Single Electricity Market

FINAL RECOMMENDATION REPORT

MOD_03_18 AUTOPRODUCER AND DSU CREDIT COVER

20 DECEMBER 2019

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Document History

Version	Date	Author	Comment
1.0	20 Dec 2019	Modifications Committee Secretariat	Issued to Modifications Committee for review and approval
2.0	7 Jan 2020	Modifications Committee Secretariat	Issued to Regulatory Authorities for final decision

Reference Documents

Document Name
Trading and Settlement Code
Modification Proposal Form
Modification Proposal Form
Modification Proposal Form
Presentation
Presentation
Presentation
Presentation
Terms of Reference
Working Group 1 Report
Working Group 2 Report
Recommendation Report

Table of Contents

1. MODIFICATIONS COMMITTEE RECOMMENDATION

RECOMMENDED FOR APPROVAL– UNANIMOUS VOTE

Recommended for Approval by Unanimous Vote		
Paraic Higgins (Chair)	Generator Member	Approve
Rochelle Broderick	Supplier Alternate	Approve
David Gascon	Generator Alternate	Approve
Eamonn Boland	Supplier Alternate	Approve
Jim Wynne	Supplier Member	Approve
Alan Mullane	Assetless Member	Approve
Ian Mullins	Supplier Member	Approve
Sinead O'Hare	Generator Member	Approve
Robert McCarthy	DSU Alternate	Approve
Kevin Hannafin	Generator Member	Approve

2. BACKGROUND

This Modification Proposal was raised by Aughinish Alumina Limited and was received by the Secretariat on the 11th January 2018. The Modification Proposal was raised at Meeting 79 on 25th January 2018 and subsequently discussed at Meeting 81, Meeting 82, Meeting 83, Meeting 84, Meeting 85, Meeting 86, Meeting 87, Meeting 88, Working Group 1, Meeting 89, Meeting 90, Meeting

91, Working Group 2, Meeting 92, Meeting 93, Meeting 94 and voted on at Meeting 95 on 5th December 2019. There were also 2 Working Groups held on 24th of January 2019 and 9th May 2019 respectively.

The T&SC Part B has attempted to devise algebra to ensure Autoproducers are settled fairly. In the absence of a Netting Generator Unit the algebra relies on a single imbalance settlement price which the individual units are cashed out at. Under this methodology, perfectly balance responsible Autoproducer will at all times be 100% out of balance in a long direction (generation) and 100% out of balance in a short direction (demand & assetless unit).

The Undefined Exposure Credit calculation in the T&SC Part B by design discourages out of balance trading. The intention of Section G is to use Standard Deviation to create non-unique assessments prices, settlement quantities and cash positions. Without a code modification (or the setting of the Analysis Percentile Parameter to zero) Autoproducers credit requirements will be very penal, estimates run into the millions.

This proposed code modification attempts to fairly assess Autoproducers credit risk and apply it to the Undefined Potential Exposure Period.

During the initial discussion of this Modification and throughout the Working Group, it has been recognised that the same issue affects DSUs and they have been included in any subsequent iteration of this Mod since.

In versions 1 and 2 of this Modification, an initial attempt to address the issue was carried out with the approach of removing the subset of affected Participants from the Undefined Exposure Period calculation and crafting a duplicate set for those with Autoproducer Sites or Trading Sites containing a DSU.

In essence, they looked back across the historical assessment period at the net cash position of all the individual units registered under a single autoproducer site or site with DSUs. The mean daily cash positions is uplifted by a standard deviation and used to calculate the participants billing period potential exposure.

Some difficulties with this method were highlighted at the design implementation stage where a different approach was proposed and hereby presented.

This involves separating the calculation of QMB (*Billing Period Metered Demand for Suppliers*) and QUEPB (*Billing Period Undefined Potential Exposure*) for those Trading Sites with Autoproducers or DSUs, and those without. Some Participants might have both site type and each Trading Sites will be calculated individually by still maintaining the same variable name and convention.

This allow the inclusion of all relevant quantities in the calculation of EUPECC (*Exposure for Capacity Charges*) while separately accounting for cash flow for TSSUs, registered to Autoproducer Sites or on Trading Sites containing DSUs, in CUB (*Billing Period Cashflow, for Generator Units*) which is used to determine the EUPEG (*Exposure for Trading for Generator Units*) for the Participant.

This has the effect of re-balancing the exposure of those sites left without the Netting Generator set up as part of the old SEM arrangements.

This revised approach eliminates the need of additional variables to be created, which would have caused an additional layer of difficulty for system changes and likely additional costs. It also add to the transparency and easiness of read of the process limiting the system changes to paragraphs G.12.4.3, G.14.7.3/A, G.14.7.6, G.14.8.1 and G.14.10.1 while all other changes are just clarifications in the definitions of the variable used.

The Working Group recommendation that Undefined Exposure Period should be maintained the same for both Generator and Supplier units on Autoproducer and DSU sites, also applies to this new approach. The issue this Modification is trying to address will not be solved should that change in the future. It was the stated position of the RAs that an exemption could be granted to the affected units should a changes to Undefined Exposure Period be proposed.

This Version 3 maintains the intent of the previous versions by:

- Enabling two variants of QMB to be created for a Participant:
    - Variant 1: for the Participant in respect of any TSSUs that are registered to Autoproducer Sites or on Trading Sites containing DSUs;
    - Variant 2: for the Participant in respect of all other Supplier Units;
- Clarifying that the two variants of QMB can be used in the determination of QUPEB (which will normally result in one version of QUPEB but must facilitate both variants);
- Clarifying that only the QUPEB derived from QMB variant 1 is to be used in the calculation of EUPES;
- Inclusion of cash flow for TSSUs that are registered to Autoproducer Sites or on Trading Sites containing DSUs in CUB, used to determine EUPEG for the Participant;
- Clarifying that both variants of QUPEB (where applicable) should be used (summed as necessary) for the QUPEB used in the calculation of EUPECC;
- Updating Glossary Definitions of Variables;

It also addresses the issues raised for the treatment of New and Adjusted Participant by:

- Defining the current interim treatment as enduring for New and Adjusted Participants in G.12.4.4;
- Deleting incorrect references to blank subsections G.14.5 and G.14.6.

For the avoidance of doubt, the legal drafting changes that follow are updates to the T&SC as opposed to being updates to the previous version of the Mod. Please disregard any previous version of this Modification as this is a whole new set of changes to resolve the issue exposed.

3. PURPOSE OF PROPOSED MODIFICATION

3A.) JUSTIFICATION OF MODIFICATION

The unique imbalance position of Trading Sites was recognised in the SEM Committee decision I-SEM ETA Markets (SEM-15-065) back in 2015

"The principle of the existing treatment of trading sites will be retained in I-SEM. This will be progressed further through the implementation phase."

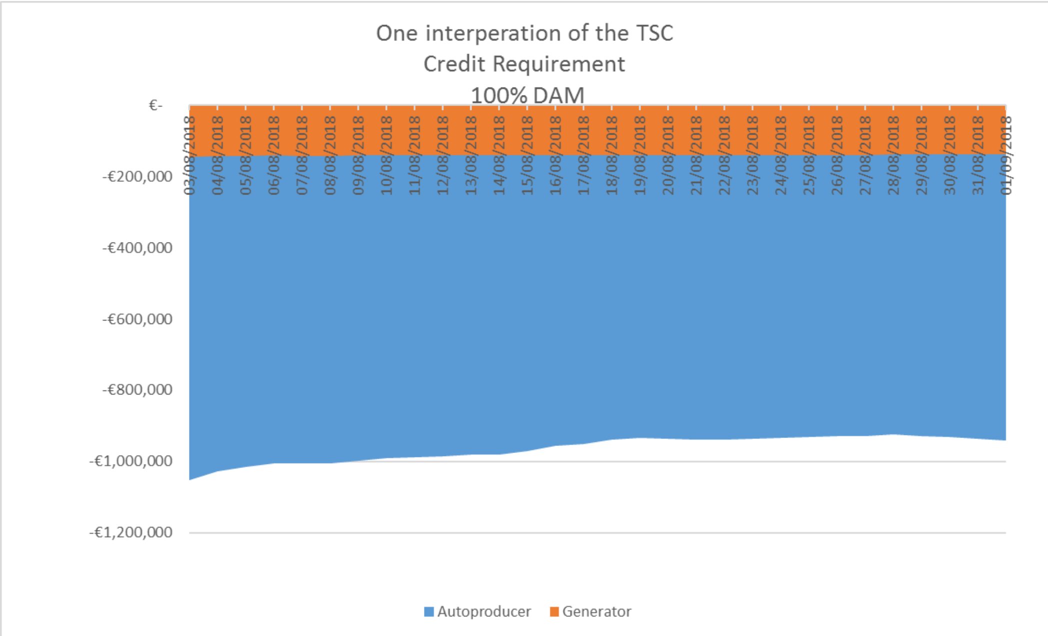
The current drafting of the Trading & Settlement Code Part B results in unnecessarily high credit cover requirements for Participants with units registered under an Autoproducer. This proposed modification corrects the determination of required credit cover, thereby reducing the required credit cover requirements for Participants in respect of their Autoproducer. The change proposed is in line with the intended design of this mechanism.

3B.) IMPACT OF NOT IMPLEMENTING A SOLUTION

The all island market has only one dispatchable Autoproducer that we know of. Aughinish exports baseload power 363 days a year. The high efficient CHP technology embedded in the alumina plant has for the last 12 years provided customers with the cheapest reliable power whilst at the same time reducing carbon emissions.

Failure to implement a remedy to the credit requirements:

- Would result in over collateralisation of the electricity market at the expense of one participant.
- Would result in irrational energy trading as Aughinish would be prevented from fully participating in the DAM and IDM.
- Would result in increased carbon emissions as high efficient CHP is substituted for less clean alternatives.
- Would jeopardise the 700 jobs on site in West Limerick. The alternative price of steam would be uncompetitive in a global alumina market.



3C.) IMPACT ON CODE OBJECTIVES

Code objectives taken from Section A.2.1.4

a. to facilitate the efficient, economic and coordinated operation, administration and development of the Single Electricity Market in a financially secure manner;
b. to promote competition in the Single Electricity Market;
c. to provide transparency in the operation of the Single Electricity Market;
d. to ensure no undue discrimination between persons who are parties to the Code; and
e. to promote the short-term and long-term interests of consumers of electricity on the island of Ireland with respect to price, quality, reliability, and security of supply of electricity.

Code objectives furthered by this proposal:

(a) Facilitates participation by removing unnecessarily and inappropriately burdensome credit requirements
(b) promote competition by putting Autoproducers under the same credit assessment as other units in the market
(c) this proposal provide better transparency for Autoproducers
(d) this proposal removes undue discrimination created following the removal on Netting Generator Units in the transition from part A to part B
(e) removal of the unfair treatment will allow generators remain independent and promote the short-term and long-term interests of consumers of electricity on the island of Ireland

4. WORKING GROUP AND/OR CONSULTATION

N/A

5. IMPACT ON SYSTEMS AND RESOURCES

This Modification requires changes to the Market Systems which will need to be impacted by the vendor.

6. IMPACT ON OTHER CODES/DOCUMENTS

N/A

7. MODIFICATION COMMITTEE VIEWS

MEETING 79 – 25 JANUARY 2018

The Proposer delivered a presentation summarising the requirement for this Modification proposal. The Proposer addressed the collateral impacts that will be experienced and advised that this proposal was needed to correct the Trading & Settlement Code.

It was suggested that this issue will also affect DSU participants. A MO Member advised that they were reviewing DSU impacts since this had only been raised the previous day. Members and Observers where in broad agreement that this was something that needed to be addressed however it was also communicated that this proposal may address the Autoproducer issue for the proposer but may not work for all Autoproducer set ups or DSU participants. A MO Member noted that the system change to deliver the proposal as drafted could not be done for I-SEM go live given how imminent it is.

A MO Member advised that an interim Modification to address the issue until an enduring solution can be included in the market systems should be possible. A MO Member advised that this may involve provisions to treat affected Participants as Adjusted Participants along with bespoke rules on the volumes to apply to the Adjusted Participant calculations but that this needed to be further investigated to ensure a robust treatment.

It was agreed that a Working Group should be set up to explore this issue and develop this Modification Proposal for the enduring solution. It was also agreed that an additional Modification Proposal will be raised in the short term to mitigate this issue for go-live.

MEETING 81 – 13 MARCH 2018

A MO Member advised that Mod_09_18 has been developed to provide an interim solution to this issue and Mod_03_18 will continue to be developed to address this issue as an enduring solution. Committee were happy to defer this and progress Mod_09_18 as the priority in the short term.

MEETING 82 – 23 MARCH 2018

Extraordinary Meeting was held to discuss Mod_09_18 which would be an interim solution. This was a Modification that was raised separately and all documentation for this can be found on the SEMO website.

