Administered Scarcity Pricing

Decision Paper

SEM-25-029

23 June 2025

EXECUTIVE SUMMARY

In response to a review of the CRM undertaken by EY in 2022, where the review authors noted that the Administered Scarcity Pricing (ASP) mechanism has not been calibrated effectively to ensure increased price volatility at times of stress, the SEM Committee, in July 2023, opened a consultation on three proposed options to modify the Reserve Scarcity Price trigger so that it could better fulfil its intended objectives (SEM-23-047).

In total, 11 responses were received, with most respondents favouring no change to the existing mechanism. Where a preference was stated, respondents favoured Option 1, which proposed to adjust the definition of Short Term Reserve Quantity in the Trading and Settlement Code to comprise Replacement Reserve only. Under this option, the Operating Reserve Requirement quantity was proposed to remain at the operating reserve requirement for Tertiary Operating Reserve 2, which equates to 100% of the Largest Single Infeed. No respondent favoured the other two options presented in the paper.

Various viewpoints were expressed regarding the first option, including from the TSOs that it more accurately represents the original ASP design and that, under its current implementation, ASP cannot be triggered. Other respondents opposed the removal of Tertiary Operating Reserve 2 from the Short Term Reserve Quantity and argued that the contribution of interruptible load needs to be recognised. Others stated that any changes made as a result of this review should only apply to future Capacity Auctions/Years, and that consideration of the Celtic Interconnector must be taken into account.

Respondents also considered adoption of Options 2a and 2b to introduce locational signals and stated it would risk moving the SEM away from being an all-island market. Several respondents also made the argument that system issues and constraints are not the fault of the generators and urged the SEM Committee not to adopt either option.

After careful consideration of the feedback provided, the SEM Committee has decided that the first option set out in the consultation paper, with one minor adjustment, best addresses the issues identified through this review of ASP. Specifically, the definition

of Short Term Reserve Quantity will be amended to refer to available Replacement Reserves only. The DSU capacity in interruptible load will also continue to be counted in the Replacement Reserve calculation.

It is worth making clear that the objective of this review and decision has not been to seek more frequent triggering of ASP but rather to ensure the mechanism is functioning correctly and as envisioned in the market design; a correction which should allow triggering of ASP as intended, ensuring the price reflects the value of power in times of scarcity, when the market alone might not deliver a price signal reflecting scarcity. Following this review, the SEM Committee considers that the appropriate measure of scarcity is when the quantity of available Replacement Reserves falls below the Largest Single Infeed.

The Regulatory Authorities will now progress with the Trading and Settlement Code Modification process to give effect to this policy decision, which will involve further industry consultation.

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Glossary of Terms

Term	Meaning
ASP	Administered Scarcity Pricing
BESS	Battery Energy Storage System
CMC	Capacity Market Code
FASP	Full Administered Scarcity Price
IAIP	Initial Auction Information Pack
LSI	Largest Single Infeed
ORR	Operating Reserve Requirement
POR	Primary Operating Reserve
RA	Regulatory Authority
RO	Reliability Option
RR	Replacement Reserve
RSC	Reserve Scarcity Curve
RSP	Reserve Scarcity Price
SEM	Single Electricity Market
SOR	Secondary Operating Reserve
STR	Short Term Reserve
TOR	Tertiary Operating Reserve
TSC	Trading and Settlement Code
VoLL	Value of Lost Load

1. Introduction

In July 2023, the SEM Committee issued a consultation (SEM-23-047) inviting comments on three proposed options to modify the Reserve Scarcity Price (RSP) trigger in order to make it better fulfil its intended objectives. A total of 11 responses were received, of which one was marked as confidential. This paper gives an overview of the consultation proposals, a summary of the non-confidential responses received to the consultation, the SEM Committee's responses to the comments raised by respondents and the SEM Committee's decision on the issues consulted on.

2. Background

Administered Scarcity Pricing (ASP) was introduced to the SEM in October 2018 as part of the I-SEM project. The thinking behind the mechanism was set out over a number of the CRM Detailed Design Papers. In particular, in SEM-15-103, the SEM Committee outlined its view that, without ASP, prices would not rise sufficiently to reflect scarcity, and that ASP would promote system security, economic efficiency and demand response. The SEM Committee considered that a functioning ASP trigger in this regard provides incentives for the availability of units[1]. Since its introduction, however, ASP has never been triggered[2], despite adequacy concerns and multiple system alerts, including a small number of all-island alerts, which raises questions about whether the trigger is functioning as originally intended. Moreover, in a review of the CRM undertaken in 2022, the review authors, EY, expressed the view that:

"*The reliability option provides insufficient incentives for providers to be available. This is principally due to the failure of the administrative scarcity pricing mechanism to set high prices at times of stress, as well as most stress events occurring on a localised basis.*"

[1] Article 22 1 (e) of Regulation (EU) 2019/943 also sets out the obligation for capacity mechanism design to "*provide incentives for capacity providers to be available in times of expected system stress*".

[2] The existing triggers for ASP are set out in the Trading and Settlement Code (TSC). ASP encompasses both the Reserve Scarcity Price (RSP) and the Full Administered Scarcity Price (FASP). The two are interlinked as the price for FASP is 25% of VoLL, equating to the end point on the RSP curve, which is reached when reserves are equal to zero. The two are also linked as FASP is triggered when the conditions for RSP are met in addition to any of the Demand Control events listed in Section E.4.3.1(b) of the TSC.

