



# Single Electricity Market

## FINAL RECOMMENDATION REPORT

MOD\_05\_23 MARKET COMPENSATION FOR FIRM CURTAILMENT

20 APRIL 2023

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## Document History

Version	Date	Author	Comment
1.0	25 <sup>th</sup> May 2023	Modifications Committee Secretariat	Issued to Modifications Committee for review and approval
2.0		Modifications Committee Secretariat	Issued to Regulatory Authorities for final decision

## Reference Documents

Document Name
<a href="#">Trading and Settlement Code</a>
<a href="#">Modification Proposal Form</a>

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## 1. MODIFICATIONS COMMITTEE RECOMMENDATION

### RECOMMENDED FOR APPROVAL– MAJORITY VOTE

Recommended for Approval by Majority Vote		
Andrew Burke (Chair)	Renewable Generator Member	Approve
Nick Heyward	Flexible Participant Alternate	Approve
Eoghan Cudmore	Supplier Alternate	Approve
Cormac Daly	Generator Member	Approve
Andrew McCorrison	Generator Alternate	Approve
Therese Murphy	Generator Alternate	Approve
Sean McParland	Generator Alternate	Abstain
Robert McCarthy	DSU Member	Approve
Bryan Hennessy	Supplier Member	Approve
Eoin Murphy	Assetless Alternate	Approve
David Caldwell	Supplier Alternate	Approve
Colm Oireachtaigh	Supplier Member	Approve

## 2. BACKGROUND

This Modification Proposal was raised by SEMO and received by the Secretariat on 5<sup>th</sup> April 2023. The Proposal was raised and voted on at Meeting 116 on 20<sup>th</sup> April 2023.

The Clean Energy for all Europeans package (CEP) is made up a suite of eight legislative acts, both regulations and directives, which were adopted by the European Parliament and European Council in 2018 and 2019. Among these acts is the revised Regulation on the internal market for electricity (EU) 2019/943 which seeks to amend aspects of wholesale electricity markets in Europe.

In 2020 and 2021, the SEM Committee undertook a process of consultation relating to a number of matters related to the CEP including a consultation on Dispatch, Redispatch and Compensation Pursuant to Regulation (EU) 2019/943 (SEM-21-026) and A Proposed Decision on the Treatment of New Renewable Units in the SEM (SEM-21-027).

A decision paper relating to these papers, [SEM-22-009](#), was published in March 2022. This proposal aims to provide for implementation of the prospective element of that SEM Committee decision in relation to compensation for market revenues for non-market-based re-dispatching in relation to curtailment of firm volumes.

The decision paper states as follows:

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*“All units will initially receive compensation in the SEM for non-market based redispatch (in relation to both constraints and curtailment), where firm, at the better of their complex bid/offer price or imbalance settlement price up to the level of their Firm Access Quantity as is the case for constraints today (with wind and solar units essentially retaining their ex-ante revenue, as such volumes are settled at a deemed decremental price of zero).*

*This will effectively extend the arrangements in place for constraints in the market to curtailment for all units, with the costs associated with curtailment to be recovered in the same way via the Imperfections Charge. This will provide for non-discrimination between different units that may be subject to different support schemes within the market for the purpose of market compensation.*

The decision paper also states as follows:

*It is expected that following implementation of required changes, compensation through this approach will occur through the same settlement mechanisms as per constraints in the market today.”*

The decision paper also notes the following in relation to the timing of implementation:

*In the context of the current and expected next two years’ high prices, the SEM Committee has decided to implement and compensate any payments for curtailment associated with this Decision, beginning in tariff year 2024/25.”*

The decision paper includes a request for SEMO to raise this Modification proposal to reflect the decision in relation to treatment of curtailment:

*“The SEM Committee requests SEMO to raise a Modification to reflect the SEM Committee’s decision regarding the treatment of curtailment set out in this paper.”*

This proposed Modification aims to provide for implementation of the element of this decision related to the retention of ex ante market revenues for firm curtailment going forward from the implementation date commencing at the beginning of tariff year 2024/25. Note that this proposed Modification does not seek to implement arrangements for the retention of ex ante revenue for firm curtailment volumes for the period between January 2020 and September 2024 inclusive which will require separate implementation. The intention is that once the details of this Modification are agreed that it will be implemented with an effective date commencing from 1<sup>st</sup> October 2024. The development work to address the period prior to that from January 2020 may be informed by the considerations taken as a result of this proposed Modification but will be addressed separately.<sup>1</sup>

In essence, if implemented, this Modification would result in firm curtailment volumes receiving the same settlement treatment as constraint does today by including those volumes in the discount charge (which is a payment to the Generator Unit) with a deemed decremental price of zero such that any imbalance charge is offset, and those volumes would retain their ex ante market revenue. Costs would be recovered via the imperfections charge in the same way as those costs are recovered for firm constraint as indicated in the relevant decision and noted above.

Settlement of non-firm curtailment volumes would remain unchanged i.e. they would remain excluded from discount charges but would continue to receive curtailment charges (which can be a payment or charge) reflecting the relative magnitude of the curtailment price, being the weighted average price of all ex ante trades, and the imbalance price for a given unit in a given period.

The approach to making this change in the settlement logic is intended to be relatively unintrusive, knowing that any attempt to change bid offer acceptance quantity calculations within instruction profiling rules and systems is highly complex and therefore likely to be both costly and carry a higher risk of unintended outcomes. That approach would also likely necessitate changes in multiple systems

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<sup>1</sup> SEMO has an obligation to plan for the implementation of the decision within the specified timelines; however, it is duly noted that SEM-22-009 is currently under Judicial Review.

whereas the proposed approach should be possible to implement with changes only to the SEMO settlement systems, although this would have to be fully confirmed via impact assessment.