MEETING 83 – 25 APRIL 2018

The scheduling of this Working Group was discussed along with outstanding proposals and Day 2 issues. It was suggested that all outstanding proposals including the establishment of this Working Group for Mod_03_18 be discussed with a view to prioritise what should be achieved before go-live.

An action item will be added to the June meeting for this discussion.

MEETING 84 – 21 JUNE 2018

Secretariat discussed steps required to progress Mod_03_18 Autoproducer Credit Cover. Possible timescales were discussed regarding the establishment of a working group and development of version 2.0 of this Modification Proposal. The Proposer has communicated that the interim measures in place are working satisfactorily and expressed their wish to be involved in any subsequent working group. The Committee agreed to review this Modification Proposal at the next meeting and review timescales. Regulatory Authorities noted their FRR on Mod_03_18 ensures a more generic reference to 'Day 2' for that Mod has been applied so it's not directly reliant on MOD_03_18.

MEETING 85 – 16 AUGUST 2018

Open actions were confirmed to convene a Working Group and a version 2 of the Modification Proposal. The Secretariat also took an action to request an extension from the RAs.

MEETING 87 – 24 OCTOBER 2018

The Secretariat advised that a draft Terms of Reference would be circulated to the Committee for their input and review. This input will then be used to draft a second version which will be issued in advance of a conference call that will be scheduled in December. Final comments and discussion will then result in the final version being published with the date for the first Working Group provisionally scheduled for late January/early February.

A high level summary of the process of a Working Group was given detailing how as many Working Groups as required will be convened with the end result being the compilation of a Working Group report that would provide recommendations to allow the Committee to finalise a potential proposal to the T&SC. Participation in the Working Group is open to industry and not just the Committee members.

The Proposer then gave some details on the current situation and confirmed that the temporary fix is working well in the interim but that they look forward to an enduring solution being developed. A DSU Member also noted that the Working Group should consider that this issue not only affects Autoproducers.

MEETING 88 – 12 DECEMBER 2018

The Proposer for this Modification, Thomas O'Sullivan was unable to attend the Modifications Meeting and sent his apologies. The Secretariat provided an update on the Terms of Reference, confirming it had been finalised. Thomas O'Sullivan has offered to chair the upcoming Working Group and there will be a communication sent next week with provisional dates and request of expression of interest.

WORKING GROUP 1 – 24 JANUARY 2019

Overview & Background

The Proposer gave a brief history of Aughinish Alumina claiming that they were arguably the most reliable Generator, they are rarely a net consumer of power and, therefore, in settlement they are rarely exposed to demand tariffs. Since demand volumes are treated on a gross basis in the current credit calculations for the Undefined Exposure Period their entire demand, including that which is met by onsite generation, has these tariffs applied whereas in settlement they are only paid on the net consumption where the onsite generation is at reduced or zero availability which is extremely rare. This creates a situation where the unit is subjected to Credit Cover Requirements which appear excessive when considered in line with the net settlement across the Trading Site. Some data was presented to support this assertion.

Further, the Proposer believed that the application of the standard deviation within the separate calculations for generation and supplier units would result in further increased credit requirements for the company.

Finally, the decision on Suspension Delay Periods at the time of raising the proposal was for Supplier and Generator Suspension Delay Periods to have differing durations in the ROI jurisdiction, resulting in differing Undefined Exposure Periods for Supplier Units and Generation Units. In the Proposers view, this would have meant that the period for which required credit for Undefined Exposure for demand is calculated was greater than that applied for offsetting generation calculations resulting in a further overstatement of credit requirements for their Autoproducer site with a single Connection Point.

The Proposer confirmed that their original proposal contained treatments to address these issues for Autoproducer Sites by treating the Undefined Exposure calculations based on Billing Period Cashflow as opposed to gross demand and imbalance settlement for generation volumes and also applying the standard deviation in the direction of the cashflow so that it was always additive to both payments and charges.

The Proposer confirmed the interim solution to treat those affected as Adjusted Participants introduced via mod_09_18 was working well for their Autoproducer. A DSU Member confirmed the interim solution was working for them also.

A question was raised as to whether the interim solution provides adequate protection to the market as intended by the credit mechanism if the interim approach endured for longer. SEMO raised a question around exposure and whether the original part B is currently covering this risk of exposure. It was agreed that clarity was needed for Autoproducers and DSU Participants on how the interim Modification has been applied in practice by SEMO. A SEMO Representative confirmed that the credit team provided an initial indication of the treatment of forecast data used for each adjusted Participant type; however, they will request and circulate further details on such process.

SEMO noted that the first Historical Assessment Period of 100 days since the start of I-SEM had recently become available; therefore, where all Participants were initially treated as ‘New’, most had recently been changed to ‘Standard’. SEMO also noted that they understood that the Autoproducer at Aughinish and most DSU Participants have been kept as ‘Adjusted’, other than those with portfolios whereby supply and generation are also under the same Participant as the DSU. SEMO suggested that any Participant who wished to confirm their treatment or request more detail may also wish follow up with the helpdesk.

It was confirmed that only Undefined Exposure is affected and that defined exposures are unaffected by the issue.

SEMO made a point that a statement on slide 20 of Aughinish’s presentation was not consistent with the SEMC policy of credit cover. The statement that “Any participant should only be exposed to their imbalance position” is not correct as to implement the SEMC policy of full collateralisation requires credit cover to be determined across a Participant’s gross exposure in relation to their consumption and not just their imbalances. SEMO agreed that there is a distinction between Supplier Units that represent retail companies, and thereby end consumers, and Supplier Units that “self-supply” and have no end consumers, noting that the rules of the calculation of Required Credit Cover implemented in Part B do not acknowledge this distinction. This also affects DSUs so a distinction needs to be made noting the difference between Supplier Unit that have end consumers and those that don’t (either through “self-supply” or where their Supplier Unit is used for algebraic purposes in settlement rules only).

It was noted that some changes for DSUs are anticipated, as part of the state aid directive, and that any enduring solution should be considered in that context. A DSU Representative suggested that since the interim solution was working well they would be happy for it to continue if deemed necessary if it did not make sense to put in place the proposed enduring solution for DSUs due to the potential changes anticipated.

Impact on DSU Participants and Possible Solutions

A DSU Representative confirmed they have a similar issue to Autoproducers which is over collateralisation but noted some key differences. A Trading Site Supplier Unit (TSSU) for a DSU is not a unit with physically Metered Demand but rather has Metered Demand set to the negative of the Dispatch Quantity so that such a TSSU can never have a non zero Metered Quantity without DSU Dispatch Quantity in the market. However, as specified, its use in this manner is not noted in the Required Credit Cover calculations and incorrectly results in determining an Undefined Exposure for DSU sites.

A DSU representative discussed DSU energy settlement calculation generally and for different scenarios of what is traded Ex Ante on the DSU a TSSU. They noted that it is not possible for the DSU to be unavailable and the TSSU to have a non zero demand so that there is no DSU analogue for an Autoproducer Site where the generation is unavailable to that demand and therefore credit exposure increases. This highlighted a key difference in the balancing market exposures for the unit types being discussed.

They went on to discuss a scenario for a DSU with a Balancing Market exposure whereby, if the TSSU would participate in any Ex Ante by selling a volume on the TSSU and not purchasing the same volume on the DSU which would cause an imbalance at the TSSU and this trading would be captured as defined exposure. SEMO suggested that, if such a defined exposure existed, then it may be appropriate to account for the potential for such an exposure in Undefined Exposure Calculations. It was suggested that in order for the Undefined Exposure calculations for DSUs to ensure that the wider market is not exposed to under collateralisation this may have to be the case and that this may mean that extending the current interim treatment for DSUs, as discussed previously in the context of potential changes to DSUs in future making it difficult to have a future proofed solution, is less desirable. SEMO suggested in that case that the preferred solution for DSUs would be one that captures current exposures and is future proofed for potential changes and extension of the interim treatment, whilst an option if this ideal is not possible, may be less desirable.

A DSU representative stated that the solutions would be reflective on settlement and tariffs being included. It was agreed that more information was needed on the interim solution to be provided by SEMO's Credit Team.

SEMO stated that timelines on implementation of any system changes have to be considered also in the context of changes arising from the state aid directive impacting on DSU. DSU are required to be treated the same as any generator so any enduring solution will need to be cognisant of other changes as the current position of no metering at the TSSU for a DSU site may not permanently be the case.

A DSU representative stated they would be comfortable with this and maintain the interim Mod_09_18 in the meantime. MOD_03_18 should ideally include provisions for DSUs. A long term solution that will work should include Autoproducer Site and DSU algebra and be mindful of the potential impact of the state aid directive for DSUs. A discussion took place around the fact that the initial drafting of the interim solution defined its end dated as being required to be no later than the implementation date of Mod_03_18 but SEMO noted that this was removed in the final drafting as detailed in the decision letter so that it shouldn't be an issue. It was, however, noted that a review of the interim provisions would be required if they were to endure for DSUs and that the proposal may need to cover amended legal drafting to account for this and a review of sub-section G.12.4 on Adjusted Participants.

It was agreed that MOD_03_18 as currently drafted is specific to Autoproducers. DSU representative is realistic about dates and timelines for System changes and is happy that the interim solution is there and could be extended if necessary. SEMO's preference is for something that will work with all anticipated long term changes.

It was suggested that a good output of this first working group would be a high level principle scope of 'solution requirements' that are future proofed insofar as is possible.

Materiality

It was noted that if there is a difference in Undefined Exposure Period as a result of differing Supplier and Generator Suspension Delay Periods and this has the potential to cause a significant impact on the credit requirements for Autoproducers and DSUs. The envisaged SEM Committee decision to have these set to 14 days for ROI Suppliers and 7 days for ROI Generators would result in a larger credit requirement for Autoproducers and DSUs. Currently the market systems do not support different undefined exposure periods for different unit types. This is consistent with Part B of the T&SC which is written on single undefined exposure period that covers everything. To implement the RAs parameter decision, which included separate values for Supplier Unit and Generator Unit, will require a further modification to the T&SC to define the changes to the algebra and further work the vendor to implement the changes. The difference is to allow the customer to switch from their previous Supplier to the Supplier of Last Resort. The MO is planning to raise such a Modification in the near future. As a result of this limitation, these have been set equal at 7 days as an interim provision so that this effect is currently not at issue, however, an action was taken for the Regulatory Authorities (RAs) representative to confirm the intentions going forward as to whether they would still require different values to be introduced in future and if an exemption could be made for Autoproducers and DSUs, so that this can be taken into account in the Working Groups recommendation and potential Modification Proposal.

SEMO reviewed the equations on approved Mod_22_18, in the context of concerns around the direction of standard deviation being applied causing an exposure, which is effective on the baseline of version 20. In the legal drafting introduced by this proposal, standard deviation will apply in one direction only. This is in contrast with the proposer's initial understanding that the effect would be disproportionately onerous for participants with demand and generation due to it applying conservatively in both directions.

The materiality presented by the proposer for their Autoproducer contains a figure of approximately €486,000 due to the difference between the undefined exposure period for the Supplier and Generator Units and approximately €170,000 due to the issue of standard deviation in the undefined exposure calculation. The MO argued and the Proposer confirmed that the €170,000 is not an issue since MOD_22_18 has resolved this and the €486,000 is also currently not an issue because the Suspension Delay Period duration of 7 days currently applies to both Generator and Supplier Units in both Jurisdictions.

This will potentially become a problem if these were to differ in future, unless an exception is made for Autoproducers and DSUs on the ground that the 14 days for Supplier Units are required to allow Suppliers of Last Resort to complete switching over of retail customers does not apply to Trading Site Supplier Units. The RAs agreed that this could be taken as an action for them to consider and advise.

It was confirmed that the issue with Supplier Tariffs (Imperfections, Capacity Charges etc.) with an approximated impact of overstating collateral for the proposer of around €143,000 due to the effect of the application of tariffs on Aughinish applies in the absence of the interim solution and this item would also otherwise affect Demand Side Units (although a figure for DSU materiality is not available). SEMO commented that this figure justifies the need for a Modification as it was inappropriate for the MO to hold collateral for such amount since it does not represent an exposure in settlement. It was also noted that further assessment of this materiality is with actual data from I-SEM would be unlikely result in any reduction that would change this view.

The Proposer gave a summary – SEMO passed 100 days, therefore it would be appropriate to look at what would have been the exposure of Autoproducers and DSU as a result of the "as is" design, versus what their actual exposures would have been over that same historical period. The Proposer stated that it was not a simple ask to run this. It was agreed to take an action that Autoproducers and DSU would both look individually at their own comparison of the interim, proposed and existing provisions for credit assessment and that SEMO would assist by providing data, templates or guidance if required.

The Proposer noted some differences between the set-up of his Autoproducer Site and that of other Demand Sites in the context of their discussions with industry and the principle of these differences was acknowledged. In particular, they highlighted the single Connection Point for import and export and noted that despite the gross metering set up for system operation that it was important that the principle of netting at the Connection Point was appropriately acknowledged by and reflected in the Market.

