt-Out Notification on the grounds that they are going to close before the end of the relevant Capacity Year.

- Secondly it provides a filter to ensure that only those USPC applications which the RAs need to scrutinise (because they may have a material impact on the clearing price or pay-as-bid prices) are scrutinised. If the ECPC is set too low, then offer prices which are below the clearing price (and therefore will have no impact on the clearing price or pay-as-bid prices) will need to be reviewed, imposing an unnecessary administrative burden on both the RAs and bidders.

In all capacity auctions to date, ECPC has been set at 0.5 times Net CONE. The rationale for this value was:

- It was estimated that the vast majority of plant required to meet the Capacity Requirement could bid at its Net Going Forward Cost without needing to apply for a USPC.
- It is consistent with relevant international benchmarks.
- It strikes an appropriate balance between the objectives of protecting consumers from the potential for bidders to exercise market power, and not placing an excessive workload on market participants and RAs from having to respectively submit and review significant volumes of USPC applications.

The SEM Committee's proposal is to continue to set the ECPC at 0.5 times the current Net CONE (i.e.,  $0.5 \times \text{€}92,300/\text{de-rated MY} / \text{year} = \text{€}46,150 / \text{de-rated MW} / \text{year}$ ). This value is not subject to change, irrespective of the outcome of the current BNE study.

The Sterling equivalent using the indicative Annual Capacity Payment Exchange Rate from the Initial Auction Information Pack.

Any existing capacity with Net Going Forward Costs higher than the Existing Capacity Price Cap will retain the option to submit a USPC application to the RAs

*(f) the €/MW rate of the New Capacity Investment Rate Threshold.*

The New Capacity Investment Rate Threshold ("**NCIRT**") is an amount determined by the RAs that must be exceeded by the cost per MW of constructing New Capacity for that

capacity to be eligible to be allocated Awarded Capacity with a duration of more than one year.

New Capacity is eligible to bid to fix its Reliability Option for up to ten years. In order to do so, a capacity provider must meet a substantial financial commitment threshold. This threshold is known as the NCIRT.

The intention of setting the NCIRT is to ensure that only plant making a substantial financial commitment equivalent to the commitment for a new build plant is able to obtain a multi-year Reliability Option.

Multi-year ROs should not be available to plant making a minor refurbishment. However, the threshold should not penalise investors who are able to build efficiently at low capital cost.

As described in the initial CRM parameters decision paper<sup>6</sup>, NCIRT for the first transitional auction was set at approximately 40% of the gross BNE cost, or €300,000 / de-rated MW. The BNE was re-evaluated in 2018 for the 2022/23 T-4 capacity auction. However, there was insufficient evidence to support a change in the NCIRT<sup>7</sup>. The SEM Committee at that time decided to retain the NCIRT at €300,000 / de-rated MW.

There is an ongoing re-evaluation of the BNE, and at the time of writing no decisions have been taken by the SEM Committee, as such the Committee proposes to retain the value of NCIRT at €300,000 / de-rated MW for the 2027/2028 T-4 auction.

*(g) the Annual Stop-Loss Limit Factor*

The Annual Stop Loss Limit is the multiplier used to establish the annual stop-loss limit for Non-Performing Difference Charges from a Capacity Market Unit.

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<sup>6</sup> [SEM-17-022](#), paragraph 7.2.18

<sup>7</sup> [SEM-18-155, CY2022/23 Parameters Decision Paper](#), paragraph 9.4.3.

A stop-loss is a cap on Reliability Option Difference Payments. Reliability Option Difference Payments are charges that must be paid by a generator during a scarcity event. The purpose of the cap is to limit risk on the generator and improve investability. However, a cap on RODPs means that there will be insufficient money to hedge suppliers, which has to be funded through the socialisation fund.

The stop-loss limit applies only to uncovered difference payments. It does not apply where the capacity provider has received revenue through the energy market to cover the difference payment. The stop-loss limit applies to the annual option fee. To date in the capacity market, the Annual Stop-Loss Limit Factor has been set at 1.5.

The SEM Committee propose to continue to apply an Annual Stop-Loss Limit Factor of 1.5 to Awarded Capacity allocated in the 2027/2028 T-4 auction.

*(h) the Billing Period Stop-Loss Limit Factor.*

The Billing Period Stop Loss Limit Factor is a multiplier used to establish the billing period stop-loss limit for Non-Performance Difference Charges from a Capacity Market Unit.