In order to limit the changes to settlement rules and systems only, this proposal uses existing bid offer acceptance quantities (non-firm and curtailment accepted bid quantities) which are already present within the settlement logic/systems to determine a non-firm curtailment accepted bid quantity. This quantity is then used in downstream settlement charge calculations to apply the existing constraint settlement logic to firm curtailment volumes and to continue to apply the existing curtailment logic to non-firm curtailment volumes.

These are some clarifications on the proposed Legal Drafting:

- Instead of creating a new variable to deal with the non-firm quantity, we are re-purposing the existing CCURL and adapting the relative wording in all the variable definitions, descriptions in 'where clauses' and calculation. The new logic will simply end date the previous and avoid potential system changes for Participants. This will lead to an easier system implementation.
- Change of QABCURLLF to  $\text{Max}(\text{QABCURLLFuoiy}, \text{QABNFLFuoiy})$  in CABBPO calculation in F.7.2.1. We consider that, at present, a QABCURL volume would not be expected to occur for an undo action so that this change is currently immaterial; however, we also anticipate that this may be more likely to manifest in future with non-priority dispatch renewables being dispatched for energy balancing once a new approach is implemented there. We propose to make this change now as future proofing for that circumstance such that non-firm curtailment accepted bid quantity only (i.e. not the firm curtailment equivalent) is included in this adjustment for volumes settled at PCURL .
- We propose to remove QABCURLLF from CDISCOUNT charge logic in F.6.8.2 since all non-firm volumes, including non-firm curtailment, are effectively already removed due to the presence of QABNFLF in the min function, which will always be a lesser quantity.
- Calculation of CREVMWP in F.11.4.2 has similar considerations to the above two points around removal of QABCURLLF or changing it to  $\text{Max}(\text{QABCURLLFuoiy}, \text{QABNFLFuoiy})$  as appropriate; and around the changes to this paragraph not being material at present but proposing to make them now as future proofing for future non priority dispatch renewable treatments in balancing.

### 3. PURPOSE OF PROPOSED MODIFICATION

#### 3A.) JUSTIFICATION OF MODIFICATION

This proposal has been raised by SEMO at the request of the SEM Committee on foot of [SEM-22-009](#).

This proposed Modification is intended to implement the forward-looking element of the SEM Committee policy decision in relation to the treatment of non-market based redispatch compensation pursuant to (EU) 2019/943 therefore ensuring that the Trading and Settlement Code both reflects the local policy requirements and the provisions of the clean energy package in this area.

#### 3B.) IMPACT OF NOT IMPLEMENTING A SOLUTION

If this proposal is not implemented then the element of [SEM-22-009](#) to which it pertains will not be implemented or implementation will be delayed, leading to a situation whereby the relevant parts of the Trading and Settlement Code do not reflect an active SEM Committee policy.

#### 3C.) IMPACT ON CODE OBJECTIVES

- *to facilitate the efficient, economic and coordinated operation, administration and development of the Single Electricity Market in a financially secure manner*

Facilitates the development of the SEM with respect to the new SEM Committee policy in relation to the treatment of firm curtailment as set out in [SEM-22-009](#).

- *to ensure no undue discrimination between persons who are parties to the Code*

As noted in SEM-22-009 and copied below:

*This will effectively extend the arrangements in place for constraints in the market to curtailment for all units, with the costs associated with curtailment to be recovered in the same way via the Imperfections Charge. This will provide for non-discrimination between different units that may be subject to different support schemes within the market for the purpose of market compensation.*

#### 4. WORKING GROUP AND/OR CONSULTATION

N/A

#### 5. IMPACT ON SYSTEMS AND RESOURCES

Impacts SEMO settlement system since a system change will be required to implement this Modification. The vendor has reviewed this change in detail, following preliminary investigations, and has assessed the change will be on lower end of cost with no major risk associated with it. This categorisation of the change as low in cost and risk is in line with indications given when the vote was taken.

#### 6. IMPACT ON OTHER CODES/DOCUMENTS

No impact to any other market code anticipated.

#### 7. MODIFICATION COMMITTEE VIEWS

##### **MODIFICATIONS MEETING 116 – 20<sup>TH</sup> APRIL 2023**

The Proposer gave an overview of this Modification Proposal noting that it arose following extensive consultation on ART. 13.7 of the Clean Energy Package (CEP). It was advised that this Modification needs to be progressed now and be included in Release M and no later than Release N to fulfil the requirement of making it effective on 1<sup>st</sup> October 2024.

The main principles of the proposal were discussed, focusing in particular on the changes to the algebra. It was advised that although the SEMC decision underpinning this Modification is currently subject to a Judicial Review, this change can be progressed and paused or re-assessed depending on the outcome of that review. It was also clarified that this proposal only deals with algebra and system changes applicable from 1<sup>st</sup> October 2024 onwards and, given that the CEP intends for the logic to be applied since January 2020, a separate Modification Proposal would need to be drafted to deal with the period between January 2020 to 30<sup>th</sup> September 2024.

A number of questions were raised about the proposal and Generator Member believed the Modification did not implement all the obligations of Article 13.7.

A Supplier Alternate asked about the impact of this proposal on Imperfections going forward. The Proposer stated that the impact will depend on a number of factors including the Imbalance Price, the volume of Curtailment and the level of Firm Access granted to new units. A high-level analysis on the years 2020 to date revealed a range that goes from approximately just below €2 million to nearly €10 million per year when the Imbalance Price increased substantially. Therefore, the impact going forward would be expected to be somewhere in that range.