Market Risk

The question was raised about what would be the Market exposure should the Autoproducer site become a net importer. It was also noted that the enduring solution should work for any Autoproducer including one which was a net importer in order to ensure that the solution is universal.

The Proposer stated that CHP on the Autoproducer site could be turned off if a cheaper alternative would be going back to being a net consumer. But it would be costly as it would not be able to start alumina plant without CHP – it's not just a power generator, it also gives steam to alumina process. Historically, they have run the alumina plant very rarely without CHP before and that this was very costly. They could consume power up to 45MW but they are arguing that this exposure to the Undefined Exposure period should be removed by the enduring solution. They agreed that this future exposure should be calculated as normal if their site reverted to a power consumer. This is catered for in their original proposal.

It was noted that if a Participants Generator Imbalance or Supplier Demand changed by more than the Credit Cover Adjustment Trigger due to becoming a net importer or otherwise they would be required to notify the Market Operator and would then be treated as an Adjusted Participant until such times as this was captured under Standard Participant calculations and that a revised forecast would need to be provided. Once Adjusted Participant rules are correctly followed there is no risk to the Market.

The DSU Representative also stated that the risks for the Market occur only when the TSSU trades differently from the DSU in the Ex-Ante Market, but the defined exposure for this is also covered by the current rules as it is picked up in trading exposure. However they will include all scenarios in their analysis in support of the Modification.

It was noted that it would be prudent to review the Code provisions contained in G.12.4 around the normal requirements to become an Adjusted Participant where volumes change and an action was taken in this regard by the Market Operator representatives. It was also noted that one of the solution requirements should be that the wider market remains appropriately and adequately protected by the collateral provisions.

Timelines for progression were further discussed as detailed in the next steps section below.

MEETING 89 – 20 FEBRUARY 2019

The Secretariat confirmed that Working Group 1 Report has been drafted and sent for attendee review with a closing date for comments this week. The final version will be published online and sent to the committee. A second meeting will be required with a date to be communicated shortly.

MEETING 90 – 11 APRIL 2019

Working Group Meeting 1 report has been circulated to the committee for information. The Proposer is currently developing version 2.0 of this proposal with a view to bringing this the Modifications Committee Meeting 92 in June 2019. Working Group Meeting 2 will be held in early May via conference call.

WORKING GROUP 2 – 9 MAY 2019

The various actions noted at Meeting 1 were discussed with all actions being closed. The Chair advised that a second version of this proposal was progressing well and thanked all those involved for their support. The recommendation of this Working Group process will be to raise version 2.0 of this proposal for consideration at the next Modifications Committee Meeting which is taking place on Thursday 27th June 2019. This new version would be based on cashflow as opposed to artificially alter the status of a Participant to be considered adjusted as in the current interim solution. The drafting is at an advanced stage, the proposer is working with SEMO to finalise some formal aspects of the legal drafting to bring it forward to the Panel.

It was advised that the submission deadline for this meeting will be Thursday 13th June 2019. The Secretariat clarified that a report will be produced for Meeting 2 with a Working Group Report summarising the process undertaken with a Recommendation noted for the information of the Modifications Committee. In tandem with the development of this report the second version of the proposal will be raised with the Modifications Committee for the June Meeting.

The issue of exemption on differing Suspension Delay Periods was raised. SEMO communicated the RA response to the group which detailed that they have not identified any issue with this. Should a Modification be raised in the future then an exemption could be given for the affected Trading Site Supplier Units (TSSU). It was proposed that this also is noted as part of the Working Group Recommendation.

Timelines for progression were further discussed as detailed in the next steps section below.

Chair thanked all those who had participated in the Working Group.

MEETING 92 – 27 JUNE 2019

The Proposer delivered a presentation on the version 2 of this modification which was raised on 13th June 2019 following two productive Working Group meetings. He confirmed a WG Recommendation report had been circulated to members. It was agreed that this Modification had worked well as an interim provision.

The Proposer went through the slides detailing what the initial problem was, the materiality self-assessment and version 2 of the proposal. The Working Group recommended that should a different length for supplier Suspension delay periods be proposed, to consider exempting Trading Site Supplier Units.

The DSU alternate confirmed they are happy that this V2 covers the standard participant but it does not cover the new and adjusted participant. The first 100 day period will require a lot more collateral which is a temporary hurdle when taking on a new participant. Advice from the committee was requested with regards to raising a separate modification for New and Adjusted Participants or not and the type of solutions that should be adopted for new and adjusted PTs (simple based on current interim or more complex to mirror standard PTs).

It was asked if V2 could be approved for Standard Participants. The DSU member advised that approving this will just put this modification in a queue for vendor implementation. There is an opportunity to review the New Participant approach based on the impact provided by the vendor for Standard Participant.

A question was raised if the interim solution deal with New and Adjusted Participants and whether it would remain in place until a new modification is implemented. It was confirmed that it would remain in place and does cater for New and Adjusted Participants however there would need to be a change to the legal drafting to reflect this.

An Observer asked why the difference between standard PTs and others, given that the calculation would be the same except for forecast data. SEMO advised that the implementation in the system is more complex as it is not sufficient to just swap one set of data with the other. Hence the proposal of either a higher level solution for the New and Adjusted Participant or bespoke algebra and volume functionality. It was agreed that an action should be taken for the proposer to include provision in V3 to allow for the interim proposal to endure for New and Adjusted Participants until a further provision can be made to cater for the impact there

It was discussed if a vote could go ahead pending an impact assessment but it was agreed that the committee should wait until August for an impact assessment to be considered prior to voting.

MEETING 93 – 22 AUGUST 2019

The proposer was unable to attend Meeting 93. An update was provided by SEMO. There is an Impact Assessment pending on this while the proposer is working on a new version of this modification to correct minor typos and include the continuation of the interim solution for the new or adjusted Participant only.

An RA Member noted that it may be necessary to request a further extension to ensure that due process is followed if deferring further.

MEETING 94 – 24 OCTOBER 2019

SEMO provided an update on this proposal. Version 3 is currently being drafted with updates for system implications needed for the drafting of the Modification Proposal. The system design has been developed.

There was a discussion around the interim treatment of Autoproducers and DSUs and the need to have a separate treatment compared to the standard process. This would need to be seamless in terms of taking standard participants out of the interim treatment and retaining it for New and Adjusted. A DSU member asked to include in the Code details now available on the interim treatment and SEMO will elaborate on this within the drafting of version 3. SEMO confirmed they are happy to put this together. The committee agreed to defer the proposal pending follow up actions.

MEETING 95 – 5 DECEMBER 2019

The Proposer delivered a presentation giving a background and history of this modification. Following a Working Group it was agreed that the interim fix should be replaced by an enduring solution that would accommodate both Autoproducers and DSUs. The Proposer confirmed that version 3 of this proposal is a different approach which is much more efficient and still maintaining the original intent. Any previous versions should be disregarded.

The Proposer went through some of the changes in the algebra and noted that version 3 solves all material issues including new and adjusted participants. It is more transparent and requires less System changes.

The DSU Alternate thanked the Proposer and SEMO for all the work completed on version 3 of this proposal. It was noted that the outcome is very similar to version 2 but does not involve creating new variables. He explained that there were 2 differences between the proposals with version 2 looking at cash flow of trading site summed across the day on both energy and Capacity, while version 3 is looking at cash flow basis for energy and tariffs and meter basis for capacity. It was explained that the new equation included in G.14.7.3A has the effect of creating an exposure even if only one Trading Period is affected which will be carried on for the whole length of the look back period. This does not affect DSUs and Autoproducers only have a minor impact compared with the exposure created with the current rules in place,

A suggestion was made by a Generator Alternate to move the min function more to the left in G.14.7.3A which would be better for DSUs and Autoproducers as calculating the risk over each Settlement Say as opposed to each Trading Period. It was agreed that this would increase the risk of not capturing actual exposures and should not be applied.

8. PROPOSED LEGAL DRAFTING

As set out in Appendix 1.

9. LEGAL REVIEW

N/A

10. IMPLEMENTATION TIMESCALE

It is proposed that this Modification is implemented as the Modifications Committee have Recommended it for Approval. This Modification requires system changes and as such it is recommended that it is made effective from the first Settlement Day following delivery of the associated system changes.

1 APPENDIX 1: MOD_03_18 AUTOPRODUCER AND DSU CREDIT COVER

MODIFICATION PROPOSAL FORM			
Proposer *(Company)*	**Date of receipt** *(assigned by Secretariat)*	**Type of Proposal** *(delete as appropriate)*	**Modification Proposal ID** *(assigned by Secretariat)*
Aughinish Alumina Ltd	**28 November 2019**	**Standard**	**Mod_03_18 v3**

Contact Details for Modification Proposal Originator		
Name	**Telephone number**	**Email address**
Thomas O'Sullivan		**Thomas.osullivan@augh.com**
Modification Proposal Title		
Autoproducer and DSU Credit Cover		
Documents affected *(delete as appropriate)*	**Section(s) Affected**	**Version number of T&SC or AP used in Drafting**
T&SC Part B **G12 to G15**	G.12.4.4, G.14.7.3, G.14.7.3A, G.14.7.4, G.14.7.5, G.14.7.6, G.14.7.7 G.14.8.1, G.14.10.1, G.14.10.2, G.14.10.3, G.14.10.4, G.14.15.6 and G.15.1.1	**V21** **12 Apr 2019**

Explanation of Proposed Change

(mandatory by originator)

The T&SC Part B has attempted to devise algebra to ensure Autoproducers are settled fairly. In the absence of a Netting Generator Unit the algebra relies on a single imbalance settlement price which the individual units are cashed out at. Under this methodology, perfectly balance responsible Autoproducer will at all times be 100% out of balance in a long direction (generation) and 100% out of balance in a short direction (demand & assetless unit).

The Undefined Exposure Credit calculation in the T&SC Part B by design discourages out of balance trading. The intention of Section G is to use Standard Deviation to create non-unique assessments prices, settlement quantities and cash positions. Without a code modification (or the setting of the Analysis Percentile Parameter to zero) Autoproducers credit requirements will be very penal, estimates run into the millions.

This proposed code modification attempts to fairly assess Autoproducers credit risk and apply it to the Undefined Potential Exposure Period.

During the initial discussion of this Modification and throughout the Working Group, it has been recognised that the same issue affects DSUs and they have been included in any subsequent iteration of this Mod since.

In versions 1 and 2 of this Modification, an initial attempt to address the issue was carried out with the approach of removing the subset of affected Participants from the Undefined Exposure Period calculation and crafting a duplicate set for those with Autoproducer Sites or Trading Sites containing a DSU.

In essence, they looked back across the historical assessment period at the net cash position of all the individual units registered under a single autoproducer site or site with DSUs. The mean daily cash positions is uplifted by a standard deviation and used to calculate the participants billing period potential exposure.

~~Note, no different to any other unit, an Autoproducer can be long or short in the Imbalance Market. In this proposal Aughinish have proposed that the intention of the T&SC is best served by having an 'IF' statement which will add or subtract the standard deviation depending on the Autoproducers imbalance position.~~

Some difficulties with this method were highlighted at the design implementation stage where a different approach was proposed and hereby presented.

This involves separating the calculation of QMB (*Billing Period Metered Demand for Suppliers*) and QUEPB (*Billing Period Undefined Potential Exposure*) for those Trading Sites with Autoproducers or DSUs, and those without. Some Participants might have both site type and each Trading Sites will be calculated individually by still maintaining the same variable name and convention.

This allow the inclusion of all relevant quantities in the calculation of EUPECC (*Exposure for Capacity Charges*) while separately accounting for cash flow for TSSUs, registered to Autoproducer Sites or on Trading Sites containing DSUs, in CUB (*Billing Period Cashflow, for Generator Units*) which is used to determine the EUPEG (*Exposure for Trading for Generator Units*) for the Participant.

This has the effect of re-balancing the exposure of those sites left without the Netting Generator set up as part of the old SEM arrangements.

This revised approach eliminates the need of additional variables to be created, which would have caused an additional layer of difficulty for system changes and likely additional costs. It also add to the transparency and easiness of read of the process limiting the system changes to paragraphs G.12.4.3, G.14.7.3/A, G.14.7.6, G.14.8.1 and G.14.10.1 while all other changes are just clarifications in the definitions of the variable used.

The Working Group recommendation that Undefined Exposure Period should be maintained the same for both Generator and Supplier units on Autoproducer and DSU sites, also applies to this new approach. The issue this Modification is trying to address will not be solved should that change in the future. It was the stated position of the RAs, that an exemption could be granted to the affected units should a changes to Undefined Exposure Period be proposed.