Accordingly, in July 2023, the SEM Committee began the current review of ASP and opened a consultation to invite comments on three proposed options to modify the RSP trigger in order to make it better fulfil its intended objectives (SEM-23-047). These options are summarised in section 3 below.

In SEM-23-047, the SEM Committee specifically invited stakeholders to:

1. Comment on whether they had a preference between the three options, providing reasons for them; and

2. Offer any other views they held regarding the contents of the consultation paper, including any alternative proposal for the modification of the ASP mechanism that was not set out in the paper. If an alternative approach was proposed, clarity of the rationale and an explanation on why it would be preferable to either of the proposed options was sought.

SEM-23-047 also noted that given the three options aimed to address different issues identified with the existing RSP trigger, it may be appropriate to introduce a combination of these options. Therefore, the SEM Committee also welcomed the views of stakeholders in this regard.

3. Proposed Options to adjust the RSP trigger

3.1 Option 1 – Adjust the definition of qSTR in the TSC to comprise Replacement Reserve only

The SEM Committee viewed there to be a difference between reserve scarcity and energy adequacy scarcity, in that an electricity system suffering from a shortage of reserves may not necessarily also be suffering from energy adequacy scarcity, and vice versa.

This option proposed considering only Replacement Reserve in the Short Term Reserve Quantity (qSTR). The rationale for this approach was that it would place the focus of ASP on energy adequacy scarcity rather than reserve scarcity, considering that Primary Operating Reserve (POR) and Secondary Operating Reserve (SOR) are Frequency Containment Reserves and Tertiary Operating Reserve 1 (TOR1) and Tertiary Operating Reserve 2 (TOR2) are Frequency Restoration Reserves, with these reserves cumulatively covering the timeframes following an event of between 5

seconds and 20 minutes. In contrast, Replacement Reserve covers the period from 20 minutes to 4 hours. Therefore, the SEM Committee considered that the resources available in this category may provide a better measure of adequacy. Under Option 1, available capacity would not be considered more than once given that only Replacement Reserve would be included in qSTR, whereas currently capacity can be included in two or more reserve categories, which are added together for comparison with the reserve requirement. Under this option, interruptible load, which the SEM Committee understood to be composed primarily of batteries, was also not included in qSTR.

If this option were selected, and TOR2 were no longer considered in qSTR, the SEM Committee would consider retaining the Operating Reserve Requirement Quantity (qORR) at the level of 100% of the Largest Single Infeed (LSI), given that qORR is currently defined as the operating reserve requirement for TOR2, which equates to 100% of the LSI.

3.2 Option 2a – Amend the trigger to account for the impact of the North-South constraint

This option proposed that RSP would be triggered if qSTR falls below qORR on either side of the North-South constraint. Both values would be assessed on the basis of the reserves in each constrained area, meaning the LSI in the given constrained area would be considered in determining the qORR for that constrained area. With this option, reserve scarcity in one constrained area would trigger scarcity pricing in the market as a whole.

The second part of the trigger would require that the qSTR is less than or equal to the starting point on the Reserve Scarcity Price Curve. It was stated in SEM-23-047 that the SEM Committee did not consider that this value would necessarily need to change under this option, as assessing qORR on the basis of each constrained area would adequately ensure that once the LSI was satisfied in each area, RSP would not be triggered.

Overall, the SEM Committee considered that by adopting the approach outlined in Option 2a, the impact of the North-South constraint on the system would be better reflected in the ASP trigger.

3.3 Option 2b – Adjust the qORR to account for the impact of constraints across the system

SEM-23-047 noted that there are additional constraints across the island which may make it infeasible for some reserves, which appear to the market to be available, to respond to a shortage of reserves in another location. Recognising that, while Option 2a aimed to address one of these constraints in a targeted way, it is not possible to account in this same way for all individual constraints across the system.

Therefore, Option 2b proposed to account for the impact of constraints across the system by adding a multiplier to the qORR. If some of the reserves considered in qSTR are, in fact, unable to replenish depleted reserves in another location, it may be appropriate to inflate qORR to allow for this, in order to help ensure that qSTR can actually meet 100% of the LSI across the system. The SEM Committee conducted analysis and determined the appropriate multiplier to apply to qORR and proposed a value of 2 (i.e. adding 100% to the qORR). The SEM Committee considered that under this option, the multiplier could be made a parameter under the CMC or TSC to provide flexibility to revise this value if appropriate.

Under this option, the MW starting point of the RSP Curve may require alteration given that if qORR were inflated, this value would also need to be inflated to prevent it from serving as a barrier to ASP triggering if qSTR fell below qORR. This value is an "anticipated value" in the Initial Auction Information Packs (IAIPs).

4. Summary of Consultation Responses

4.1 Responses

The SEM Committee received a total of 11 responses, one of which was marked as confidential. The non-confidential responses summarised in this paper were from:

- Bord Gáis Energy (BGE)
- Bord na Móna (BnM)
- Demand Response Association of Ireland (DRAI)
- EirGrid plc and SONI Ltd (TSOs)
- Electricity Association of Ireland (EAI)
- Energia
- EP UK Investments (EPUKI)

- ESB Generation and Trading (ESB GT)
- PrePayPower
- SSE

4.2 Overview

The majority of respondents favoured no change to the existing ASP mechanism, citing various reasons for their view, which are summarised in the section below. Where a preference was stated, respondents favoured Option 1. No respondent favoured Option 2a or Option 2b.