An Observer asked if the materiality on price per MWh was known as the increase could provide a disincentive for consumers to switch from fossil fuels to low carbon electricity. That level of detail was not known; however, it was noted by a Supplier Member that even the highest estimate of €10 million is relatively low compared to the large imperfection budget and that new units are expected not to have firm access therefore they would not benefit from this.

Generator Alternate queried the reasons for proceeding with the change and using resources while there is still uncertainty regarding the direction the implementation should take. MO Member provided assurance that this had been long considered; the Modification, although ready for a number of months, had been delayed as long as possible to allow for a resolution; however, given the timings of the court proceedings SEMO can no longer await their conclusion. Reassurance was also given that initial discussions with the vendor helped to simplify the system changes which have been provisionally considered as low impact pending final detailed assessment.

## **8. PROPOSED LEGAL DRAFTING**

As per Appendix 1.

## **9. LEGAL REVIEW**

N/A

## **10. IMPLEMENTATION TIMESCALE**

It is recommended that this Modification is implemented on a Settlement Day basis on the first available Settlement Day following deployment of the required system changes in a scheduled Market Release. Relevant Dates will be published via market messages once available.

## 1 APPENDIX 1: MOD\_05\_23 MARKET COMPENSATION FOR FIRM CURTAILMENT

Proposer <i>(Company)</i>	Date of receipt <i>(assigned by Secretariat)</i>	Type of Proposal <i>(delete as appropriate)</i>	Modification Proposal ID <i>(assigned by Secretariat)</i>
SEMO	5 <sup>th</sup> April 2023	Standard	Mod_05_23
<b>Contact Details for Modification Proposal Originator</b>			
Name	Telephone number	Email address	
Katia Compagnoni		<a href="mailto:Katia.compagnoni@eirgrid.com">Katia.compagnoni@eirgrid.com</a>	
<b>Modification Proposal Title</b>			
Treatment for Firm Curtailment as per SEM-22-09			
Documents affected <i>(delete as appropriate)</i>	Section(s) Affected	Version number of T&SC or AP used in Drafting	
T&SC Part B  Glossary Part B	T&SC Part B Section F & G: F.1.2.1, F.6.8.2, F.7.2.1, F.8.3.1, F.11.4.2, G.4.7.1, G.4.11.1 and G.17.3.2  Glossary Part B Definitions and List of Variables and Parameters	27.0	
<b>Explanation of Proposed Change</b> <i>(mandatory by originator)</i>			
<p>The Clean Energy for all Europeans package (CEP) is made up a suite of eight legislative acts, both regulations and directives, which were adopted by the European Parliament and European Council in 2018 and 2019. Among these acts is the revised Regulation on the internal market for electricity (EU) 2019/943 which seeks to amend aspects of wholesale electricity markets in Europe.</p> <p>In 2020 and 2021, the SEM Committee undertook a process of consultation relating to a number of matters related to the CEP including a consultation on Dispatch, Redispatch and Compensation Pursuant to Regulation (EU)</p>			



2019/943 (SEM-21-026) and A Proposed Decision on the Treatment of New Renewable Units in the SEM (SEM-21-027).

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January 2020 and September 2024 inclusive which will require separate implementation. The intention is that once the details of this Modification are agreed that it will be implemented with an effective date commencing from 1<sup>st</sup> October 2024. The development work to address the period prior to that from January 2020 may be informed by the considerations taken as a result of this proposed Modification but will be addressed separately.<sup>2</sup>

In essence, if implemented, this Modification would result in firm curtailment volumes receiving the same settlement treatment as constraint does today by including those volumes in the discount charge (which is a payment to the Generator Unit) with a deemed decremental price of zero such that any imbalance charge is offset and those volumes would retain their ex ante market revenue. Costs would be recovered via the imperfections charge in the same way as those costs are recovered for firm constraint as indicated in the relevant decision and noted above.

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These are some clarifications on the proposed Legal Drafting:

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- Change of QABCURLL to  $\text{Max}(\text{QABCURLLFuoiy}, \text{QABNFLFuoiy})$  in CABBPO calculation in F.7.2.1. We consider that, at present, a QABCURL volume would not be expected to occur for an undo action so that this change is currently immaterial; however, we also anticipate that this may be more likely to manifest in future with non-priority dispatch renewables being dispatched for energy balancing once a new approach is implemented there. We propose to make this change now as future proofing for that circumstance such

<sup>2</sup> SEMO has an obligation to plan for the implementation of the decision within the specified timelines; however, it is duly noted that SEM-22-009 is currently under Judicial Review.

that non-firm curtailment accepted bid quantity only (i.e. not the firm curtailment equivalent) is included in this adjustment for volumes settled at PCURL .

- We propose to remove QABCURLLF from CDISCOUNT charge logic in F.6.8.2 since all non-firm volumes, including non-firm curtailment, are effectively already removed due to the presence of QABNFLF in the min function, which will always be a lesser quantity.
- Calculation of CREVMWP in F.11.4.2 has similar considerations to the above two points around removal of QABCURLLF or changing it to  $\text{Max}(\text{QABCURLLF}_{uoy}, \text{QABNFLF}_{uoy})$  as appropriate; and around the changes to this paragraph not being material at present but proposing to make them now as future proofing for future non priority dispatch renewable treatments in balancing.