This Version 3 maintains the intent of the previous versions by:

- Enabling two variants of QMB to be created for a Participant:
    - Variant 1: for the Participant in respect of any TSSUs that are registered to Autoproducer Sites or on Trading Sites containing DSUs;
    - Variant 2: for the Participant in respect of all other Supplier Units;

- Clarifying that the two variants of QMB can be used in the determination of QUPEB (which will normally result in one version of QUPEB but must facilitate both variants);
- Clarifying that only the QUPEB derived from QMB variant 1 is to be used in the calculation of EUPES;
- Inclusion of cash flow for TSSUs that are registered to Autoproducer Sites or on Trading Sites containing DSUs in CUB, used to determine EUPEG for the Participant;
- Clarifying that both variants of QUPEB (where applicable) should be used (summed as necessary) for the QUPEB used in the calculation of EUPECC;
- Updating Glossary Definitions of Variables;

It also addresses the issues raised for the treatment of New and Adjusted Participant by:

- Defining the current interim treatment as enduring for New and Adjusted Participants in G.12.4.4;
- Deleting incorrect references to blank subsections G.14.5 and G.14.6.

For the avoidance of doubt, the legal drafting changes that follow, are updates to the T&SC as opposed to being updates to the previous version of the Mod. Please disregard any previous version of this Modification as this is a whole new set of changes to resolve the issue exposed.

Legal Drafting Change

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

~~A.~~B.

~~F.12.4.3~~G.12.4.3 Where a Participant is a New Participant or becomes an Adjusted Participant, it shall notify the Market Operator of its forecast value of its Metered Demand and/or Imbalance for any of its Supplier Units and/or Generator Units respectively, which are not listed in paragraph G.12.4.4. The forecast values notified by an Adjusted Participant shall represent the forecast of its average Metered Demand or forecasted Imbalance which will be applied in the calculations for Required Credit Cover. Each Adjusted Participant shall provide such additional information to the Market Operator as provided for pursuant to Agreed Procedure 9 "Management of Credit Cover and Credit Default" to enable the Market Operator to calculate revised values of Required Credit Cover in accordance with this Chapter G (Financial and Settlement).

G.12.4.4 Where a Participant is a New Participant or becomes an Adjusted Participant, it shall submit Forecast values of zero to the Market Operator in respect of:

(a) Metered Demand for Supplier Unit, v, that is a Trading Site Supplier Unit which is registered as part of an Autoproducer Site in accordance with B.9.4 and B.9.1.2; or a Trading Site Supplier Unit which is registered as part of a Trading Site which contains a Demand Side Unit in accordance with B.9.5.4

(b) Imbalance for an Autoproducer Unit which is registered as part of an Autoproducer Site in accordance with B.9.4 and B.9.1.1 for which a Trading Site Supplier Unit is also registered in accordance with B.9.4 and B.9.1.2; or a Demand Side Unit which is registered as part of a Trading Site in accordance with B.9.5.4.

…..

~~F.14~~G.14 CALCULATIONS OF REQUIRED CREDIT COVER FOR THE UNDEFINED EXPOSURE PERIOD

~~F.14.1~~G.14.1 General

~~F.14.1.1~~G.14.1.1 The Market Operator shall undertake the following calculations leading to the determination of Participants' Undefined Potential Exposure which calculations are dependent on whether a Participant is a New Participant, an Adjusted Participant or a Standard Participant.

~~F.14.1.2~~G.14.1.2 The Undefined Potential Exposure for each New or Adjusted Participant in respect of its Supplier Units shall be based on the product of the Participant's Credit Assessment Volume and the Combined Credit Assessment Price.

~~F.14.1.3~~G.14.1.3 The Undefined Potential Exposure for each New or Adjusted Participant in respect of its Generator Units shall be based on the product of the Participant's Credit Assessment Volume and the Credit Assessment Price.

~~F.14.1.4~~G.14.1.4 The Market Operator shall calculate the Credit Assessment Price as set out in section G.14.2.

~~F.14.2~~G.14.2 Calculation of the Combined Credit Assessment Price

~~F.14.2.1~~G.14.2.1 The Daily Average Imbalance Settlement Price ($DAPIMB_d$) for each Settlement Day d in the Historical Assessment Period shall be calculated by the Market Operator as follows:

$$DAPIMB_d = \frac{\sum_{\gamma\ in\ d} Min\left(PIMB_\gamma, PSTR_m\right)}{count\left(PIMB_\gamma : \underset{\gamma\ in\ d}{\forall}\right)}$$

where:

(a) $PIMB_\gamma$ is the Imbalance Settlement Price in Imbalance Settlement Period γ, as determined in accordance with section E.3.7;

(b) $PSTR_m$ is the Strike Price applicable in month m as determined in accordance with section F.16;

(c) $\sum_{\gamma\ in\ d}$ is a summation over all Imbalance Settlement Periods γ in Settlement Day d; and

(d) $count\left(PIMB_\gamma : \underset{\gamma\ in\ d}{\forall}\right)$ is the number of all Imbalance Settlement Prices in Settlement Day d.

~~F.14.2.2~~G.14.2.2 The number of all Daily Average Imbalance Settlement Prices ($NDAPIMB_g$) in the Historical Assessment Period H to be applied for the Undefined Exposure Period g shall be calculated as follows:

$$NDAPIMB_g = count\left(DAPIMB_d : \underset{d\ in\ H}{\forall}\right)$$

where:

(a) $DAPIMB_d$ is the Daily Average Imbalance Settlement Price for Settlement Day d calculated in accordance with paragraph G.14.2.1; and;

(b) $count\left(DAPIMB_d : \underset{d\ in\ H}{\forall}\right)$ is the number of all Daily Average Imbalance Settlement Prices in the Historical Assessment Period H.

~~F.14.2.3~~G.14.2.3 The mean value of Daily Average Imbalance Settlement Prices ($UMPIMB_g$) in the Historical Assessment Period H to be applied for the Undefined Exposure Period g shall be calculated by the Market Operator as follows:

$$UMPIMB_g = \frac{\sum_{d\ in\ H} DAPIMB_d}{NDAPIMB_g}$$

where:

(a) $DAPIMB_d$ is the Daily Average Imbalance Settlement Price for Settlement Day d calculated in accordance with paragraph G.14.2.1;

(b) $\sum_{d\ in\ H}$ is a summation over all Settlement Days d in the Historical Assessment Period H; and

(c) $NDAPIMB_g$ is the number of all Daily Average Imbalance Settlement Prices in the Historical Assessment Period H to be applied for the Undefined Exposure Period g calculated in accordance with paragraph G.14.2.2.

~~F.14.2.4~~G.14.2.4 The standard deviation of the Daily Average Imbalance Settlement Price ($SDPIMB_g$) in the Historical Assessment Period H to be applied for the Undefined Exposure Period g shall be calculated by the Market Operator as follows:

$$SDPIMB_g = \sqrt{\frac{NDAPIMB_g \times \sum_{d\ in\ g}(DAPIMB_d)^2 - (\sum_{d\ in\ H} DAPIMB_d)^2}{NDAPIMB_g \times \left(NDAPIMB_g - 1\right)}}$$

where:

(a) $NDAPIMB_g$ is the number of all Daily Average Imbalance Settlement Prices in the Historical Assessment Period H to be applied for the Undefined Exposure Period g as calculated in accordance with paragraph G.14.2.2;

(b) $DAPIMB_d$ is the Daily Average Imbalance Settlement Price for Settlement Day d as calculated in accordance with paragraph G.14.2.1; and

(c) $\sum_{d\ in\ H}$ is a summation over all Settlement Days d in the Historical Assessment Period.

~~F.14.2.5~~G.14.2.5 The Credit Assessment Price (PCA_g) for Undefined Exposure Period g shall be calculated as follows:

$$PCA_g = UMPIMB_g + AnPP\left(SDPIMB_g\right)$$

where:

(a) $UMPIMB_g$ is the mean value of Imbalance Settlement Prices in the Historical Assessment Period applied for the Undefined Exposure Period g;

(b) AnPP is the Analysis Percentile Parameter applicable for Undefined Exposure Period g; and

(c) $SDPIMB_g$ is the standard deviation of the Daily Average Imbalance Settlement Prices in the Historical Assessment Period to be applied for the Undefined Exposure Period g, as calculated in accordance with paragraph G.14.2.4.

~~F.14.2.6~~G.14.2.6 The Market Operator shall calculate the Combined Credit Assessment Price ($CCAP_g$) for the Undefined Exposure Period g as follows:

If Undefined Exposure Period g is entirely within a single Year, y:

$$CCAP_g = PCA_g + PIMP_y + PREV_y + PCC_y$$

If Undefined Exposure Period g includes periods from two Years, y-1 and y:

$$CCAP_g = PCA_g + Max(PIMP_y, PIMP_{y-1}) + Max(PREV_y, PREV_{y-1}) + Max(PCC_y, PCC_{y-1})$$

where:

(a) PCA_g is the Credit Assessment Price for the Undefined Exposure Period g as calculated in accordance with paragraph G.14.2.5;

(b) $PIMP_y$ is the approved Imperfections Price for year y as determined in accordance with section F12.1;

(c) $PIMP_{y-1}$ is the approved Imperfections Price for year y-1 as determined in accordance with section F12.1;

(d) $PREV_y$ is the approved Residual Error Volume Price for year y, as determined in accordance with section F.14.2;

(e) $PREV_{y-1}$ is the approved Residual Error Volume Price for year y-1, as determined in accordance with section F.14.2;

(f) PCC_y is the approved Currency Cost Price for year y, as determined in accordance with section F.15.2; and

(g) PCC_{y-1} is the approved Currency Cost Price for year y-1, as determined in accordance with section F.15.2.

~~F.14.3~~G.14.3 **Calculations for the Undefined Exposure Period for a New or Adjusted Participant in respect of its Supplier Units**

~~F.14.3.1~~G.14.3.1 The Credit Assessment Volume for a New or Adjusted Participant p ($VCAS_{py}$) shall be a forecast of Metered Demand in respect of a New or Adjusted Participant's Supplier Units based upon information provided by the Participant in accordance with subsection G.12.4 and used in the calculation of the Participant's Required Credit Cover.

~~F.14.3.2~~G.14.3.2 The Market Operator shall calculate the Exposure for Trading Charges for the Undefined Exposure Period for each New or Adjusted Participant p in respect of its Supplier Units ($EUPES_{pg}$) as follows:

$$EUPES_{pg} = CCAP_g \times \sum_{\gamma\ in\ g} VCAS_{p\gamma}$$

where:

(a) $CCAP_g$ is the Combined Credit Assessment Price for the Undefined Exposure Period g calculated in accordance with G.14.2.6;

(b) $VCAS_{p\gamma}$ is the Credit Assessment Volume for each New or Adjusted Participant for the Imbalance Settlement Period γ; and

(c) $\sum_{\gamma\ in\ g}$ is a summation over Imbalance Settlement Periods γ in the Undefined Exposure Period g.

~~F.14.3.3~~G.14.3.3 A New or Adjusted Participant's Exposure in respect of its Capacity Charges for its Supplier Units ($EUPECC_{pg}$) for Undefined Exposure Period g shall be calculated by the Market Operator as follows:

$$EUPECC_{pg} = \sum_{\gamma\ in\ g} \sum_{\Omega} CCP_{\Omega\gamma} \times \frac{-\sum_{\gamma\ in\ g} VCAS_{p\gamma}}{(\sum_p QUPEB_{pg} + \sum_p \sum_{\gamma\ in\ g} VCAS_{p\gamma})}$$

where:

(a) $CCP_{\Omega\gamma}$ is the Capacity Payment for Capacity Market Unit Ω in Imbalance Settlement Period γ;

(b) $VCAS_{p\gamma}$ is the Credit Assessment Volume for each New or Adjusted Participant in respect of its Supplier Units for the Imbalance Settlement Periods γ;

(c) $QUPEB_{pg}$ is the Billing Period Undefined Potential Exposure Quantity for Standard Participant p in respect of all its Supplier Units v in Undefined Exposure Period g calculated in accordance with section G.14.7;

(d) $\sum_{\gamma\ in\ g}$ is the summation across all Imbalance Settlement Periods γ in Undefined Exposure Period g;

(e) $\sum_{\Omega}$ is the summation across all Capacity Market Units Ω; and

(f) $\sum_p$ is the summation across all Participants p.

~~F.14.4~~G.14.4 **Calculations for the Undefined Exposure Period for a New or Adjusted Participant in respect of its Generator Units or Assetless Units**

~~F.14.4.1~~G.14.4.1 The Credit Assessment Volume ($VCAG_{p\gamma}$) for a New or Adjusted Participant p in Imbalance Settlement Period γ shall be a forecast of Imbalance relating to Total Daily Amounts in respect of the Participant's Generator Units based upon information provided by the Participant in accordance with subsection G.12.4 and used in the calculation of the Participant's Required Credit Cover.