4.3 Option 1

Eight of the ten non-confidential responses commented on Option 1.

BGE did not support Option 1 and stated that it should not be considered for implementation in its current form. It stated that it is "*inappropriate to exclude short-term reserves from the calculation of ASP*". It stated further that, if the option were to be progressed, it must be amended to reflect the contribution that interruptible load can make to reserves and short-term scarcity. BGE said that, in its view, there was "*merit in considering an application of a scalar to interruptible load to reflect the duration of reserves*", rather than excluding its contribution.

BnM considered Option 1 to be flawed in removing TOR2 from short-term reserve volumes, stating that it would create an "*apples comparing with oranges counter intuitive situation owing to the short term price signal being solely driven by the longer term Replacement Reserves*". In its view, removing interruptible load from qSTR would be inappropriate and, rather, the "*increasingly positive contribution from Interruptible load needs to be recognised dynamically within the qSTR volumes*".

The DRAI favoured Option 1 but stated that it should only be implemented for "*Capacity Years for which an auction has not been run*". It cited reasons such as the changing of risk profiles of capacity contracts, limited short-term benefit, increased cost to the consumer, historic under-procurement of capacity, a lack of secondary trading and overly risk-adverse System Operators as its motivations for favouring this option over the other two.

The TSOs supported Option 1 and were of the view that this option was a more "*accurate representation*" of the original ASP design rather than a change to it. In their view, this option would seek to "*better resolve the concerns raised with respect to TOR2 and Interruptible Load, triggering ASP when there are insufficient reserves available to the TSOs*". In the TSOs' view, Option 1 addressed its immediate concerns with respect to the current ASP calculation. The option, in the TSOs' view, also partly addressed "*concerns pertaining to the inclusion of battery storage reserve in Interruptible Load*" and "*models more accurately how ASP should have been reflected in the systems to date*".

The EAI said that Option 1 was not acceptable. It stated that if short-term reserve was removed from the ASP calculation, it would "*kill the market for short term flexible storage in the SEM because currently there are no other markets that these assets can participate in*". A suitable solution in the EAI's view could be to apply a scalar to this calculation that would not remove interruptible load but was based on duration of reserve as a sliding scale.

Energia considered Option 1 as the "*least-worst*" option but stated that it required modifications. In its view, rather than removing interruptible load from Replacement Reserve, using a scalar would "*better reflect the limitations of interruptible load, while at the same time recognising its contribution to reserve scarcity*". It stated that any such appropriate scalar "*should be determined through further consultation with participants and be accompanied by a transparent methodology*". It also stated that any changes should only be applied to future CRM auctions.

PrePayPower said that on balance it did not agree with any of the proposed options. However, it stated that if it had to choose, and on the basis that it "*best fits the original design intention of ASP and best reflects a signal designed to encourage All Island Generation adequacy*", PrePayPower favoured Option 1. It stated that "*careful consideration should be given if this option were to be chosen in the context of the Celtic Interconnector should it be configured in a way that would make it the largest infeed at a level in excess of 500 MW*".

SSE stated that if the intention of Option 1 is for the scarcity signal to encourage storage to enter the market, the proposal to remove short-term reserve from the qSTR is effectively "*killing the market*" for these assets. Furthermore, in SSE's view, Option

1 is ineffective for the problem it believed the SEMC may be seeking to resolve, that "*more scarcity events would trigger demand response, economic efficiency, and system security as well as investment signals*".

4.4 Option 2a and Option 2b

Nine of the ten non-confidential responses commented on Options 2a and 2b.

BGE said that Option 2a would create a "*market that has locational signals with uniform pricing*". It further said that, in its view, the system "*should not be operated to maintain jurisdictional reserve*" as this goes against the "*principle objective of the SEM to function as one market on an all-island basis*" and "*ASP being an all-island signal*". BGE was also of the view that it is unreasonable to "*unfairly penalise units on a system wide basis*" via Balancing Market payments "*due to a local constraint in one location which is outside of their control*". Regarding Option 2b, BGE said it was not in favour of this being implemented in the SEM. It said that, in its view, there is "*no sound basis for applying an arbitrary multiplier*" to qORR such that it "*helps ensure qSTR meets 100% of LSI across the system*". BGE stated that this approach *"only serves to reflect the size of the LSI which remains mostly static"* and *"does not consider other important variables such as seasonality which affects the system's ability to move reserves"*.

BnM said it was opposed to Option 2a and stated that, under this option, the proposal to trigger ASP for the whole island based on a jurisdictional shortage in either Ireland/Northern Ireland, relating to the LSI in that jurisdiction, and the splitting of signals between jurisdictions for a balancing price for the whole island is like "*comparing Apples and Oranges and is totally inappropriate*". It said that, in its view, the option also fails to recognise the new North-South Interconnector. BnM said also that it was opposed to Option 2b and stated that it is a "*random doubling of the qORR but without any supporting rationale for the quantum of the multiplier*", but "*is positive in recognising the limited scope of Option 2a*" and "*looks to be a progression from* [it]". It said a significant concern with this option is, however, that "*the 'doubling' quantum could be adjusted and used as a lever to generate any number of ASP Scarcity events, without rationale*".