#### Legal Drafting Change

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

### **Part B T&SC Sections F and G**

#### **F.1.2 Settlement Charges and Payments for Generator Units**

F.1.2.1 The Market Operator shall calculate the following charges and payments for each Generator Unit in accordance with the Settlement Calendar in section G.2.4:

- CIMB<sub>uy</sub>, the Imbalance Component Payment or Charge calculated in accordance with section **Error! Reference source not found.**;
- CPREMIUM<sub>uy</sub>, the Premium Component Payment calculated in accordance with section **Error! Reference source not found.**;
- CDISCOUNT<sub>uy</sub>, the Discount Component Payment calculated in accordance with section **Error! Reference source not found.**;
- CAOPO<sub>uy</sub>, the Offer Price Only Accepted Offer Payment or Charge calculated in accordance with section **Error! Reference source not found.**;
- CABBPO<sub>uy</sub>, the Bid Price Only Accepted Bid Payment or Charge calculated in accordance with section **Error! Reference source not found.**;
- CCURL<sub>uy</sub>, the [Non-Firm](#) Curtailment Payment or Charge calculated in accordance with section **Error! Reference source not found.**;
- CUNIMB<sub>uy</sub>, the Uninstructed Imbalance Charge calculated in accordance with section **Error! Reference source not found.**;
- CII<sub>uy</sub>, the Information Imbalance Charge calculated in accordance with section **Error! Reference source not found.**;
- CFC<sub>ub</sub>, the Fixed Cost Payment or Charge calculated in accordance with section **Error! Reference source not found.**; and
- CTEST<sub>uy</sub>, the Testing Charge calculated in accordance with section F.13.

F.6.8.2 The Market Operator shall calculate Premium and Discount Component Payments for each Generator Unit, u, and each Imbalance Settlement Period, y, as follows:

$$\begin{aligned}
& CPREMIUM_{uy} \\
& = \sum_o \sum_i \left( \text{Max}(PBO_{uoiy} - PIMB_{\gamma}, 0) \right. \\
& \times \left( QAOLF_{uoiy} \right. \\
& \left. \left. - \text{Max}(QAOPOLF_{uoiy}, QAOBIAS_{uoiy}, QAOUNDEL_{uoiy}, QAOTOTSOLF_{uoiy}) \right) \right)
\end{aligned}$$

$$\begin{aligned}
& CDISCOUNT_{uy} \\
& = \sum_o \sum_i \left( \text{Min}(PBO_{uoiy} - PIMB_{\gamma}, 0) \right. \\
& \times \left( QABLF_{uoiy} \right. \\
& \left. \left. - \text{Min}(QABBPOLF_{uoiy}, QABBIAAS_{uoiy}, QABUNDEL_{uoiy}, QABNFLF_{uoiy}, \text{QABCURLLF}_{uoiy}, \right. \right. \\
& \left. \left. QABTOTSOLF_{uoiy}) \right) \right)
\end{aligned}$$

where:

- (a)  $PIMB_{\gamma}$  is the Imbalance Settlement Price in Imbalance Settlement Period,  $\gamma$ , calculated in accordance with Chapter E (Imbalance Pricing);
- (b)  $PBO_{uoiy}$  is the Bid Offer Price for each Accepted Bid Quantity and Accepted Offer Quantity for Generator Unit,  $u$ , for Bid Offer Acceptance,  $o$ , for Band,  $i$ , in Imbalance Settlement Period,  $\gamma$ , determined in accordance with section **Error! Reference source not found.**;
- (c)  $\sum_o$  is a summation over all Bid Offer Acceptances,  $o$ ;
- (d)  $\sum_i$  is a summation over all Bands,  $i$ ;
- (e)  $QAOLF_{uoiy}$  is the Loss-Adjusted Accepted Offer Quantity for Generator Unit,  $u$ , for Bid Offer Acceptance,  $o$ , for Band,  $i$ , in Imbalance Settlement Period,  $\gamma$ , calculated in accordance with section **Error! Reference source not found.**;
- (f)  $QABLF_{uoiy}$  is the Loss-Adjusted Accepted Bid Quantity for Generator Unit,  $u$ , for Bid Offer Acceptance,  $o$ , for Band,  $i$ , in Imbalance Settlement Period,  $\gamma$ , calculated in accordance with section **Error! Reference source not found.**;
- (g)  $QAOTOTSOLF_{uoiy}$  is the Loss-Adjusted Trade Opposite TSO Accepted Offer Quantity for Generator Unit,  $u$ , for Bid Offer Acceptance,  $o$ , for Band,  $i$ , in Imbalance Settlement Period,  $\gamma$ , calculated in accordance with section **Error! Reference source not found.**;
- (h)  $QABTOTSOLF_{uoiy}$  is the Loss-Adjusted Trade Opposite TSO Accepted Bid Quantity for Generator Unit,  $u$ , for Bid Offer Acceptance,  $o$ , for Band,  $i$ , in Imbalance Settlement Period,  $\gamma$ , calculated in accordance with section **Error! Reference source not found.**;
- (i)  $QABNFLF_{uoiy}$  is the Loss-Adjusted Non-Firm Accepted Bid Quantity for Generator Unit,  $u$ , for Bid Offer Acceptance,  $o$ , for Band,  $i$ , in Imbalance Settlement Period,  $\gamma$ , calculated in accordance with section **Error! Reference source not found.**;