~~F.14.4.2~~G.14.4.2 The Market Operator shall calculate the Exposure for Trading Payments and Trading Charges for the Undefined Exposure Period g for each New or Adjusted Participant p in respect of its Generator Units and Assetless Units ($EUPEG_{pg}$) as follows:

$$EUPEG_{pg} = PCA_g \times \sum_{\gamma \, in \, g} VCAG_{p\gamma}$$

where:

(a) PCA_g is the Credit Assessment Price for the Undefined Exposure Period g as calculated in accordance with section G.14.2;

(b) $VCAG_{p\gamma}$ is the Credit Assessment Volume for each New or Adjusted Participant for the Imbalance Settlement Period γ; and

(c) $\sum_{\gamma \, in \, g}$ is a summation over Imbalance Settlement Periods γ in the Undefined Exposure Period g.

~~F.14.5~~G.14.5 **Intentionally blank**

~~F.14.6~~G.14.6 **Intentionally blank**

~~F.14.7~~G.14.7 **Calculations for the Undefined Exposure Period for a Standard Participant in respect of its Supplier Units**

~~F.14.7.1~~G.14.7.1 The Market Operator shall procure that, where the Participant is a Standard Participant, the Participant's Undefined Potential Exposure in respect of its Supplier Units, v, shall be calculated as one calculation for the Billing Period values and one calculation for the Capacity Period values according to the procedures set out in the following paragraphs of this section G.14.7.

~~F.14.7.2~~G.14.7.2 The number of Sample Undefined Exposure Periods in the Historical Assessment Period that is to be used in the summation of the Billing Period payments and charges for the Undefined Exposure Period g ($BPHAP_g$) shall be calculated by the Market Operator as follows:

$$BPHAP_g = \left(DINHAP - UEPBD_g\right) + 1$$

where:

(a) DINHAP is the number of days in the Historical Assessment Period; and

(b) $UEPBD_g$ is the number of days in the Undefined Exposure Period g.

~~F.14.7.3~~G.14.7.3 The Market Operator shall calculate the Billing Period Metered Demand ($QMB_{pg\omega}$) for Participant p in respect of any of its Supplier Units, v, that is not a Trading Site Supplier Unit which is registered as part of an Autoproducer Site in accordance with B.9.4 and B.9.1.2; or a Trading Site Supplier Unit which is registered as part of a Trading Site which contains a Demand Side Unit in accordance with B.9.5.4 for each Sample Undefined Exposure Period ω in the Historical Assessment Period to be applied for the Undefined Exposure Period g as follows:

$$for\ each\ Sample\ Undefined\ Exposure\ Period\ in\ the\ Historical\ Assessment\ Period\ defined\ by\ BPHAP_g$$

$$QMB_{pg\omega} = \sum_{d\ in\ \omega} \sum_{v\ in\ p} \sum_{\gamma\ in\ d} QM_{v\gamma}$$

where:

(a) $QM_{v\gamma}$ is the Metered Quantity on Supplier Unit, v, in Imbalance Settlement Period γ;

(b) $\sum_{d\ in\ \omega}$ is a summation over all Settlement Days d in Sample Undefined Exposure Period ω;

(c) $\sum_{\gamma\ in\ d}$ is a summation over all Imbalance Settlement Periods γ in Settlement Day d; and

(d) $\sum_{v\ in\ p}$ is a summation over all Supplier Units, v, registered in respect of Participant p.

G.14.7.3A The Market Operator shall calculate the Billing Period Metered Demand ($QMB_{pg\omega}$) for Participant p in respect of any of its Supplier Units, v, that is a Trading Site Supplier Unit which is registered as part of an Autoproducer Site in accordance with B.9.4 and B.9.1.2; or a Trading Site Supplier Unit which is registered as part of a Trading Site which contains a Demand Side Unit in accordance with B.9.5.4 for each Sample Undefined Exposure Period ω in the Historical Assessment Period to be applied for the Undefined Exposure Period g as follows:

$$for\ each\ Sample\ Undefined\ Exposure\ Period\ in\ the\ Historical\ Assessment\ Period\ defined\ by\ BPHAP_g$$

$$QMB_{pg\omega} = \sum_{s\ in\ p} \left(\sum_{d\ in\ \omega} \left(\sum_{\gamma\ in\ d} \left(Min \left(\sum_{u\ \in s} QMLF_{u\gamma} + \sum_{v\ \in s} QMLF_{v\gamma}, 0 \right) \right) \right) \right)$$

where:

(a) QMuγ is the Metered Quantity for each Generator Unit, u, in Imbalance Settlement Period γ;

(b) QMvγ is the Metered Quantity for Supplier Unit, v, in Imbalance Settlement Period γ;

(c) $\sum_{d\ in\ \omega}$ is a summation over all Settlement Days d in Sample Undefined Exposure Period ω;

(d) $\sum_{\gamma\ in\ d}$ is a summation over all Imbalance Settlement Periods γ in Settlement Day d;

(e) $\sum_{s\ in\ p}$ is a summation over all Trading Sites registered to Participant p that contain Trading Site Supplier Units which are registered as part of Autoproducer Sites or as part of Trading Sites which contain Demand Side Units;

(f) $\sum_{u\ \in\ s}$ means the value for all Generator Units, u, in Trading Site, s, relevant to the Trading Site Supplier Unit; and

(g) $\sum_{v\ \in\ s}$ means the value for the single Trading Site Supplier Unit in Trading Site, s, in accordance with paragraph B.9.1.2.

G.14.7.4 The mean of the Billing Period Metered Demand ($QMBM_{pg}$) ~~for Participant p in respect of its Supplier Units v for all Sample Undefined Exposure Periods ω in the Historical Assessment Period to be applied for the Undefined Exposure Period g~~ shall be calculated by the Market Operator separately for each Participant p in respect of:

(a) any of its Supplier Units, v, that is a Trading Site Supplier Unit which is registered as part of an Autoproducer Site in accordance with B.9.4 and B.9.1.2, or a Trading Site Supplier Unit which is registered as part of a Trading Site which contains a Demand Side Unit in accordance with B.9.5.4; and

(b) all other Supplier Units, v,

for all Sample Undefined Exposure Periods ω in the Historical Assessment Period to be applied for the Undefined Exposure Period g as follows:

$$QMBM_{pg} = \frac{\sum_{\omega=1}^{\omega=BPHAP_g} QMB_{pg\omega}}{BPHAP_g}$$

where:

(c) $BPHAP_g$ is the number of Sample Undefined Exposure Periods in the Historical Assessment Period that will be used in the summation of the Billing Period payments and charges for the relevant Undefined Exposure Period g as calculated in accordance with paragraph G.14.7.2 as calculated in accordance with paragraph G.14.7.3;

(d) $QMB_{pg\omega}$ is the Billing Period Metered Demand for Participant p in respect of its Supplier Units, v, for for each Sample Undefined Exposure Period ω in the Historical Assessment Period to be applied for the Undefined Exposure Period g; and

(e) $\sum_{\omega=1}^{\omega=BPHAP_g}$ is the sum over all the Billing Period Metered Demand values for the Sample Undefined Exposure Periods ω.

G.14.7.5 The standard deviation of the Billing Period Metered Demand ($QMBSD_{pg}$) ~~for Participant p in respect of its Supplier Units v for all Sample Undefined Exposure Periods ω in the Historical Assessment Period to be applied for Undefined Exposure Period g~~ shall be calculated by the Market Operator separately for each Participant p in respect of:

(a) any of its Supplier Units, v, that is a Trading Site Supplier Unit which is registered as part of an Autoproducer Site in accordance with B.9.4 and B.9.1.2, or a Trading Site Supplier Unit which is registered as part of a

Trading Site which contains a Demand Side Unit in accordance with B.9.5.4; and

~~(f)~~(b) all other Supplier Units, v,

for all Sample Undefined Exposure Periods ω in the Historical Assessment Period to be applied for the Undefined Exposure Period g as follows:

$$QMBSD_{pg} = \sqrt{\frac{BPHAP_g \times \sum_{\omega=1}^{\omega=BPHAP_g}\left(QMB_{pg\omega}\right)^2 - \left(\sum_{\omega=1}^{\omega=BPHAP_g} QMB_{pg\omega}\right)^2}{BPHAP_g \times \left(BPHAP_g - 1\right)}}$$

where:

~~(g)~~(c) $BPHAP_g$ is the number of Sample Undefined Exposure Periods in the Historical Assessment Period that will be used in the summation of the Billing Period payments and charges for the relevant Undefined Exposure Period g;

~~(h)~~(d) $QMB_{pg\omega}$ is the Billing Period Metered Demand for Participant p in respect of its Supplier Units, v, for each Sample Undefined Exposure Period ω in the Historical Assessment Period for the Undefined Exposure Period g ; and

~~(i)~~(e) $\sum_{\omega=1}^{\omega=BPHAP_g}$ is the sum over all the Billing Period Metered Demand values for the Sample Undefined Exposure Periods ω.

G.14.7.6 The Billing Period Undefined Potential Exposure Quantity ($QUPEB_{pg}$) ~~to be applied for Participant p in respect of its Supplier Units for the Undefined Exposure Period g~~ shall be calculated by the Market operator separately for each Participant p in respect of

~~(j)~~(a) any of its Supplier Unit, v, that is a Trading Site Supplier Unit which is registered as part of an Autoproducer Site in accordance with B.9.4 and B.9.1.2, or a Trading Site Supplier Unit which is registered as part of a Trading Site which contains a Demand Side Unit in accordance with B.9.5.4; and

~~(k)~~(b) all other Supplier Units, v,

to be applied for the Undefined Exposure Period g as follows:

If $QMBM_{pg} \geq 0$ *then*

$$QUPEB_{pg} = QMBM_{pg} + AnPP\left(QMBSD_{pg}\right)$$

Else

$$QUPEB_{pg} = QMBM_{pg} - AnPP\left(QMBSD_{pg}\right)$$

where:

~~(l)~~(c) $QMBM_{pg}$ is the mean of the Billing Period Metered Demand for Participant p in respect of its Supplier Units, v, for all Sample Undefined Exposure Periods ω in the Historical Assessment Period to be applied for the Undefined Exposure Period g as calculated in accordance with paragraph G.14.7.3A;

~~(m)~~(d) AnPP is the Analysis Percentile Parameter applicable for Undefined Exposure Period g; and

~~(n)~~(e) $QMBSD_{pg}$ is the standard deviation of the Billing Period Metered Demand for Participant p in respect of its Supplier Units, v, for all Sample Undefined Exposure Periods ω in the Historical Assessment Period to be applied for Undefined Exposure Period, g, as calculated in accordance with paragraph G.14.7.5.

~~F.14.7.4~~G.14.7.7 The Market Operator shall calculate the exposure for Trading Charges for the Undefined Exposure Period g for a Standard Participant p in respect of any of its Supplier Units, v, that is not a Trading Site Supplier Unit which is registered as part of an Autoproducer Site in accordance with B.9.4 and B.9.1.2, or a Trading Site Supplier Unit which is registered as part of a Trading Site which contains a Demand Side Unit in accordance with B.9.5.4 ($EUPES_{pg}$), in accordance with the following formula:

$$EUPES_{pg} = CCAP_g \times QUPEB_{pg}$$

where:

(a) $CCAP_g$ is the Combined Credit Assessment Price for the Undefined Exposure Period g calculated in accordance with G.14.2.6; and

(b) $QUPEB_{pg}$ is the Billing Period Undefined Potential Exposure Quantity for the Undefined Exposure Period g, as calculated in accordance with paragraph G.14.7.6.

~~F.14.8~~G.14.8 Calculations in respect of Capacity Charges

~~F.14.8.1~~G.14.8.1 A Standard Participant's Exposure in respect of its Capacity Charges for its Supplier Units, v, ($EUPECC_{pg}$) for Undefined Exposure Period g shall be calculated by the Market Operator as follows:

$$EUPECC_{pg} = \sum_{\gamma\ in\ g} \sum_{\Omega} CCP_{\Omega\gamma} \times \frac{-QUPEB_{pg}}{(\sum_p QUPEB_{pg} + \sum_p \sum_{\gamma\ in\ g} VCAS_{p\gamma})}$$

where:

(a) $CCP_{\Omega\gamma}$ is the Capacity Payment for Capacity Market Unit Ω in Imbalance Settlement Period γ calculated in accordance with section F.17;

(b) $QUPEB_{pg}$ is the total Billing Period Undefined Potential Exposure Quantity for Participant p in respect of all its Supplier Units v in Undefined Exposure

Period g calculated in accordance with paragraph G.14.7.6, including for each Participant p in respect of:

(i) any of its Supplier Unit, v, that is a Trading Site Supplier Unit which is registered as part of an Autoproducer Site in accordance with B.9.4 and B.9.1.2, or a Trading Site Supplier Unit which is registered as part of a Trading Site which contains a Demand Side Unit in accordance with B.9.5.4; and

(ii) all other Supplier Units, v;

~~(b)~~(c) $VCAS_{p\gamma}$ is the Credit Assessment Volume for each New or Adjusted Participant in respect of its Supplier Units for the Imbalance Settlement Periods γ;

~~(c)~~(d) $\sum_{\gamma\ in\ g}$ is the summation across all Imbalance Settlement Periods γ in Undefined Exposure Period g;

~~(d)~~(e) $\sum_{\Omega}$ is the summation across all Capacity Market Units Ω; and

~~(e)~~(f) $\sum_{p}$ is the summation across all Participants p.