The DRAI said that any changes to ASP must happen over a period of at least four years. It stated that, "*given the need for this longer timeline, matched with the expected*

completion of the North-South interconnector prior to 2027, Option 2a does not seem a viable option that would benefit the system in the long run". The DRAI said that it opposed Option 2b also. It said that "*without having insight into the SEM Committee's analysis, the proposed multiplier does not appear to accurately account for the locational issues experienced by the system*", and that "*a multiplier would not achieve the intended objective of ASP to improve the reliability of capacity*".

The EAI said both Option 2a and Option 2b were unacceptable for its members. It said that, in its view, these options would "*make scarcity more locational if targeted as part of the RSP*". It stated that the RSP is an "*all-island market signal and therefore should not be set in a way that could create locational effects*". It further stated that the approach for both options "*appear to be dangerously shoehorning how RSP would align to past system alerts that are based on system issues and less about capacity adequacy*".

Energia stated that Option 2a would lead to "*inefficient and illogical outcomes in the unconstrained SEM and should not be contemplated*". It stated that the "*frequency of ASP triggering would be even greater than historically modelled*" if there are "*particular security of supply concerns in the coming years either side of the border*". It said this would have significant negative consequences for all participants in the SEM, and ultimately on consumers. Similarly, Energia said it was of the view that Option 2b would lead to highly inefficient outcomes in the SEM and stated that this option should not be contemplated. It stated that the multiplier of two *"is arbitrary and seems excessively high, both of which are unacceptable in a calculation that will be used to set energy prices for generators and consumers across Ireland*". Energia also stated that Option 2b will "*quickly become dated*" if the constraints identified in the consultation "*are resolved as they are expected to be by the TSOs*".

EPUKI considered Option 2a to be completely inappropriate given that the impact of constraints in its view, is a "*direct result of the TSOs failing to deliver the North-South Interconnector in a timely manner*". It stated that "*it would be unacceptable for generators to be the ones expected to bear the responsibility of this delay through greater risk exposure under this optio*n". EPUKI stated that Option 2b presents similar issues to Option 2a, in that market participants will be exposed to Difference Charges at ASP "*due to the constraints which are entirely the responsibility of the TSO to*

manage and resolve". It stated further that "*there should be a stronger incentive on the TSO to develop the network and ensure security of supply in accordance with its statutory and regulatory obligations*".

ESB GT stated that both Option 2a and Option 2b appear to be a complete move away from the fundamental basis of the CRM being designed for an all-island market, and that they are effectively going in the opposite regulatory direction. It said that, in its view, "*the premise of the double trigger for ASP, and all the modifications raised on Non-Performance Difference Charges, is that if a unit couldn't solve the issue due to a transmission constraint it shouldn't be held to account*". ESB GT stated also that there is a risk of both options having "*the negative consequence of being so difficult to forecast and understand that market participants will not be able to respond to the signals*". It stated that if either option were implemented, "*the TSOs would need to materially increase the transparency on the transmission network managements at real time*".

SSE, referring to the North-South tie-line, stated that network infrastructure should not influence pricing in the energy market. It stated that the impact of the North-South tie-line "*could be addressed by other means but attributing it to a scarcity calculation is effectively suggesting that the energy market can solve network infrastructure issues*", which it stated is not the case. SSE said it considered Option 2b to "*further entrench constraints in the market*", and that, in its view, "*all effort should be to reduce and remove constraints*". It stated that system issues such as constraints being included as a trigger for scarcity would lead to all market participants facing punishing penalties when system limitations are outside of their control to remedy.

4.5 Other views

SEM-23-047 also invited respondents to provide other views they held regarding the contents of the consultation paper, including any alternative proposal for the modification of the ASP mechanism. If an alternative approach was being proposed, the consultation paper requested that a clearly set out rationale and explanation on why it would be preferable to either of the proposed options is provided.

BGE reiterated its position that it did not support the implementation of any option outlined in the paper. Firstly, it suggested that instead of "*arbitrarily altering the ASP*

to align with past system alerts", the RAs could consider an energy-only pricing stack to be pursued in the near term on an enduring basis and to compensate energy providers (including DSUs) if instructed not to run for system reasons. Secondly, it also suggested the RAs consider removing the concept of non-marginal flagging, which it described as "*a legacy from the old SEM days*". Thirdly, BGE suggested the RAs focus on taking measures that specifically target units with poor availability rather than taking broad measures that penalise units with existing high availability. Lastly, BGE proposed an interim solution that would see the TSO be obligated "*to take steps to trigger ASP before the TSO is permitted to dispatch TEG*"[3].

BnM said it did not support any of the options outlined in the paper. It stated that change is not required and that the existing market signals are already fully adequate to incentivise availability, including to "*avoid threat of very significant non-performance difference payments*". It considered the proposals in the consultation to be flawed for reasons including that the paper, in its view, omits to recognise future market designs as well as existing arrangements relating to the RO mechanism. BnM further stated that, without effective secondary trading or without the delivery of the full Scheduling and Dispatch workstream, any changes made would increase the risk to participants. It also considered it not to be the intention of EY's observation to prompt a consultation like SEM-23-047 without a full impact assessment.