The purpose of stop-loss limits is described above. The purpose of the Billing Period Stop Limit Factor is to limit the level of losses in any Billing Period (week).

If there were no Billing Period Stop Loss Limit Factor, and there were a number of scarcity events at the start of the Capacity Year so that a capacity provider reached its Annual Stop Loss Limit, that capacity provider would have a reduced incentive to maximise its availability for the remainder of the capacity year.

By limiting the losses that can apply in any Billing Period, the incentive to remain available for the remainder of the Capacity Year is maximised.

The Billing Period Stop Loss Limit Factor is currently 0.5<sup>8</sup>. The SEM Committee proposes to retain this value for Awarded Capacity allocated in the 2027/2028 T-4 capacity auction.

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<sup>8</sup> Note: in the parameters decision paper for the first capacity auction ([SEM-17-022](#)), the SEM Committee decided that the Billing Period Stop-Loss Limit should be 50% of the Annual Stop-Loss Limit. Because the Annual Stop-Loss Limit Factor was set to 1.5, the Billing Period Stop-Loss Limit

(i) *the indicative Annual Capacity Payment Exchange Rate.*

The Annual Capacity Payment Exchange Rate is an exchange rate applicable to a Capacity Year which converts the Capacity Payment Price for a Primary Trade or a Secondary Trade from Euros to Sterling. This is determined by the System Operators using a methodology approved by the RAs.

Only the indicative exchange rate is calculated for the Initial Auction Information Pack. This will be calculated immediately prior to its publication. The exchange rate will then be updated for inclusion in the Final Auction Information Pack.

(j) *the Increase Tolerance and Decrease Tolerance by Tolerance Class that may be applied by a Participant in its Application for Qualification to Capacity Market Unit de-ratings.*

The Increase Tolerance is a percentage upwards tolerance that a Participant is permitted to apply to Capacity Market Unit de-ratings in an Application for Qualification. There may be different Increase Tolerances for different Technology Classes.

A Decrease Tolerance is a percentage downwards tolerance that a Participant is permitted to apply to Capacity market Unit de-ratings in an Application for Qualification. There may be different Decrease Tolerances for different Technology Classes.

The SEM Committee Decision<sup>9</sup> allowed for the possibility of tolerance bands to be applied to the unit-level De-Rating Factors determined for capacity providers. These tolerance bands would allow some flexibility in the level of participation required from dispatchable

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Factor was set to 0.75. However, because of the way the Annual and Billing Period Stop Loss Limit Factors interact within paragraph F.18.3.2 and F.18.3.4 of the Trading and Settlement Code, in order to achieve a relation of 50%, a Billing Period Stop-Loss Limit Factor of 0.5 is required.

<sup>9</sup> [SEM-15-103](#)

plant in the auction. This allowance was made in relation to mandatory participation, although all generators would still be required to participate. It would reflect the fact that not all generators of the same technology class have the same degree of reliability.

The SEM Committee is proposing to retain this decision for the 2027/2028 T-4 auction.

Technology Class	Increase Tolerance (%)	Decrease Tolerance (%)
All Except DSUs	0	0
DSUs	0	100

- (k) *in respect of Performance Securities:*
- (i) *the final Performance Security Posting Dates/ Events applicable to Awarded Capacity allocated in the Capacity Auction; and*
  - (ii) *for each Performance Security Posting Date/ Event, the final €/MW rate to be applied in setting Performance Securities applicable to Awarded Capacity allocated in the Capacity Auction.*

A Performance Security is a security required as a condition of capacity award for Awarded New Capacity that has not reached Substantial Completion.

A Performance Security Posting Date/ Event is a date or event from which a specified €/MW rate shall be applied to Awarded Capacity in setting Performance Securities. There may be multiple different Performance Security Posting Dates/ Events.

The Performance Security Posting Dates / Events applicable to Awarded Capacity allocated in a Capacity Auction are determined by the Regulatory Authorities and provided to the System Operators.

Interested parties are asked to comment in their response, on the amounts the SEM Committee have set with regards to the Performance Security Rate and the Termination Charges (of course the Bond amount should be a one for one to the Termination amount) but also on the milestones, participants are asked to give the SEM Committee their view

as to whether the number of milestones is suitable and / or whether a greater timeframe is required.