~~F.14.9~~G.14.9 **Calculations for the Undefined Exposure Period for a Standard Participant in respect of its Generator Units**

~~F.14.9.1~~G.14.9.1 The Market Operator shall procure that, where the Participant is a Standard Participant, the Participant's Undefined Potential Exposure in respect of its Generator Units will be calculated in accordance with the provisions paragraph G.14.10.

~~F.14.10~~G.14.10 **Calculations in respect of Billing Period Payments**

~~F.14.10.1~~G.14.10.1 The Billing Period Cashflow ($CUB_{pg\omega}$) for Standard Participant p in respect of its Generator Units, u, and any of its Supplier Unit, v, that is a Trading Site Supplier Unit which is registered as part of an Autoproducer Site in accordance with B.9.4 and B.9.1.2, or a Trading Site Supplier Unit which is registered as part of a Trading Site which contains a Demand Side Unit in accordance with B.9.5.4 for each Sample Undefined Exposure Period ω in the Historical Assessment Period H to be applied for the Undefined Exposure Period g shall be calculated by the Market Operator as follows:

$$for\ each\ Sample\ Undefined\ Exposure\ Period\ in\ the\ Historical\ Assessment\ Period\ defined\ by\ BPHAP_g$$

$$CUB_{pg\omega} = \sum_{d\ in\ \omega}\left(\sum_{u\ in\ p} CDAY_{ud} + \sum_{\Omega\ in\ p} CDAY_{\Omega d} + \sum_{v\ in\ p} CDAY_{vd}\right)$$

where:

(a) $CDAY_{ud}$ is the Total Daily Amounts on Generator Unit, u, for Settlement Day d, as calculated in accordance with section **Error! Reference source not found.**;

(b) $CDAY_{\Omega d}$ is the Total Daily Amounts on Capacity Market Unit Ω for Settlement Day d, as calculated in accordance with section **Error! Reference source not found.**;

(c) CDAYvd is the total Daily Amounts on Supplier Unit, v, which is a Trading Site Supplier Unit registered on a Trading Site that contains either an Autoproducer Unit or a Demand Side Unit for Settlement Day d, as calculated in accordance with section G.5.6.1;

~~(c)~~(d) $\sum_{d\ in\ \omega}$ is a summation over all Settlement Days d in each Sample Undefined Exposure Period ω;

~~(d)~~(e) $\sum_{u\ in\ p}$ is a summation over all Generator Units registered in respect of Participant p; ~~and~~

~~(e)~~(f) $\sum_{\Omega\ in\ p}$ is a summation over all Capacity Market Units registered in respect of Participant p; and

(g) $\sum_{v\ in\ p}$ is a summation over all Trading Site Supplier Units registered in respect of Participant p as part of Autoproducer Sites or as part of Trading Sites which contain a Demand Side Unit.

~~F.14.10.2~~G.14.10.2 The mean of the Billing Period Cashflow ($CUBM_{pg}$) for Standard Participant p in respect of its Generator Units, u, and any of its Supplier Unit, v, that is a Trading Site Supplier Unit which is registered as part of an Autoproducer Site in accordance with B.9.4 and B.9.1.2, or a Trading Site Supplier Unit which is registered as part of a Trading Site which contains a Demand Side Unit in accordance with B.9.5.4 for all Sample Undefined Exposure Periods ω in the Historical Assessment Period to be applied for the Undefined Exposure Period g shall be calculated by the Market Operator as follows:

$$CUBM_{pg} = \frac{\sum_{\omega=1}^{\omega=BPHAP_g} CUB_{pg\omega}}{BPHAP_g}$$

where:

(a) $BPHAP_g$ is the number of Sample Undefined Exposure Periods in the Historical Assessment Period that is to be used in the summation of the Billing Period payment and charges for the Undefined Exposure Period g as calculated in accordance with paragraph G.14.7.2;

(b) $CUB_{pg\omega}$ is the Billing Period Cashflow for Participant p in respect of its Generator Units for each Sample Undefined Exposure Period ω in the Historical Assessment Period to be applied for the Undefined Exposure Period g, as calculated in accordance with paragraph G.14.10.1; and

(c) $\sum_{\omega=1}^{\omega=BPHAP_g}$ is the sum across all the Sample Undefined Exposure Periods ω.

~~F.14.10.3~~G.14.10.3 The standard deviation of the Billing Period Cashflow ($CUBSD_{pg}$) for Participant, p, in respect of its Generator Units, u, and any of its Supplier Unit, v, that is a Trading Site Supplier Unit which is registered as part of an Autoproducer Site in accordance with B.9.4 and B.9.1.2, or a Trading Site Supplier Unit which is registered as part of a Trading Site which contains a Demand Side Unit in accordance with B.9.5.4 for all Sample Undefined Exposure Periods ω in the Historical Assessment Period to be applied for the Undefined Exposure Period g shall be calculated by the Market Operator as follows:

$$CUBSD_{pg} = \sqrt{\frac{BPHAP_g \times \sum_{\omega=1}^{\omega=BPHAP_g}(CUB_{pg\omega})^2 - \left(\sum_{\omega=1}^{\omega=BPHAP_g} CUB_{pg\omega}\right)^2}{BPHAP_g \times (BPHAP_g - 1)}}$$

where:

(a) $BPHAP_g$ is the number of the Sample Undefined Exposure Periods in the Historical Assessment Period that is to be used in the summation of the Billing Period payments and charges for the Undefined Exposure Period g as calculated in accordance with paragraph G.14.7.2;

(b) $CUB_{pg\omega}$ is the Billing Period Cashflow for Participant p in respect of its Generator Units for each Sample Undefined Exposure Period ω in the Historical Assessment Period to be applied for the Undefined Exposure Period g, as calculated in accordance with paragraph G.14.10.1; and

(c) $\sum_{\omega=1}^{\omega=BPHAP_g}$ is the sum across all the Sample Undefined Exposure Periods ω.

~~F.14.10.4~~G.14.10.4 The Billing Period Undefined Potential Exposure for Trading Payments ($EUPEG_{pg}$) for Undefined Exposure Period g for Standard Participant, p, in respect of its Generator Units, u, and any of its Supplier Unit, v, that is a Trading Site Supplier Unit which is registered as part of an Autoproducer Site in accordance with B.9.4 and B.9.1.2, or a Trading Site Supplier Unit which is registered as part of a Trading Site which contains a Demand Side Unit in accordance with B.9.5.4 shall be calculated by the Market Operator as follows:

If $CUBM_{pg} \geq 0$ *then*

$$EUPEG_{pg} = CUBM_{pg} + AnPP(CUBSD_{pg})$$

Else

$$EUPEG_{pg} = CUBM_{pg} - AnPP(CUBSD_{pg})$$

where:

(a) $CUBM_{pg}$ is the mean of the Billing Period Cashflow for Participant p in respect of its Generator Units for all Sample Undefined Exposure Periods ω in the Historical Assessment Period to be applied for the Undefined Exposure Period g, as calculated in accordance with paragraph G.14.10.2;

(b) AnPP is the Analysis Percentile Parameter applicable for Undefined Exposure Period g; and

(c) $CUBSD_{pg}$ is the standard deviation of the Billing Period Cashflow for Participant p in respect of its Generator Units for all Sample Undefined Exposure Periods ω in the Historical Assessment Period to be applied for the Undefined Exposure Period g, as calculated in accordance with paragraph G.14.10.3.

~~F.14.11~~G.14.11 **Calculations for the Undefined Exposure Period for a Standard Participant in respect of its Assetless Units**

~~F.14.11.1~~G.14.11.1 The Market Operator shall procure that, where the Participant is a Standard Participant, the Participant's Undefined Exposure in respect of its Assetless Units will be calculated according to the procedures set out in section G.14.12.

~~F.14.12~~G.14.12 **Calculations in respect of Billing Period Payments**

~~F.14.12.1~~G.14.12.1 The Billing Period Cashflow ($CUB_{pg\omega}$) for Participant p in respect of its Assetless Units for each Sample Undefined Exposure Period ω in the Historical Assessment Period to be applied for the Undefined Exposure Period g shall be calculated by the Market Operator as follows:

$$\text{for each Sample Undefined Exposure Period in the Historical Assessment Period defined by } BPHAP_g$$

$$CUB_{pg\omega} = \sum_{d\ in\ \omega} \sum_{u\ in\ p} CDAY_{ud}$$

where:

(a) $CDAY_{ud}$ is the Total Daily Amounts on Assetless Unit u for Settlement Day d, as calculated in accordance with section **Error! Reference source not found.**;

(b) $\sum_{d\ in\ \omega}$ is a summation over all Settlement Days d in each Sample Undefined Exposure Period ω; and

(c) $\sum_{u\ in\ p}$ is a summation over all Assetless Units registered in respect of Participant p.

~~F.14.12.2~~G.14.12.2 The mean of Billing Period Cashflow ($CUBM_{pg}$) for Participant p in respect of its Assetless Units for all Sample Undefined Exposure Periods ω in the Historical Assessment Period to be applied for the Undefined Exposure Period g shall be calculated by the Market Operator as follows:

$$CUBM_{pg} = \frac{\sum_{\omega=1}^{\omega=BPHAP_g} CUB_{pg\omega}}{BPHAP_g}$$

where:

(a) $BPHAP_g$ is the number of Sample Undefined Exposure Periods in the Historical Assessment Period that is to be used in the summation of the Billing Period payment and charges for the Undefined Exposure Period g as calculated in accordance with paragraph G.14.7.2;

(b) $CUB_{pg\omega}$ is the Billing Period Cashflow for Participant p in respect of its Assetless Units for each Sample Undefined Exposure Period ω in the Historical Assessment Period to be applied for the Undefined Exposure Period g, as calculated in accordance with paragraph G.14.12.1; and

(c) $\sum_{\omega=1}^{\omega=BPHAP_g}$ is the sum across all the Sample Undefined Exposure Periods ω.

~~F.14.12.3~~G.14.12.3 The standard deviation of the Billing Period Cashflow ($CUBSD_{pg}$) for Participant p in respect of its Assetless Units for all Sample Undefined Exposure Periods ω in the Historical Assessment Period to be applied for the Undefined Exposure Period g shall be calculated by the Market Operator as follows:

$$CUBSD_{pg} = \sqrt{\frac{BPHAP_g \times \sum_{\omega=1}^{\omega=BPHAP_g}\left(CUB_{pg\omega}\right)^2 - \left(\sum_{\omega=1}^{\omega=BPHAP_g} CUB_{pg\omega}\right)^2}{BPHAP_g \times \left(BPHAP_g - 1\right)}}$$

where:

(a) $BPHAP_g$ is the number of Sample Undefined Exposure Periods in the Historical Assessment Period that is to be used in the summation of the Billing Period payments and charges for the Undefined Exposure Period g as calculated in accordance with paragraph G.14.7.2;

(b) $CUB_{pg\omega}$ is the Billing Period Cashflow for Participant p in respect of its Assetless Units for each Sample Undefined Exposure Period ω in the Historical Assessment Period to be applied for the Undefined Exposure Period g, as calculated in accordance with paragraph G.14.12.1; and

(c) $\sum_{\omega=1}^{\omega=BPHAP_g}$ is the sum over all the Sample Undefined Exposure Periods ω.

~~F.14.12.4~~G.14.12.4 The Billing Period Undefined Potential Exposure ($EUPEG_{pg}$) for Undefined Exposure Period g for Participant p in respect of its Assetless Units shall be calculated as follows:

If $CUBM_{pg} \geq 0$ *then*

$$EUPEG_{pg} = CUBM_{pg} + AnPP\left(CUBSD_{pg}\right)$$

Else

$$EUPEG_{pg} = CUBM_{pg} - AnPP\left(CUBSD_{pg}\right)$$

where:

(a) $CUBM_{pg}$ is the mean of the Billing Period Cashflow for Participant p in respect of its Assetless Units for all Sample Undefined Exposure Periods ω in the Historical Assessment Period to be applied for the Undefined Exposure Period g, as calculated in accordance with paragraph G.14.12.2;

(b) AnPP is the Analysis Percentile Parameter applicable for Undefined Exposure Period g; and

(c) $CUBSD_{pg}$ is the standard deviation of the Billing Period Cashflow for Participant p in respect of its Generator Units for all Sample Undefined Exposure Periods ω in the Historical Assessment Period to be applied for the Undefined Exposure Period g, as calculated in accordance with paragraph G.14.12.3.