The DRAI more generally stated that the issue of "*inadequate DSU incentives is one that needs to be addressed in the short-term*", and this begins with the enablement of energy payments, as proposed in Mod_02_23. It further stated that the role of interconnectors and its net contribution "*during times of system stress needs to be reviewed in conjunction with adjustments to the ASP mechanism*". It highlighted that interconnector de-rating factors "*have been fixed since the introduction of the I-SEM*", and argued that as such, "*have failed to account for their real contribution to the system in stress events*". The DRAI were also of the view that effective secondary trading is needed and that a lack of such a mechanism prevents participants from managing their risks.

[3] Temporary Emergency Generation.

The TSOs said they found two areas of concern on why ASP has not been triggered. The first area related to qSTR and its composition of both TOR2 and Replacement Reserve. According to the TSOs, typically "*a generator that can provide TOR2, can also provide Replacement Reserve*" and through their analysis the TSOs identified that the "*TOR2 contribution to qSTR is already accounted for within Replacement Reserve*". Where reserve is provided by a generator in both TOR2 and Replacement Reserve timeframes, the TSOs stated that it would be "*incorrect for both values to be aggregated into the qSTR total*", which may make it seem like "*more reserve is available than can be delivered, when needed*". It stated that the "*inclusion of TOR2, independently of Replacement Reserve, makes it unlikely that ASP would be invoked*". It viewed this as a "*significant contributing factor in the appearance of adequate reserves, in 'real world' periods of tight generation capacity*" and considered that this needed to be addressed.

The second area of concern for the TSOs related to interruptible load and how its dual use within the systems is "*having an unintended impact on the calculation of qSTR*". The TSOs stated that the "*battery storage portion of Interruptible Load is being added to both TOR2 and Replacement Reserve*" and, in their view, the availability of batteries to provide Replacement Reserve will be limited due to their "*inability to provide sustained generation capacity*". The "*additional counting of battery storage reserve also has the potential to affect the intended calculation of both Reserve Scarcity Pricing and the Full Administered Scarcity Pricing*", according to the TSOs, and the potential for impact has grown over time, due to the increased registration of battery storage technologies in the market.

The EAI, like other respondents, was of the view that adequate incentives for reliability already existed within the SEM, and that a change to the ASP mechanism was not needed. It explained how a limitation of exposure, even with the existence of Stop Loss Limits, was needed. The EAI also stated that there was a lack of consideration of regulatory risks and uncertainty associated with pricing at scarcity within the consultation and stated that, contrary to what the paper suggested, ASP does not act as an investment signal for non-RO holders. It stated this is due to the temporary nature of ASP, given it is a "*short-notice signal in a short-notice market*". It also stated that it is "*unconscionable to implement such exposure to scarcity when there are insufficient mechanisms for hedging of this risk*", like secondary trading.

Energia was of the view that significant incentives to be reliable and available already existed for generators in the SEM. While noting the difference between reserve scarcity and adequacy scarcity highlighted in the consultation, Energia stated that all evidence, including from the SOs, "*shows that the root cause of the adequacy scarcity issue is the failure to procure and deliver sufficient capacity to replace decommissioning plants and to meet growing demand*". It further stated that a change to the ASP mechanism may come with unintended consequences that could have a negative impact on generator reliability, security of supply and costs for consumers.

EPUKI said it considered load following factors to limit the ability of capacity holders to sell excess capacity to the market, which in turn, limits generators' ability to benefit from scarcity. It said, in its view, triggering ASP more often "*would represent a significant risk for generators, with little discernible upside*". In its view, a "*greater upside incentive would be to encourage demand response during periods where margins are tight*", according to EPUKI. Rather than changing the ASP, EPUKI requested that the SEM Committee review the Reliability Option Strike Price in the context of scarcity pricing and consider the impact it would have on security of supply in the medium and long-term. EPUKI also stated that any changes to the application of ASP would be inappropriate without *"robust and reasonable secondary trading arrangements*" in place. It stated that secondary trading could ensure that alternative capacity is sourced and in place when a unit is unavailable. EPUKI also stated that failure to undertake an impact assessment is highly likely to lead to unintended consequences and negative market signals in the medium to long-term which may worsen security of supply concerns.

ESB GT stated that without a Cost Benefit Assessment, it is not clear what, if any, net benefit consumers would receive from the three proposed options. ESB GT also identified a set of issues, which in its view, need to be addressed ahead of making any of the proposed changes in the consultation to the ASP mechanism, including implementation of improved secondary trading arrangements. It also commented on the need for "*the applicability of the RO risk within a USPC[4] application*" to be considered "*if more RO events are to occur*". More generally, ESB GT also commented

[4] Unit Specific Price Cap.

on the relationship between the need for capacity markets and scarcity pricing, stating that it found it unclear how creating greater ASP events will encourage different participation from CRM contract holders, when considering "*the previous RO event pricing that occurred were triggered by SO-SO trades"* across the interconnectors *"when there was sufficient capacity on the island*". ESB GT also stated that consideration should be given so as to not impact certainty and confidence in information//signals provided, owed to changing information from the IAIP, for example.

PrePayPower said it found it difficult to comprehend why the RAs considered it necessary to *"send a signal to artificially increase market prices in order to protect consumers",* at a time *"where the energy consumer is clearly stressed*". It stated that the consultation does not consider any knock-on impacts on consumer prices in the wider ex-ante markets or on increases in consumer costs via imperfections. PrePayPower also considered the market design of the ISEM to be based on the assumption of a transmission grid of infinite capacity allowing power to be moved freely across the island through uniform marginal pricing. The proposed changes, in its view, would move away from this and more in the direction of a "*locational marginal priced based market structure*". PrePayPower, while noting the DRAI's response to an earlier consultation, stated that it also considered the enablement of energy payments for DSUs would bring more capacity into the market.