- (j)  $QAOUNDEL_{uoi\gamma}$  is the Undelivered Accepted Offer Quantity for Generator Unit, u, for Bid Offer Acceptance, o, for Band, i, in Imbalance Settlement Period,  $\gamma$ , calculated in accordance with section **Error! Reference source not found.**;
- (k)  $QABUNDEL_{uoi\gamma}$  is the Undelivered Accepted Bid Quantity for Generator Unit, u, for Bid Offer Acceptance, o, for Band, i, in Imbalance Settlement Period,  $\gamma$ , calculated in accordance with section **Error! Reference source not found.**;
- (l)  $QAObIAS_{uoi\gamma}$  is the Biased Accepted Offer Quantity for Generator Unit, u, for Bid Offer Acceptance, o, for Band, i, in Imbalance Settlement Period,  $\gamma$ , calculated in accordance with section **Error! Reference source not found.**;
- (m)  $QABBIASt_{uoi\gamma}$  is the Biased Accepted Bid Quantity for Generator Unit, u, for Bid Offer Acceptance, o, for Band, i, in Imbalance Settlement Period,  $\gamma$ , calculated in accordance with section **Error! Reference source not found.**;
- ~~(n)  $QABCURLLF_{uoi\gamma}$  is the Loss-Adjusted Curtailment Accepted Bid Quantity for Generator Unit, u, for Bid Offer Acceptance, o, for Band, i, in Imbalance Settlement Period,  $\gamma$ , calculated in accordance with section F.8.1;~~
- ~~(o)~~(n)  $QAOPOLF_{uoi\gamma}$  is the Loss-Adjusted Offer Price Only Accepted Bid Quantity for Generator Unit, u, for Bid Offer Acceptance, o, for Band, i, in Imbalance Settlement Period,  $\gamma$ , calculated in accordance with section **Error! Reference source not found.**; and
- ~~(o)~~(o)  $QABBPOLF_{uoi\gamma}$  is the Loss-Adjusted Bid Price Only Accepted Bid Quantity for Generator Unit, u, for Bid Offer Acceptance, o, for Band, i, in Imbalance Settlement Period,  $\gamma$ , calculated in accordance with section **Error! Reference source not found.**

F.7.2.1 Market Operator shall calculate the Offer Price Only Accepted Offer Payment or Charge ( $CAOPO_{u\gamma}$ ) and the Bid Price Only Accepted Bid Payment or Charge ( $CABBPO_{u\gamma}$ ) for each Generator Unit, u, in each Imbalance Settlement Period,  $\gamma$ , as follows:

$$CAOPO_{u\gamma} = \sum_o \sum_i \left( (PBO_{uoi\gamma} - PIMB_\gamma) \times \text{Max}(QAOPOLF_{uoi\gamma} - QAOUNDEL_{uoi\gamma}, 0) \right)$$

$$CABBPO_{u\gamma} = \sum_o \sum_i \left( (PBO_{uoi\gamma} - PIMB_\gamma) \times \text{Min}(QABBPOLF_{uoi\gamma} - \text{Min}(\text{Max}(QABCURLLF_{uoi\gamma}, QABNFLFuoi\gamma), QABUNDEL_{uoi\gamma}), 0) \right)$$

where:

- (a)  $PIMB_\gamma$  is the Imbalance Settlement Price in Imbalance Settlement Period,  $\gamma$ , calculated in accordance with Chapter E (Imbalance Pricing);

- (b)  $PBO_{uoi\gamma}$  is the Bid Offer Price for each Accepted Bid Quantity and Accepted Offer Quantity for Generator Unit,  $u$ , for Bid Offer Acceptance,  $o$ , for Band,  $i$ , in Imbalance Settlement Period,  $\gamma$ ;
- (c)  $\sum_o$  is a summation over all Bid Offer Acceptances,  $o$ ;
- (d)  $\sum_i$  is a summation over all Bands,  $i$ ;
- (e)  $QAOOPOLF_{uoi\gamma}$  is the Loss-Adjusted Offer Price Only Accepted Bid Quantity for Generator Unit,  $u$ , for Bid Offer Acceptance,  $o$ , for Band,  $i$ , in Imbalance Settlement Period,  $\gamma$ ;
- (f)  $QABBPOLF_{uoi\gamma}$  is the Loss-Adjusted Bid Price Only Accepted Bid Quantity for Generator Unit,  $u$ , for Bid Offer Acceptance,  $o$ , for Band,  $i$ , in Imbalance Settlement Period,  $\gamma$ ;
- (g)  $QAOUNDEL_{uoi\gamma}$  is the Undelivered Accepted Offer Quantity for Generator Unit,  $u$ , for Bid Offer Acceptance,  $o$ , for Band,  $i$ , in Imbalance Settlement Period,  $\gamma$ ;
- (h)  $QABCURLLF_{uoi\gamma}$  is the Loss-Adjusted Curtailment Accepted Bid Quantity for Generator Unit,  $u$ , for Bid Offer Acceptance,  $o$ , for Band,  $i$ , in Imbalance Settlement Period,  $\gamma$ ; and
- (i)  $QABUNDEL_{uoi\gamma}$  is the Undelivered Accepted Bid Quantity for Generator Unit,  $u$ , for Bid Offer Acceptance,  $o$ , for Band,  $i$ , in Imbalance Settlement Period,  $\gamma$ ;
- (j)  $QABNFLF_{uoi\gamma}$  is the Loss-Adjusted Non-Firm Accepted Bid Quantity for Generator Unit,  $u$ , for Bid Offer Acceptance,  $o$ , for Band,  $i$ , in Imbalance Settlement Period,  $\gamma$ , calculated in accordance with section F.6.5;

### F.8.3 Calculation of Non-Firm Curtailment Payments and Charges

F.8.3.1 The Market Operator shall calculate the Non-Firm Curtailment Payment or Charge ( $CCURL_{u\gamma}$ ) for each Generator Unit,  $u$ , in each Imbalance Settlement Period,  $\gamma$ , as follows:

$$CCURL_{u\gamma} = \sum_o \sum_i \left( (PCURL_{u\gamma} - PIMB_{\gamma}) \times \text{Min}(\text{Max}(QABCURLLF_{uoi\gamma}, QABNFLF_{uoi\gamma}) - \text{Min}(QABBIAF_{uoi\gamma}, QABUNDEL_{uoi\gamma}), 0) \right)$$

where:

- (a)  $PIMB_{\gamma}$  is the Imbalance Settlement Price in Imbalance Settlement Period,  $\gamma$ , calculated in accordance with Chapter E (Imbalance Pricing);
- (b)  $PCURL_{u\gamma}$  is the Curtailment Price for Generator Unit,  $u$ , in Imbalance Settlement Period,  $\gamma$ ;
- (c)  $\sum_o$  is a summation over all Bid Offer Acceptances,  $o$ ;
- (d)  $\sum_i$  is a summation over all Bands,  $i$ ;

- (e)  $QABCURLLF_{uoi\gamma}$  is the Loss-Adjusted Curtailment Accepted Bid Quantity for Generator Unit,  $u$ , for Bid Offer Acceptance,  $o$ , for Band,  $i$ , in Imbalance Settlement Period,  $\gamma$ ;
- (f)  $QABUNDEL_{uoi\gamma}$  is the Undelivered Accepted Bid Quantity for Generator Unit,  $u$ , for Bid Offer Acceptance,  $o$ , for Band,  $i$ , in Imbalance Settlement Period,  $\gamma$ ; and
- (g)  $QABBIAS_{uoi\gamma}$  is the Biased Accepted Bid Quantity for Generator Unit,  $u$ , for Bid Offer Acceptance,  $o$ , for Band,  $i$ , in Imbalance Settlement Period,  $\gamma$ ;
- (h)  $QABNFLF_{uoi\gamma}$  is the Loss-Adjusted Non-Firm Accepted Bid Quantity for Generator Unit,  $u$ , for Bid Offer Acceptance,  $o$ , for Band,  $i$ , in Imbalance Settlement Period,  $\gamma$ , calculated in accordance with section F.6.5;

F.11.4.2 The Market Operator shall calculate the Make-Whole Payment Revenue ( $CREVMWP_{uk}$ ) for each Generator Unit,  $u$ , for each Contiguous Operating Period,  $k$ , in each Billing Period,  $b$ , as follows:

$$\begin{aligned}
& CREVMWP_{uk} \\
&= \sum_{\gamma \in k} \left( \sum_o \sum_i \left( \text{Max}(PBO_{uoi\gamma}, PIMB_{\gamma}) \right. \right. \\
&\times \left( QAOLF_{uoi\gamma} \right. \\
&- \text{Max}(QAOPOLF_{uoi\gamma}, QAOTOTSOLF_{uoi\gamma}, QABUNDEL_{uoi\gamma}, QAOTOTSOLF_{uoi\gamma})) \\
&+ \sum_o \sum_i \left( \text{Min}(PBO_{uoi\gamma}, PIMB_{\gamma}) \right. \\
&\times \left( QABLF_{uoi\gamma} \right. \\
&- \text{Min}(QABBPOLF_{uoi\gamma}, QABBIAS_{uoi\gamma}, QABUNDEL_{uoi\gamma}, QABNFLF_{uoi\gamma}, \text{QABCURLLF}_{uoi\gamma}, \\
&QABTOTSOLF_{uoi\gamma})) \\
&+ \sum_o \sum_i \left( PBO_{uoi\gamma} \times \text{Max}(QAOPOLF_{uoi\gamma} - QABUNDEL_{uoi\gamma}, 0) \right) \\
&+ \sum_o \sum_i \left( PBO_{uoi\gamma} \right. \\
&\times \text{Min}(QABBPOLF_{uoi\gamma} \\
&- \text{Min}(\text{Max}(QABCURLLF_{uoi\gamma}, QABNFLF_{uoi\gamma}), QABUNDEL_{uoi\gamma}), 0) \\
&+ \sum_o \sum_i \left( PCURL_{u\gamma} \right. \\
&\times \text{Min}(\text{Max}(QABCURLLF_{uoi\gamma}, QABNFLF_{uoi\gamma}) \\
&- \text{Min}(QABBIAS_{uoi\gamma}, QABUNDEL_{uoi\gamma}), 0) \left. \right) \left. \right)
\end{aligned}$$

where:

- (a)  $\sum_{\gamma \in k}$  is a summation over all Imbalance Settlement Periods,  $\gamma$ , within the Contiguous Operating Period,  $k$ ;