~~F.14.13~~G.14.13 **Calculations in respect of Traded Not Delivered Exposure for Participants**

~~F.14.13.1~~G.14.13.1 A Participant's Traded Not Delivered Exposure in respect of its Generator Units u, Assetless Units u and Supplier Units v ($ETND_{pg}$) for Undefined Exposure Period g shall be calculated by the Market Operator as follows:

$$ETND_{pg} = \left(\sum_{u\,in\,p}\sum_{h\,in\,g}\left(\sum_{x} qTDA_{xuh} \times Min(DTDA_x, DISP) + \sum_{x} qTID_{xuh} \times Min(DTID_x, DISP)\right) \times PCA_g\right) + \left(\sum_{v\,in\,p}\sum_{h\,in\,g}\left(\sum_{x} qTDA_{xvh} \times Min(DTDA_x, DISP) + \sum_{x} qTID_{xvh} \times Min(DTID_x, DISP)\right) \times PCA_g\right) \times -1$$

where:

(a) $qTDA_{xuh}$ is the Day-ahead Trade Quantity in respect of Generator Unit u (including Assetless Units) for Day-ahead Trading Period h for Trade x;

(b) $qTID_{xuh}$ is the Intraday Trade Quantity in respect of Generator Unit u (including Assetless Units) for Intraday Trading Period h for Trade x;

(c) $qTDA_{xvh}$ is the Day-ahead Trade Quantity in respect of Supplier Unit v for Day-ahead Trading Period h for Trade x;

(d) $qTID_{xvh}$ is the Intraday Trade Quantity in respect of Supplier Unit v for Intraday Trading Period h for Trade x;

(e) DISP is the Imbalance Settlement Period Duration;

(f) $DTDA_x$ is the Day-ahead Trade Duration of Trade, x;

(g) $DTID_x$ is the Intraday Trade Duration of Trade, x;

(h) PCA_g is the Credit Assessment Price for credit assessment for Undefined Exposure Period g;

(i) $\sum_{x}$ is the summation across all Trades, x;

(j) $\sum_{u\ in\ p}$ is the summation across all units u in respect of Participant p;

(k) $\sum_{v\ in\ p}$ is the summation across all units v in respect of Participant p; and

(l) $\sum_{h\ in\ g}$ is the summation across all Trading Periods h in Undefined Exposure Period g.

~~F.14.14~~G.14.14 **Calculations in respect of Capacity Payments**

~~F.14.14.1~~G.14.14.1 The Undefined Exposure for Participant p in respect of its Capacity Payments for its Capacity Market Units ($EUPECP_{pg}$) to be applied for the Undefined Exposure Period g shall be calculated by the Market Operator as follows:

$$EUPECP_{pg} = \sum_{\gamma\ in\ g} \sum_{\Omega\ in\ p} CCP_{\Omega\gamma}$$

where:

(a) $CCP_{\Omega\gamma}$ is the Capacity Payment for Capacity Market Unit Ω in Imbalance Settlement Period γ calculated in accordance with section F.17;

(b) $\sum_{\Omega\ in\ p}$ is the summation across all Capacity Market Units Ω in respect of Participant p; and

(c) $\sum_{\gamma\ in\ g}$ is the summation across all Imbalance Settlement Periods in Undefined Exposure Period g.

~~F.14.15~~G.14.15 **Calculation of Forecast Amounts of Settlement Reallocations Agreements**

~~F.14.15.1~~G.14.15.1 The Market Operator shall procure that, where a Participant is a party to a Settlement Reallocation Agreement, the Participant's available amount with respect to that Settlement Reallocation Agreement as it applies across the Settlement Risk Period will be calculated according to the procedures set out in the following paragraph G.14.15.2.

~~F.14.15.2~~G.14.15.2 The Market Operator shall procure that the Forecast Amount Available for Settlement Reallocation Agreements ($FAVRA_{apr}$) that apply to a Participant for Settlement Reallocation Agreement a that falls within Settlement Risk Period r shall be calculated as follows:

$$FAVRA_{apr} = FCR_{py} + EA_{pr} + ETND_{pg} + EUPES_{pg} + EUPEG_{pg} + EUPECC_{pg} + EUPECP_{pg}$$

where:

(a) FCR_{py} is the Fixed Credit Requirement for Participant p in Year y, as determined in accordance with paragraph **Error! Reference source not found.**;

(b) EA_{pr} is the Actual Exposure in respect of actual liabilities for participant p across Settlement Risk Period r as calculated in accordance with paragraph **Error! Reference source not found.**;

(c) $ETND_{pg}$ is the Traded Not Delivered Exposure for Participant p in Undefined Exposure Period g as calculated in accordance with section G.14.13;

(d) $EUPES_{pg}$ is the exposure for Trading Charges for Undefined Exposure Period g for Participant p in respect of its Supplier Units as calculated in accordance with paragraph G.14.7.7;

(e) $EUPEG_{pg}$ is the Billing Period Undefined Potential Exposure for Trading Payments for Undefined Exposure Period g for Participant p in respect of its Generator Units and Assetless Units as calculated in accordance with paragraph G.14.10.4;

(f) $EUPECC_{pg}$ is the exposure in respect of its Capacity Charges for Undefined Exposure Period g for Participant p in respect of its Supplier Units as calculated in accordance with paragraph G.14.8.1; and

(g) $EUPECP_{pg}$ is the Undefined Exposure in respect of its Capacity Payments for Undefined Exposure Period g for Participant p in respect of its Capacity Market Units as calculated in accordance with paragraph G.14.14.1.

~~F.14.15.3~~G.14.15.3 The Market Operator shall procure that, where a Participant is a party to a Settlement Reallocation Agreement and the SRA Start Date and/or the SRA End Date of that agreement fall within Settlement Risk Period r, the Participant's available amount with respect to that Settlement Reallocation Agreement as it applies across the Settlement Risk Period will be calculated according to the procedures set out in the following paragraphs G.14.15.4 through to G.14.15.8.

~~F.14.15.4~~G.14.15.4 For each Settlement Document that will include calculated amounts of Trading Payments and Trading Charges associated with any Settlement Reallocation Agreement a, in Settlement Risk Period r, determine the Energy Credit, EC_BILIMB_{apr}, relating to Settlement Days for which Settlement Statements have issued in accordance with paragraphs G.2.5.1(a) or G.2.5.1(b) for each Secondary Participant for each Settlement Reallocation Agreement a as follows:

$$EC\_BILIMB_{apr} = \sum_{b\ in\ a}\left(\sum_{v\ in\ p}\sum_{d\ in\ b} CDAY_{vd} + \sum_{u\ in\ p}\sum_{d\ in\ b} CDAY_{ud} + \sum_{\Omega\ in\ p}\sum_{d\ in\ b} CDAY_{\Omega d} + \sum_{u\ in\ p}\sum_{b} CFC_{ub}\right)$$

where:

(a) $CDAY_{vd}$ is the Total Daily Amounts for Supplier Unit v for Settlement Day d calculated in accordance with paragraph **Error! Reference source not found.**;

(b) $CDAY_{ud}$ is the Total Daily Amounts for Generator Unit u for Settlement Day d calculated in accordance with paragraph **Error! Reference source not found.**;

(c) $CDAY_{\Omega d}$ is the Total Daily Amounts for Capacity Market Unit Ω for Settlement Day d calculated in accordance with paragraph **Error! Reference source not found.**;

(d) CFC_{ub} is the Fixed Cost Payment or Charge for Generator Unit u calculated for the Billing Period calculated in accordance with section F.11;

(e) $\sum_{v\ in\ p}$ is the summation across all Supplier Units v registered in respect of Participant p;

(f) $\sum_{u\ in\ p}$ is the summation across all Generator Units u registered in respect of Participant p;

(g) $\sum_{\Omega\ in\ p}$ is the summation across all Capacity Market Unit Ω registered in respect of Participant p;

(h) $\sum_{d\ in\ b}$ is the summation across all Settlement Days d in Billing Period b; and

(i) $\sum_{b\ in\ a}$ is the summation across all Billing Periods b related to Settlement Reallocation Agreement a.

~~F.14.15.5~~G.14.15.5 For each Settlement Document that will include calculated amounts of Capacity Payments and Capacity Charges associated with any Settlement Reallocation Agreement a, in Settlement Risk Period r, determine the Capacity Credit, CC_BILCAP_{apr}, relating to Settlement Days for which Settlement Statements have issued in accordance with paragraphs G.2.5.2(a) or G.2.5.2(b) for each Secondary Participant for each Settlement Reallocation Agreement a as follows:

$$CC\_BILCAP_{apr} = \sum_{b\ in\ a} \left(\sum_{v\ in\ p} \sum_{\gamma\ in\ b} CCC_{v\gamma} + \sum_{\Omega\ in\ p} \sum_{\gamma\ in\ b} CCP_{\Omega\gamma} \right)$$

where:

(a) $CCP_{\Omega\gamma}$ is the Capacity Payment for a Capacity Market Unit Ω Imbalance Settlement Periods γ calculated in accordance with section F.17;

(b) $CCC_{v\gamma}$ is the Capacity Charge for a Supplier Unit v in Imbalance Settlement Periods γ calculated in accordance with section F.19;

(c) $\sum_{v\ in\ p}$ is the summation across all Supplier Units v registered in respect of Participant p;

(d) $\sum_{u\ in\ p}$ is the summation across all Generator Units u registered in respect of Participant p;

(e) $\sum_{\Omega \ in \ p}$ is the summation across all Capacity Market Unit Ω registered in respect of Participant p;

(f) $\sum_{\gamma \ in \ b}$ is the summation all Imbalance Settlement Periods γ in Billing Period b; and

(g) $\sum_{b \ in \ a}$ is the summation across all Billing Periods b related to Settlement Reallocation Agreement a.

~~F.14.15.6~~G.14.15.6 For each Settlement Document that will include calculated amounts of Trading Payments and Trading Charges associated with any Settlement Reallocation Agreement a, in Settlement Risk Period r, determine Energy Credit, EC_UNBIMB_{apr}, relating to Settlement Days for which Settlement Statements have not issued in accordance with paragraphs G.2.5.1(a) or G.2.5.1(b) for each Secondary Participant for each Settlement Reallocation Agreement a as follows:

$$EC\_UNBIMB_{apr} = \left(\left(EUPES_{pg} + EUPEG_{pg} \right) \times \frac{DUNBIMB_a}{UEPBD_g} \right) + \sum_{b \ in \ a} \sum_{d \ in \ b} ETND_{pg}$$

where:

(a) $EUPES_{pg}$ is the exposure for Trading Charges for Undefined Exposure Period g for Participant p in respect of its Supplier Units, v, as calculated in accordance with paragraph G.14.3.2 ~~or paragraph~~ **Error! Reference source not found.** ~~-~~or any of its Supplier Units, v, that is not a Trading Site Supplier Unit which is registered as part of an Autoproducer Site in accordance with B.9.4 and B.9.1.2, or a Trading Site Supplier Unit which is registered as part of a Trading Site which contains a Demand Side Unit in accordance with B.9.5.4, as calculated in~~or~~ paragraph G.14.7.7;

(b) $EUPEG_{pg}$ is the Billing Period Undefined Potential Exposure for Trading Payments for Undefined Exposure Period g for Participant p in respect of its Generator Units and Assetless Units, u, as calculated in accordance with paragraph G.14.4.2 or paragraph G.14.12.4~~, or paragraph G.14.6.1 or~~ plus any Trading Site Supplier Unit registered on a Trading Site that contains either an Autoproducer Unit or a Demand Side Unit calculated in accordance with paragraph G.14.10.4 ~~or paragraph G.14.12.4~~;

(c) $DUMBIMB_a$ is the number days of unbilled imbalance settlement in Undefined Exposure Period g for each Settlement Document associated with Settlement Reallocation Agreement a;

(d) $UEPBD_g$ is the number of days in the Undefined Exposure Period g;

(e) $ETND_{pg}$ is the Traded Not Delivered Exposure for Participant p in Undefined Exposure Period g, as calculated in accordance with section G.14.13;

(f) $\sum_{d \ in \ b}$ is the summation across all Settlement Days d in Billing Period b; and

(g) $\sum_{b \ in \ a}$ is the summation across all Billing Periods b related to Settlement Reallocation Agreement a.

~~F.14.15.7~~G.14.15.7 For each Settlement Document that will include calculated amounts of Capacity Payments and Capacity Charges associated with any Settlement

Reallocation Agreement a, in Settlement Risk Period r, determine the Capacity Credit, CC_UNBCAP_{apr}, relating to Settlement Days for which Settlement Statements have not issued in accordance with paragraphs G.2.5.2(a) or G.2.5.2(b) for each Secondary Participant for each Settlement Reallocation Agreement a as follows:

$$CC\_UNBCAP_{apr} = (EUPECC_{pg} + EUPECP_{pg}) \times \frac{DUNBCAP_a}{UEPBD_g}$$

where:

(a) $EUPECC_{pg}$ is the exposure in respect of its Capacity Charges for Undefined Exposure Period g for Participant p in respect of its Supplier Units, v, as calculated in accordance with paragraph G.14.3.3 ~~or paragraph G.14.5.2~~ or paragraph G.14.8.1;

(b) $EUPECP_{pg}$ is the exposure in respect of its Capacity Payments for Undefined Exposure Period g for Participant p in respect of its Generator Units, as calculated in accordance with paragraph G.14.14;

(c) $DUNBCAP_a$ is the number days of unbilled Capacity settlement in Undefined Exposure Period g for each Settlement Document associated with Settlement Reallocation Agreement a; and

(d) $UEPBD_g$ is the number of days in the Undefined Exposure Period g.