SSE stated that it would be unrealistic to consider that a short-term mechanism like ASP would be a reasonable signal on which to make sustainable and enduring investment. It stated that it has also never been evidenced what amount of non-RO holders are expected to be encouraged by a short-term RSP signal in the Balancing Market. It also highlighted concerns it held, related to the protection of consumers, system security, Stop Loss Limits, the RO Strike Price effect and regulatory pricing risk. SSE further stated that de-rating factors in the CRM design already account for unit unreliability and should factor into the SEM Committee's assumptions about generator availability. In terms of incentives, SSE considered that unit reliability is appropriately incentivised through the RO Strike Price mechanism. In its view, there are "*plenty of penalties and charges already embedded in SEM design*".

5. SEM Committee Responses

5.1 Option 1

The SEM Committee welcomes the comments from respondents concerning Option 1, and notes comments both in favour and against this option.

Removing TOR2 from ASP Calculation

The SEM Committee notes the comment that removing TOR2 from the short-term reserve requirement (qSTR) would result in comparing, counter-intuitively, "*apples with oranges*".

Following the loss of an infeed, the system will have a physical imbalance. As long as there is sufficient inertia then system frequency can be contained within limits if additional balancing energy can be provided quickly, and within the five seconds required in the specification of POR. The POR specification also requires that this additional balancing energy can be sustained for 15 seconds. SOR is specified as being able to respond within 15 seconds, so that system balance can be maintained after POR has been exhausted. The specification of SOR requires that this response can be sustained for 90 seconds, after which TOR1 - available within 90 seconds and sustainable for five minutes - takes over, followed by TOR2 - available within five minutes and sustainable for 20 minutes - and finally RR - available within 20 minutes and sustainable for 4 hours. It is assumed that after four hours the TSOs can redispatch the system, just as they would for normal variations in demand and/or generation availability.

It follows that a shortfall in reserve in any of the categories would make the system vulnerable in the corresponding timescale. For instance, a shortfall in TOR2 would imply that, following an infeed loss, additional balancing energy would be available to balance the system from five seconds through to five minutes. However, at five minutes, POR, SOR and TOR1 would have been exhausted and, while further balancing energy would be available at 20 minutes, there would not be sufficient balancing energy to make good the infeed loss in the intervening period. The SEM Committee recognises that the amount of reserve required in each category is related to the size of the LSI, being the largest physical imbalance that can arise from a single event.

Following this logic, the availability in each reserve category should be compared to the corresponding requirement in that category, with a shortfall in any of the categories representing a vulnerability. As such, comparing the availability for RR with the requirement for RR might be a more coherent expression of Option 1. However, the SEM Committee understands, from discussions with the TSOs, that the RR requirement is implicitly provided to the TSOs through two Transmission Constraint Groups (Replacement Reserve in Ireland and Northern Ireland) and unlike the TOR2 requirement, is not a value that dynamically tracks the LSI. The SEM Committee notes that the cost associated with the Transmission Constraint Groups is recovered through Imperfections Charges. The SEM Committee considers that a dynamic value based on the LSI is more suitable for use in a metric that considers the system at 5-minute intervals in order to observe system scarcity.

More significantly, the SEM Committee considers that the current mechanism's comparison of the requirement in a single reserve category with the sum of the availabilities in two categories, is not a sensible approach. To borrow the analogy employed in one of the comments, the current approach does not compare apples with apples, nor apples with oranges, but compares apples with apples plus oranges. Thus, the SEM Committee does not agree with the comment that Option 1 is inappropriate in excluding 'Short Term Reserves' (except to the extent that POR, SOR and TOR 1 are already ignored), and agrees with the comment that Option 1 is a more accurate representation of the ASP design, rather than a change to it.

In terms of which category of reserves are used in the Short Term Reserve Quantity, the SEM Committee understands that, in the original CRM design, POR, SOR and TOR1 were considered to be very short-term, and that it would not be desirable to potentially signal scarcity following every event on the system which consumed these very short-term reserves, recognising that these reserves are generally replenished in similarly short timescales.

Moreover, the SEM Committee considers that focusing on RR rather than TOR2 or one of the other reserve categories is appropriate given that the most pertinent expression of scarcity in today's market may be in the availability of resources that can provide energy over a longer duration. The recent uptake of Battery Energy Storage Systems (BESS), which are typically capable of responding quickly, but may not have

sufficient energy storage to sustain their response for four hours, helps explain this situation. Furthermore, in a system which is becoming ever more dependent on renewables, the duration of scarcity events is likely to increase. Therefore, as posited in the consultation paper, it appears more appropriate to focus on energy adequacy scarcity rather than reserve scarcity in the consideration of the correct approach to ASP.

The SEM Committee considers this change to be an appropriate amendment to the TSC definition of qSTR. The existing TSC definition of qSTR means the available reserves for TOR2 and Replacement Reserve in the most recent Indicative Operations Schedule. The change being made reflects the intended design of ASP and avoids unnecessary double-counting of TOR2.

Interruptible load

The SEM Committee acknowledges comments concerning the contribution of interruptible load to reserves and short-term scarcity.