- (b)  $PBO_{uo\gamma}$  is the Bid Offer Price for each Accepted Bid Quantity and Accepted Offer Quantity for Generator Unit,  $u$ , for Bid Offer Acceptance,  $o$ , for Band,  $i$ , in Imbalance Settlement Period,  $\gamma$ ;
- (c)  $QAOLF_{uo\gamma}$  is the Loss-Adjusted Accepted Offer Quantity for Generator Unit,  $u$ , for Bid Offer Acceptance,  $o$ , for Band,  $i$ , in Imbalance Settlement Period,  $\gamma$ ;
- (d)  $QABLF_{uo\gamma}$  is the Loss-Adjusted Accepted Bid Quantity for Generator Unit,  $u$ , for Bid Offer Acceptance,  $o$ , for Band,  $i$ , in Imbalance Settlement Period,  $\gamma$ ;
- (e)  $PIMB_{\gamma}$  is the Imbalance Settlement Price in Imbalance Settlement Period,  $\gamma$ , calculated in accordance with Chapter E (Imbalance Pricing);
- (f)  $QAOTOTSOLF_{uo\gamma}$  is the Loss-Adjusted Trade Opposite TSO Accepted Offer Quantity for Generator Unit,  $u$ , for Bid Offer Acceptance,  $o$ , for Band,  $i$ , in Imbalance Settlement Period,  $\gamma$ , calculated in accordance with section **Error! Reference source not found.**;
- (g)  $QABTOTSOLF_{uo\gamma}$  is the Loss-Adjusted Trade Opposite TSO Accepted Bid Quantity for Generator Unit,  $u$ , for Bid Offer Acceptance,  $o$ , for Band,  $i$ , in Imbalance Settlement Period,  $\gamma$ , calculated in accordance with section **Error! Reference source not found.**;
- (h)  $QABNFLF_{uo\gamma}$  is the Loss-Adjusted Non-Firm Accepted Bid Quantity for Generator Unit,  $u$ , for Bid Offer Acceptance,  $o$ , for Band,  $i$ , in Imbalance Settlement Period,  $\gamma$ , calculated in accordance with section **Error! Reference source not found.**;
- (i)  $QAOUNDEL_{uo\gamma}$  is the Undelivered Accepted Offer Quantity for Generator Unit,  $u$ , for Bid Offer Acceptance,  $o$ , for Band,  $i$ , in Imbalance Settlement Period,  $\gamma$ , calculated in accordance with section **Error! Reference source not found.**;
- (j)  $QABUNDEL_{uo\gamma}$  is the Undelivered Accepted Bid Quantity for Generator Unit,  $u$ , for Bid Offer Acceptance,  $o$ , for Band,  $i$ , in Imbalance Settlement Period,  $\gamma$ , calculated in accordance with section **Error! Reference source not found.**;
- (k)  $QAObIAS_{uo\gamma}$  is the Biased Accepted Offer Quantity for Generator Unit,  $u$ , for Bid Offer Acceptance,  $o$ , for Band,  $i$ , in Imbalance Settlement Period,  $\gamma$ , calculated in accordance with section **Error! Reference source not found.**;
- (l)  $QABBIAS_{uo\gamma}$  is the Biased Accepted Bid Quantity for Generator Unit,  $u$ , for Bid Offer Acceptance,  $o$ , for Band,  $i$ , in Imbalance Settlement Period,  $\gamma$ , calculated in accordance with section **Error! Reference source not found.**;
- (m)  $QABCURLLF_{uo\gamma}$  is the Loss-Adjusted Curtailment Accepted Bid Quantity for Generator Unit,  $u$ , for Bid Offer Acceptance,  $o$ , for Band,  $i$ , in Imbalance Settlement Period,  $\gamma$ , calculated in accordance with section **Error! Reference source not found.**;
- (n)  $QAOPOLF_{uo\gamma}$  is the Loss-Adjusted Offer Price Only Accepted Bid Quantity for Generator Unit,  $u$ , for Bid Offer Acceptance,  $o$ , for Band,  $i$ , in Imbalance Settlement Period,  $\gamma$ , calculated in accordance with section **Error! Reference source not found.**;
- (o)  $QABBPOLF_{uo\gamma}$  is the Loss-Adjusted Bid Price Only Accepted Bid Quantity for Generator Unit,  $u$ , for Bid Offer Acceptance,  $o$ , for Band,  $i$ , in Imbalance Settlement Period,  $\gamma$ , calculated in accordance with section **Error! Reference source not found.**;
- (p)  $\sum_o$  is a summation over all Bid Offer Acceptances,  $o$ ;
- (q)  $\sum_i$  is a summation over all Bands,  $i$ ; and
- (r)  $PCURL_{u\gamma}$  is the Curtailment Price for Generator Unit,  $u$ , in Imbalance Settlement Period,  $\gamma$ .

#### G.4.7 Payments or Charges for Curtailment

G.4.7.1 The total [Non-Firm](#) Curtailment Payment or Charge ( $CCURL_{ud}$ ) made for each Generator Unit  $u$  for each Settlement Day  $d$  shall be calculated by the Market Operator as follows:



$$CCURL_{ud} = \sum_{\gamma \text{ in } d} CCURL_{u\gamma}$$

where:

- (a)  $CCURL_{u\gamma}$  is the [Non-Firm](#) Curtailment Payment or Charge for Generator Unit  $u$  in Imbalance Settlement Period  $\gamma$  calculated in accordance with section F.8; and
- (b)  $\sum_{\gamma \text{ in } d}$  is a summation over all Imbalance Settlement Periods  $\gamma$  in Settlement Day  $d$ .

#### **G.4.11 Total Daily Amounts for Generator Units**

G.4.11.1 The Total Daily Amounts ( $CDAY_{ud}$ ) made for each Generator Unit  $u$  for each Settlement Day  $d$  shall be calculated by the Market Operator as follows:

$$CDAY_{ud} = CIMB_{ud} + CPREMIUM_{ud} + CDISCOUNT_{ud} + CAOPO_{ud} + CABBPO_{ud} + CCURL_{ud} + CUNIMB_{ud} + CII_{ud} + CTEST_{ud}$$

where:

- (a)  $CIMB_{ud}$  is the total Imbalance Component Payment or Charge for Generator Unit  $u$  for Settlement Day  $d$  calculated in accordance with section G.4.2;
- (b)  $CPREMIUM_{ud}$  is the total Premium Component Payment for Generator Unit  $u$  for Settlement Day  $d$  calculated in accordance with section G.4.3;
- (c)  $CDISCOUNT_{ud}$  is the total Discount Component Payment for Generator Unit  $u$  for Settlement Day  $d$  calculated in accordance with section G.4.4;
- (d)  $CAOPO_{ud}$  is the total Offer Price Only Accepted Offer Payment or Charge for Generator Unit  $u$  for Settlement Day  $d$  calculated in accordance with section G.4.5;
- (e)  $CABBPO_{ud}$  is the total Bid Price Only Accepted Bid Payment or Charge for Generator Unit  $u$  for Settlement Day  $d$  calculated in accordance with section G.4.6;
- (f)  $CCURL_{ud}$  is the total [Non-Firm](#) Curtailment Payment or Charge for Generator Unit  $u$  for Settlement Day  $d$  calculated in accordance with section G.4.7;
- (g)  $CUNIMB_{ud}$  is the total Uninstructed Imbalance Charge for Generator Unit  $u$  for Settlement Day  $d$  calculated in accordance with section G.4.8;
- (h)  $CII_{ud}$  is the total Information Imbalance Charge for Generator Unit  $u$  for Settlement Day  $d$  calculated in accordance with section G.4.9; and
- (i)  $CTEST_{ud}$  is the total Testing Charge for Generator Unit  $u$  for Settlement Day  $d$  calculated in accordance with section G.4.10.