Date / Event	Performance Security Rate (€/MW)
From Capacity Auction completion to 27 months prior to the beginning of the Capacity Year	20,000
27-13 months prior to the beginning of the Capacity Year	30,000
From 13 months to beginning of Capacity Year	40,000
From beginning of Capacity Year	50,000

(l) *the €/MW fee rates for calculating Termination Charges*

A Termination Charge is a fee payable by a Participant where Awarded New Capacity is terminated.

The CRM detailed design decision paper<sup>10</sup> noted that it is important that New Capacity is required to pay a Termination Fee if it fails to deliver capacity. The Termination Fee will be payable if the project:

- fails to deliver the Substantial Financial Completion milestones by the given date; or
- fails to achieve Substantial Completion by the Long Stop Date; or
- submits false or misleading information in the Qualification process.

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<sup>10</sup> [SEM-16-022](#)

For all capacity auctions to date, the Termination Charges have been set in accordance with the following table:

Date / Event	Termination Charge Rate (€/MW)
From Capacity Auction completion to 27 months prior to the beginning of the Capacity Year	20,000
27-13 months prior to the beginning of the Capacity Year	30,000
From 13 months to beginning of Capacity Year	40,000
From beginning of Capacity Year	50,000

The SEM Committee seeks feedback on the changes outlined above, and also those of the Performance Security rates.

*(m) values for the Full Administered Scarcity Price and the Reserve Scarcity Price; and*

The Administered Scarcity Price (“**ASP**”) sets a floor on the Balancing Market price when a scarcity event occurs. The Full Administered Scarcity Price is the maximum value of the Administered Scarcity Price. The Reserve Scarcity Price Curve is a piecewise linear curve defining the relationship between the Reserve Scarcity price and the Short-Term Reserve Quantity.

In the second CRM detailed design decision paper<sup>11</sup>, the SEM Committee decided that the piece-wise linear function of ASP will be static, and the price from which the function begins will be the Reliability Option Strike Price.

However, the Reliability Option Strike Price is not strictly static. As described below, it is set in relation to monthly carbon, gas, and oil prices, but has a floor price equal to the theoretical price of a Demand Side Unit (which in recent years has been set at €500/MWh).

The SEM Committee propose to set the price at which the piece-wise linear function of ASP begins at the floor of the Strike Price, as determined below. The Administered Scarcity Price will therefore be set in accordance with the following table:

Short Term Reserve (MW)	Administered Scarcity Price (€/MWh)
Demand Control	25% of VOLL
0	25% of VOLL
500	RO Strike Price

To clarify, ASP only applies when the available Short-Term Reserve is less than the operating reserve requirement. If the operating reserve requirement is only 450 MW and the available Short Term Reserve falls to 490 MW the ASP function does not apply and prices will be market determined.

At this stage, the SEM Committee proposes to retain setting the value of Full ASP in relation to VOLL. However, the SEM Committee requests respondents' views on whether any changes could be made to the parameters of the ASP function to encourage availability at times when system margins are tight.

(n) *anticipated values for the parameters to be applied in determining the Strike Price.*

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<sup>11</sup> [SEM-16-022](#), section 6.4

If the Market Reference Price exceeds the Strike Price, holders of Reliability Options must make Difference Payments. The formula for the calculation of the monthly Strike Price ( $PSTR_m$ ) is contained in the Trading and Settlement Code as follows:

$$PSTR_m = Max \left( \frac{1}{FTHEORYPU_y} \times Max \left( PFUELNG_m + (PCARBON_m \times FCARBONING_y), PFUELO_m + (PCARBON_m \times FCARBONIO_y) \right), PTHEORYDSU_y \right)$$

where:

- $FTHEORYPU_y$  is the Peaking Unit Theoretical Efficiency for Capacity Year, y.
- $PFUELNG_m$  is the Natural Gas Fuel Price for Month, m.
- $FCARBONING_y$  is the Natural Gas Carbon Intensity Factor for Capacity Year, y.
- $PFUELO_m$  is the Oil Fuel Price for Month, m.
- $FCARBONIO_y$  is the Oil Carbon Intensity Factor for Capacity Year, y.
- $PCARBON_m$  is the Carbon Price for Month, m; and
- $PTHEORYDSU_y$  is the Demand Side Unit Theoretical Price for Capacity Year, y, d.