In the consultation paper, the SEM Committee requested that the TSOs provide information on the treatment of interruptible load. This is not a defined term in either the Trading and Settlement Code or the Grid Code but, as the TSOs describe in their consultation response, has been used to refer to reserve provided by demand reduction. The SEM Committee understands that, in essence, the TSOs use interruptible load in system operation and in the calculation of System Alerts, to account for sources of reserve that, unlike generators and interconnectors, are not modelled explicitly. Currently, the contribution of BESS is not modelled explicitly, and hence interruptible load is used to account for BESS also.

The SEM Committee understands that, in the criterion for determining Amber Alerts, the TSOs apply factors to BESS to reflect the duration for which the BESS can sustain its response. This appears to reflect the fact that a battery with, for example, a rating of 10MW and an energy storage limit of 20MWh would be able to sustain a 10MW response for only two hours but would be able to sustain a 5MW response for a full four hours, and that two such batteries would be required to provide a 10MW response for a full four hours. A number of respondents commented that the Option 1 proposal

to omit interruptible load would fail to take into account the contribution from BESS and suggested that a BESS factor should be applied for ASP.

A further issue with interruptible load which the TSOs highlighted in their response was that the current Scheduling and Dispatch systems are not able to keep track of the state of charge of BESS. Clearly, the ability of a 20MWh BESS to sustain a 10MW response for two hours is contingent on the BESS not being already discharged at the time that the reserve is called upon. While this is of limited impact for the shorter timescale reserves, with even a heavily discharged battery still likely having enough energy to sustain a substantial response for five or even 20 minutes, it is not the case for RR. Thus, including BESS, even with a factor, implicitly depends on an assumption that a typical BESS unit will be, or is almost, fully charged. While responses that suggested using a factor did not address this issue, it seems reasonable that batteries are more likely to be charged when operators anticipate the system will be tight and reserve most likely to be called.

The SEM Committee acknowledges the comments made and also considers that BESS can offer reserves over a longer timeframe, which should be appreciated in the ASP trigger. However, the SEM Committee understands that "Release N" of the TSOs Scheduling and Dispatch systems, currently targeted for deployment in November 2025[5], will allow BESS to be modelled explicitly. It is likely, therefore, that Release N will overtake any initiative to use BESS factors, making any such development unnecessary. The SEM Committee also understands from SEMO that a small volume of DSU capacity remains in interruptible load. Given the developments with Release N, the SEM Committee is currently satisfied that the remaining volume of DSU capacity in interruptible load continues to be counted in the Replacement Reserve calculation.

Market for Short-Term Reserves

The SEM Committee notes comments that excluding TOR2 will "*kill the market*" for short-term flexible storage. However, there is nothing in Option 1 that is intended to change the way that system services are procured or used in system operation. The

[55] As per https://www.sem-o.com/market-messages/scheduling-dispatch-programme-update-sdp02-esps-revised-go-live-date.

effect of Option 1 would be solely to amend the trigger for ASP. If triggered, this would affect all users exporting or importing power during these events. As such, the SEM Committee does not agree that Option 1 would impact the market for short-term storage, i.e., DASSA, in the way some comments seemed to suggest.

Capacity Auctions

The SEM Committee notes the comment that Option 1 should only be implemented for Capacity Years for which an auction has not been run. This, in effect, would mean that no changes could be made to ASP until at least 2038 given that ten-year contracts from the most recently held T-4 auction are in effect until that time. The SEM Committee understands that changes to ASP, by affecting Imbalance Prices, have the potential to affect Difference Charges due under Capacity Market Reliability Options. It recognises that Reliability Options are, at least in part, one-way contracts for difference, and hence that the level of Capacity Payments are driven, at least in part, by the expected level of Difference Charges.

The SEM Committee considers that changing the definition of qSTR as proposed does not deviate from the design of ASP as originally envisioned, that the effect of the modification would be small, and notes the finding of the EY Review that RO difference payments only represent a small percentage of annual Capacity Payments.

In addition, the SEM Committee notes that, as set out in Section D.3.1.4 of the Capacity Market Code, where a curve, value or item included in the Initial Auction Information Pack (IAIP) is referred to as "*anticipated*", it is included "*for information only, and may change or vary from time to time*". The SEM Committee notes that the values for FASP and the RSP Curve are anticipated values. The SEM Committee does not accept that the intention of an "*anticipated*" value should lead to a situation where no changes could be implemented unless made more than fourteen years in advance.

Celtic Interconnector

The SEM Committee notes the comment that careful consideration should be given in the context of the Celtic Interconnector. The SEM Committee recognises that the Celtic Interconnector is a significant development for the SEM and that, depending on the flow at any given time, the Celtic Interconnector, with a capacity of 700MW, could be the LSI. However, it is not apparent that the principles that underpin the market

without the Celtic Interconnector do not apply to the market with the Celtic Interconnector.

5.2 Option 2a and Option 2b

The SEM Committee welcomes the comments from respondents concerning Options 2a and 2b, and recognises that respondents were generally opposed to these options.

The SEM Committee notes the comment that Option 2a would result in "*locational signals with uniform pricing*" and that operating the system to maintain jurisdictional reserve "*goes against the principle of the SEM as one all-island market*". The SEM Committee also acknowledges comments that the constraint problem is a result of the TSOs' failure to deliver the North-South Interconnector in a timely manner, that network infrastructure should not influence pricing in the energy market and can be addressed by other means, and Option 2a does not recognise the new line.