**G.17.3.2** For all Imbalance Settlement Periods,  $\gamma$ , for which Administered Imbalance Settlement is in effect, the Market Operator shall set the following amounts equal to zero for all Generator Units and Supplier Units as applicable:

- (a) Premium Component Payment ( $CPREMIUM_{\gamma}$ );

- (b) Discount Component Payment (CDISCOUNT<sub>y</sub>);
- (c) Offer Price Only Accepted Offer Payment or Charge (CAOOPO<sub>y</sub>);
- (d) Bid Price Only Accepted Bid Payment or Charge (CABBPO<sub>y</sub>);
- (e) [Non-Firm](#) Curtailment Payment or Charge (CCURL<sub>y</sub>);
- (f) Uninstructed Imbalance Charge (CUNIMB<sub>y</sub>);
- (g) Fixed Cost Payment or Charge (CFC<sub>y</sub>);
- (h) Information Imbalance Charge (CII<sub>y</sub>);
- (i) Testing Charge (CTEST<sub>y</sub>);
- (j) Imperfections Charge (CIMP<sub>y</sub>);
- (k) Residual Error Volume Charge (CREV<sub>y</sub>);
- (l) Currency Adjustment Payment or Charge (CCA<sub>y</sub>);
- (m) Difference Payment Socialisation Charge (CSOCDIFFP<sub>y</sub>);
- (n) Achievable Difference Payment (CDIFFPACHIEVE<sub>y</sub>);
- (o) Day Ahead Difference Charge (CDIFFCDA<sub>y</sub>);
- (p) Within Day Difference Charge (CDIFFCWD<sub>y</sub>);
- (q) Non Performance Difference Charge (CDIFFCNP<sub>y</sub>); and
- (r) Total Difference Charge (CDIFFCTOT<sub>y</sub>).

### **Part B Glossary and List of Variables and Parameters**

<b><a href="#">Non-Firm</a> Curtailment Payment or Charge</b>	an adjustment to ensure that Accepted Bid Quantities due to a Dispatch Instruction curtailing a Unit <a href="#">in the non-firm region of its output range</a> are settled at the curtailment price only. It is calculated in accordance with section F.8.
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Variable	CCURL <sub>uy</sub> , CCURL <sub>ud</sub>	<a href="#">Non-Firm</a> Curtailment Payment or Charge	An adjustment payment or charge for a Generator Unit, u, in an Imbalance Settlement Period, y, or Settlement Day, d, as applicable, to ensure that <a href="#">Non-Firm</a> Accepted Bid Quantities due to a Dispatch Instruction curtailing the Unit are settled at the Curtailment Price only.	€
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### Modification Proposal Justification

*(Clearly state the reason for the Modification)*

This proposal has been raised by SEMO at the request of the SEM Committee on foot of [SEM-22-009](#).

This proposed Modification is intended to implement the forward-looking element of the SEM Committee policy decision in relation to the treatment of non-market based redispatch compensation pursuant to (EU) 2019/943 therefore ensuring that the Trading and Settlement Code both reflects the local policy requirements and the provisions of the clean energy package in this area.

### Code Objectives Furthered

*(State the Code Objectives the Proposal furthers, see Section 1.3 of Part A and/or Section A.2.1.4 of Part B of the T&SC for Code Objectives)*

- *to facilitate the efficient, economic and coordinated operation, administration and development of the Single Electricity Market in a financially secure manner*

Facilitates the development of the SEM with respect to the new SEM Committee policy in relation to the treatment of firm curtailment as set out in [SEM-22-009](#).

- *to ensure no undue discrimination between persons who are parties to the Code*

As noted in SEM-22-009 and copied below:

*This will effectively extend the arrangements in place for constraints in the market to curtailment for all units, with the costs associated with curtailment to be recovered in the same way via the Imperfections Charge. This will provide for non-discrimination between different units that may be subject to different support schemes within the market for the purpose of market compensation*

### Implication of not implementing the Modification Proposal

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

If this proposal is not implemented then the element of [SEM-22-009](#) to which it pertains will not be implemented or implementation will be delayed, leading to a situation whereby the relevant parts of the Trading and Settlement Code do not reflect an active SEM Committee policy.

<p style="text-align: center;"><b>Working Group</b> <i>(State if Working Group considered necessary to develop proposal)</i></p>	<p style="text-align: center;"><b>Impacts</b> <i>(Indicate the impacts on systems, resources, processes and/or procedures; also indicate impacts on any other Market Code such as Capacity Market Code, Grid Code, Exchange Rules etc.)</i></p>
<p>N/A</p>	<p>Impacts SEMO settlement system since a system change will be required to implement this Modification.</p> <p>Impacts SEMO resources required to implement this Modification.</p> <p>No ongoing resource impact is anticipated once implemented.</p> <p>No impact to any other market code anticipated.</p>
<p><i>Please return this form to Secretariat by email to <a href="mailto:balancingmodifications@sem-o.com">balancingmodifications@sem-o.com</a></i></p>	