This formula bases the Strike Price on the cost of a hypothetical low efficiency peaking unit and includes a floor price on the strike price at the price of a theoretical demand side unit in €/MWh; this reflects the cost incurred by the DSU is switching off, which may not be related to the cost of energy. The values of each of these parameters for each capacity auction to date were:

Strike Price Component	Value	Unit
PCARBON <sub>m</sub>	PCARBON <sub>m</sub> Index	€/tCO <sub>2</sub> e
PFUELNG <sub>m</sub>	[PFUELNG <sub>m</sub> Index (p/therm) x 0.01 (£/p) + PFUELNG <sub>m</sub> Transport (£/therm)] x Exchange Rate (€/£) x 9.48 (therm/GJ) x 3.6 (GJ/MWh)	€/MWh
PFUELO <sub>m</sub>	[PFUELO <sub>m</sub> Index (\$/t) x Exchange Rate (€/£) + PFUELO <sub>m</sub> Transport (€/t)] x 0.025 (t/GJ) x 3.6 (GJ/MWh)	€/MWh
PCARBON <sub>m</sub> Index	ICE ECX EUA Futures – EUA - (monthly) <sup>12</sup>	€/tCO <sub>2</sub> e
PFUELNG <sub>m</sub> Index	ICE UK Natural Gas Index (monthly)	p/therm
PFUELNG <sub>m</sub> Transport	0.0424 <sup>13</sup>	£/therm
PFUELO <sub>m</sub> Index	Platt's Forward Curve (monthly) for monthly swap transactions for 1% sulphur free on board (FOB) fuel oil cargoes in North West Europe (NWE) for the relevant month (AAEGR00)	\$/t
PFUELO <sub>m</sub> Transport	50 <sup>14</sup>	€/t
FTHEORYPU <sub>y</sub>	15	%
FCARBONING <sub>y</sub>	0.202	tCO <sub>2</sub> e/MWh
FCARBONINO <sub>y</sub>	0.277	tCO <sub>2</sub> e/MWh
PTHEORYDSU <sub>y</sub>	500	€/MWh
Exchange Rate (€/£)	The Trading Day Exchange Rate as defined in the Trading and Settlement Code	€/£
Exchange Rate (€/£)	The rate set at 17:00 the day before the Trading Day, from the same source as used for the Trading Day Exchange Rate	€/£
therm per GJ	9.48 <sup>15</sup>	therm/GJ
LSFO calorific value	0.025 <sup>16</sup>	t/GJ

## 5. TREATMENT OF CONSTRAINTS

For the purposes of a Capacity Auction, a number of Locational Capacity Constraints Areas (“**LCCA**”) can be determined by the System Operators. A Locational Capacity Constraint Required Quantity is the minimum de-rated capacity quantity that is required to satisfy the Locational Capacity Constraint.

The Capacity Auction is initially run on an unconstrained (i.e., location agnostic) basis. If following the initial solution, any of the Locational Capacity Constraints has not been

<sup>12</sup> The December price for a given year will apply to all months falling within that year.

<sup>13</sup> NI natural gas transport adder used in I-SEM PLEXOS Forecast Model 2021-30.

<sup>14</sup> Based on ROI LSFO transport adder used in I-SEM PLEXOS Forecast Model 2021-30

<sup>15</sup> Universal constant, utilised in the I-SEM PLEXOS Forecast Model 2021-30

<sup>16</sup> Universal constant, utilised in the I-SEM PLEXOS Forecast Model 2021-30

satisfied, additional capacity must be procured<sup>17</sup>. This capacity will be procured on a pay-as-bid basis.

When procuring this additional capacity, New Capacity with an offered capacity duration of more than one year should be excluded. However, if there is insufficient capacity within an LCCA to allow the constraint to be met without it, this new, multi-year, Capacity must be considered.

For the 2027/2028 T-4 capacity auction, the SEM Committee remains open to allowing the constrained element auction to solve using multi-year New Capacity. A decision on this will be made prior to the publication of the Final Auction Information Pack, after the System Operators have provided the relevant information on LCCAs.

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<sup>17</sup> Under Auction Format C and D, this constrained capacity can replace capacity that was used to satisfy the initial solution.

## 6. NEXT STEPS

Responses to the proposals within this consultation should be sent to both email addresses [CRMSubmissions@uregni.gov.uk](mailto:CRMSubmissions@uregni.gov.uk) and [CRMsubmissions@cru.ie](mailto:CRMsubmissions@cru.ie), by February 10<sup>th</sup> 2023.

We intend to publish all responses unless they have been marked confidential.