~~F.14.15.8~~G.14.15.8 The Market Operator shall procure that the Forecast Amount Available for Settlement Reallocation Agreements ($FAVRA_{apr}$) for each Settlement Reallocation Agreement a, in Settlement Risk Period r, for each Participant p that is Secondary Participant to the agreement as follows:

$$FAVRA_{apr} = EC\_BILIMB_{apr} + CC\_BILCAP_{apr} + EC\_UNBIMB_{apr} + CC\_UNBCAP_{apr} + FCR_{py}$$

where:

(a) EC_BILIMB_{apr} is the Energy Credit relating to Settlement Days for which Settlement Statements have issued in accordance with paragraphs G.2.5.1(a) or G.2.5.1(b) for each Settlement Reallocation Agreement a for Secondary Participant, p;

(b) CC_BILCAP_{apr} is the Capacity Credit relating to Settlement Days for which Settlement Statements have issued in accordance with paragraphs G.2.5.2(a) or G.2.5.2(b) for each Settlement Reallocation Agreement a Secondary Participant, p;

(c) EC_UNBIMB_{apr} is the Energy Credit relating to Settlement Days for which Settlement Statements have not issued in accordance with paragraphs G.2.5.1(a) or G.2.5.1(b) for each Settlement Reallocation Agreement a Secondary Participant, p;

(d) CC_UNBCAP_{apr} is the Capacity Credit relating to Settlement Days for which Settlement Statements have not issued in accordance with paragraphs G.2.5.2(a) or G.2.5.2(b) for each Settlement Reallocation Agreement a Secondary Participant, p; and

(e) FCR_{py} is the Fixed Credit Requirement for Participant p in Year y, as determined in accordance with paragraph **Error! Reference source not found.** applied in respect of the Settlement Reallocation Agreement a where the SRA End Date is later than the end of Undefined Exposure Period g.

~~F.14.15.9~~G.14.15.9 The Market Operator shall procure that the Forecast Amount for Settlement Reallocation Agreement(s) ($FASRAS_{pr}$) for any Participant that is the Secondary Participant p to Settlement Reallocation Agreement(s), a, for Settlement Risk Period r shall be calculated as follows:

$$FASRAS_{pr} = \sum_{a\ in\ r} FAVRA_{apr}$$

where:

(a) $FAVRA_{apr}$ is the Forecast Amount available for Settlement Reallocation Agreements for Participant p in Settlement Risk Period r calculated in accordance with paragraph G.14.15.2 or paragraph G.14.15.8; and

(b) $\sum_{a\ in\ r}$ is the summation over all Settlement Reallocation Agreements a in Settlement Risk Period r.

~~F.14.15.10~~G.14.15.10 The Market Operator shall procure that the Forecast Amount of the Settlement Reallocation Agreement ($FASRAP_{apr}$) for any Participant that is the Principal Participant p to a Settlement Reallocation Agreement a shall be calculated as follows:

$$FASRAP_{apr} = FAVRA_{apr}$$

where:

(a) $FAVRA_{apr}$ is the Forecast Amount for Settlement Reallocation Agreements for each Secondary Participant p with which the Principal Participant has a Settlement Reallocation Agreement a in Settlement Risk Period r calculated in accordance with paragraph G.14.15.2 or paragraph G.14.15.8.

~~F.15~~G.15 CALCULATIONS OF REQUIRED CREDIT COVER FOR PARTICIPANTS

~~F.15.1.1~~G.15.1.1 The Market Operator shall procure that the Required Credit Cover (RCC_{pr}) for each Participant p in respect of the Settlement Risk Period r shall be calculated as follows:

$$RCC_{pr} = FCR_{py} + EA_{pr} + ETND_{pg} + EUPES_{pg} + EUPEG_{pg} + EUPECC_{pg} + EUPECP_{pg} - FASRAS_{pr} + \sum_{a\ in\ p} FASRAP_{apr}$$

where:

(a) FCR_{py} is the Fixed Credit Requirement for Participant p in year y;

(b) EA_{pr} is the Actual Exposure in respect of actual liabilities for Participant p across Settlement Risk Period r, as calculated in accordance with paragraph **Error! Reference source not found.**;

(c) $ETND_{pg}$ is the Traded Not Delivered Exposure for Participant p in Undefined Exposure Period g, as calculated in accordance with section G.14.13;

(d) $EUPES_{pg}$ is the exposure for Trading Charges for Undefined Exposure Period g for Participant p in respect of its Supplier Units, v, as calculated in accordance with paragraph G.14.3.2 ~~or paragraph G.14.5.1~~ plus any of its Supplier Units, v, that is not a Trading Site Supplier Unit which is registered as part of an Autoproducer Site in accordance with B.9.4 and B.9.1.2, or a Trading Site Supplier Unit which is registered as part of a Trading Site which contains a Demand Side Unit in accordance with B.9.5.4, as calculated in ~~or~~ paragraph G.14.7.7;

(e) $EUPEG_{pg}$ is the Billing Period Undefined Potential Exposure for Trading Payments for Undefined Exposure Period g for Participant p in respect of its Generator Units and Assetless Units, u, as calculated in accordance with paragraph G.14.4.2 or paragraph G.14.12.4, ~~or paragraph G.14.6.1~~ plus any Trading Site Supplier Unit registered on a Trading Site that contains either an Autoproducer Unit or a Demand Side Unit calculated in accordance with ~~or~~ paragraph G.14.10.4 ~~or paragraph G.14.12.4~~;

(f) $EUPECC_{pg}$ is the exposure in respect of its Capacity Charges for Undefined Exposure Period g for Participant p in respect of its Supplier Units, v, as calculated in accordance with paragraph G.14.3.3 ~~or paragraph G.14.5.2~~ or paragraph G.14.8.1;

(g) $EUPECP_{pg}$ is the exposure in respect of its Capacity Payments for Undefined Exposure Period g for Participant p in respect of its Generator Units, as calculated in accordance with paragraph G.14.14;

(h) $FASRAS_{pr}$ is the forecast amount of Settlement Reallocation Agreement(s) applicable for Secondary Participant p in Settlement Risk Period r, as calculated in accordance with paragraph G.14.15;

(i) $FASRAP_{apr}$ is the forecast amount of the Settlement Reallocation Agreement a applicable for Principal Participant p, as calculated in accordance with paragraph G.14.15; and

(j) $\sum_{a\ in\ p}$ is a summation overall Settlement Reallocation Agreements registered in respect of the Principal Participant p.

Changes to Glossary:

Variable	$EUPEG_{pg}$	Billing Period Undefined Potential Exposure for Trading Payments and Charges (Generators and Assetless)	The Exposure for Trading Payments and Charges for a Participant, p, in respect of its Generator Units and Assetless Units, u, for New and Adjusted Participants and in respect of its Generator Units, Assetless Units, u, and any Trading Site Supplier Unit, v, registered on a Trading Site that contains either an Autoproducer Unit or a Demand Side Unit for Standard Participants, for an Undefined Exposure Period, g, relating to potential credit exposure in respect of Trading Payments and Charges arising from undefined obligations which would be likely to have accrued before a Participant's Units could be Suspended from trading under the Code for payment default.	€
Variable	$EUPES_{pg}$	Billing Period Undefined Potential Exposure for Trading Payments and Charges (Suppliers)	The Exposure for Trading Payments and Charges for a Participant, p, in respect of any of its Supplier Units, v, that is not a Trading Site Supplier Unit which is registered on a Trading Site that contains either an Autoproducer Unit or a Demand Side Unit, for an Undefined Exposure Period, g, relating to potential credit exposure in respect of Trading Payments and Charges arising from undefined obligations which would be likely to have accrued before a	€

			Participant's Units could be Suspended from trading under the Code for payment default.	

Modification Proposal Justification *(Clearly state the reason for the Modification)*
The unique imbalance position of Trading Sites was recognised in the SEM Committee decision I-SEM ETA Markets (SEM-15-065) back in 2015 *"The principle of the existing treatment of trading sites will be retained in I-SEM. This will be progressed further through the implementation phase."* The current drafting of the Trading & Settlement Code Part B results in unnecessarily high credit cover requirements for Participants with units registered under an Autoproducer. This proposed modification corrects the determination of required credit cover, thereby reducing the required credit cover requirements for Participants in respect of their Autoproducer. The change proposed is in line with the intended design of this mechanism.
Code Objectives Furthered *(State the Code Objectives the Proposal furthers, see Section 1.3 of T&SC for Code Objectives)*
Code objectives taken from Section A.2.1.4 f. to facilitate the efficient, economic and coordinated operation, administration and development of the Single Electricity Market in a financially secure manner; g. to promote competition in the Single Electricity Market; h. to provide transparency in the operation of the Single Electricity Market; i. to ensure no undue discrimination between persons who are parties to the Code; and j. to promote the short-term and long-term interests of consumers of electricity on the island of Ireland with respect to price, quality, reliability, and security of supply of electricity. Code objectives furthered by this proposal: (f) Facilitates participation by removing unnecessarily and inappropriately burdensome credit requirements (g) promote competition by putting Autoproducers under the same credit assessment as other units in the market

(h) this proposal provide better transparency for autoproducers
(i) this proposal removes undue discrimination created following the removal on Netting Generator Units in the transition from part A to part B
(j) removal of the unfair treatment will allow generators remain independent and promote the short-term and long-term interests of consumers of electricity on the island of Ireland

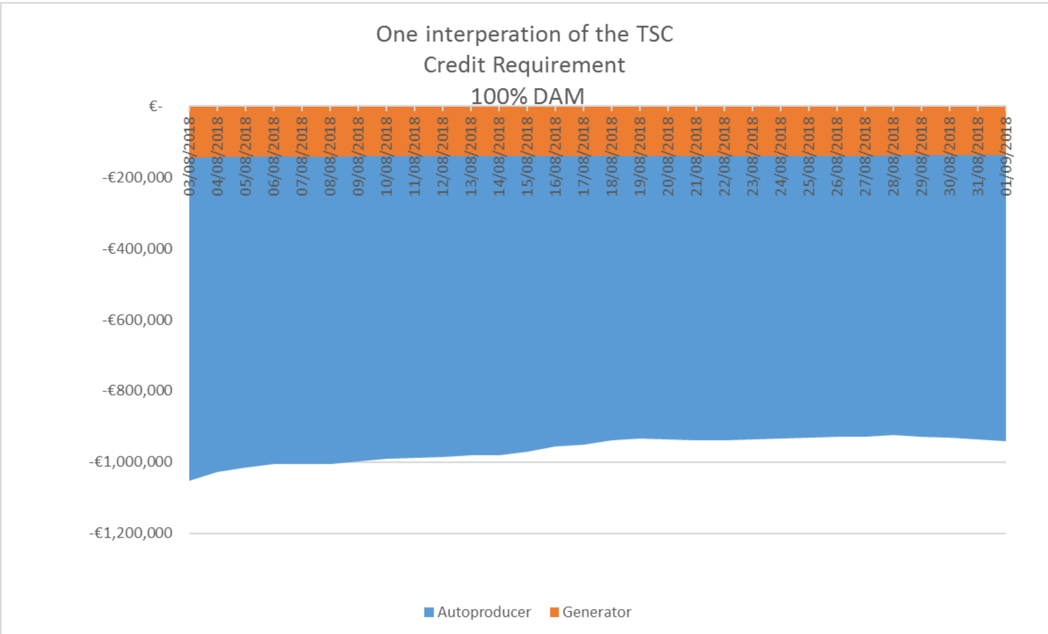
Implication of not implementing the Modification Proposal

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

The all island market has only one dispatchable Autoproducer that we know of. Aughinish exports baseload power 363 days a year. The high efficient CHP technology embedded in the alumina plant has for the last 12 years provided customers with the cheapest reliable power whilst at the same time reducing carbon emissions.

Failure to implement a remedy to the credit requirements:

- Would result in over collateralisation of the electricity market at the expense of one participant.
- Would result in irrational energy trading as Aughinish would be prevented from fully participating in the DAM and IDM.
- Would result in increased carbon emissions as high efficient CHP is substituted for less clean alternatives.
- Would jeopardise the 700 jobs on site in West Limerick. The alternative price of steam would be uncompetitive in a global alumina market.



Working Group *(State if Working Group considered necessary to develop proposal)*	**Impacts** *(Indicate the impacts on systems, resources, processes and/or procedures; also indicate impacts on any other Market Code such as Capacity Marker Code, Grid Code, Exchange Rules etc.)*
This Modification has already been discussed at a working group convened in Jan 2019 and no further working group meeting is required.	This Modification requires changes to the Market Systems which will need to be impacted by the vendor
Please return this form to Secretariat by email to modifications@sem-o.com	