The SEM Committee recognises the importance of the all-island market, including in terms of competition and security of supply. It agrees that increased transmission capability between Ireland and Northern Ireland will significantly address the problems that Option 2a in particular is intended to resolve. However, the absence of infrastructure does not detract from the fact that securing the system requires that sufficient reserve is procured and is available at all locations on the system, and this must be achieved regardless of whether or not either of Option 2a or Option 2b is adopted.

The SEM Committee notes the comments that Option 2b would further entrench constraints in the market, that the multiplier would not accurately account for locational issues, and that a multiplier of two would be arbitrary. The SEM Committee agrees that Option 2b relies on increasing incentives provided by ASP at all locations to address scarcity, which may only be an issue at some locations. As such, it was proposed as a pragmatic solution, and the optimum value would be that which ensures all parts of the system can be secured, whilst inflating incentives at other locations to the minimum possible degree. It does not agree that the option would necessarily "*entrench*" constraints, although it agrees that this option would not do anything to resolve them.

Notwithstanding the comments, the SEM Committee remains concerned that, at present, the system could be secure on an all-island basis but be insecure at particular locations, and that incentives to address this problem would be desirable. However, the SEM Committee acknowledges the widespread comments in opposition to Options 2a and 2b. Moreover, the SEM Committee recognises that the North-South Interconnector project is progressing such that this constraint issue will be resolved in the future. Nonetheless, current timeframes for delivery indicate that this constraint will not be resolved until Q4 2031.

The SEM Committee notes the comment that both options would be "*shoehorning how RSP would align to past system alerts*". Whilst System Alerts are not determined in exactly the same way as ASP, the SEM Committee considers that there are similarities in the methodologies. It acknowledges that many System Alerts have been in either one jurisdiction or the other. Nevertheless, the SEM Committee considers that the comparison of System Alerts and ASP triggering is a useful analysis, notwithstanding that it considers that this comment applies with more relevance to Option 1, and it does not change the SEM Committee's view of Options 2a and 2b.

5.3 Other views

The SEM Committee acknowledges the comment regarding energy-only price stacks and removing non-marginal flagging, and that the RAs' focus on measures that specifically target unreliable units. The SEM Committee considers that all these measures might have merit, and that it is not intended that ASP is the only measure that will be considered in order to ensure incentives are appropriate.

The SEM Committee notes the comment that change is not required, and that existing market signals are already fully adequate. However, as discussed in Section 5.1, the SEM Committee considers that ROs are, at least in part, one-way contracts for difference whose purpose is to swap a highly uncertain scarcity revenue with a more certain RO premium payment, in the form of the Capacity Payment. The level of Capacity Payment should thus be driven, at least in part, by the expectation of Difference Charges, and it appears to the SEM Committee that the mismatch in the current comparison of reserve availability and requirement means that this expectation is unlikely to be significant even when margins are tight. Moreover, the SEM Committee remains of the view that an ASP trigger that is not functioning as intended

may soften incentives on unit reliability and hence may increase the volume of capacity that is procured through the CRM and paid for by consumers. This is not in line with CRM design. The SEM Committee recognises that participants have concerns that situations arise whereby the Difference Charges can be due when the capacity resource is available but not dispatched. To address this situation, the SEM Committee published a decision in March 2023 limiting the exposure of Non-Performance Difference Charges to available units in merit that were not dispatched (SEM-23-029).

The SEM Committee notes the comment about the inadequacy of DSU incentives, and the need for DSU energy payments. Subsequent to this consultation, the SEM Committee published a consultation paper on these DSU issues (SEM-24-046), and will publish a decision in due course.

The SEM Committee notes the comment that TOR2 contribution is already accounted for within RR, and that it is inappropriate that both values are aggregated in the qSTR total. The SEM Committee is aware that reserves available in the TOR2 timeframe may also be available for RR, and considers that Option 1, as discussed in Section 5.1 above, addresses this point. The SEM Committee considers that this addresses also the concern about double-counting of BESS in interruptible load.

The SEM Committee notes also the comment concerning a lack of consideration of regulatory risk and that ASP does not act as an investment signal for non-RO holders. The SEM Committee acknowledges that it is unlikely that participants would invest in capacity resources on the basis of unhedged scarcity revenues alone, and that ROs are intended specifically to enable participants to swap these revenues for more certain Capacity Payments. Nevertheless, as discussed in Section 5.1, the SEM Committee considers that ASP is failing to function as intended due to the mismatch in the comparison of reserve availability and reserve requirement. It should be noted that ASP may also have a role in providing efficient signals to explicit and implicit demand response.

The SEM Committee notes the comment that exposure to scarcity is "*unconscionable*" when there are insufficient mechanisms for hedging this risk. The SEM Committee's view is that the intended principle of the RO mechanism is that RO Difference Charges are hedged by revenues earned by generating at the time of the scarcity event. Whilst

there are secondary trading arrangements in place, the SEM Committee recognises (see above) that this may not always work as well as might be desired in the absence of a fully developed secondary trading auction. The SEM Committee understands that the two secondary trading Modifications are currently in development by the TSOs. The RAs have been informed by the TSOs that CMC_09_22, which will allow automatic validation of trades, and the part of CMC_11_21 which deals with a reduction in processing time for online submission of secondary trades will be in place by Q1 2026. The RAs await an update from the TSOs on full implementation of CMC_11_21 and urge faster progress on this.

The SEM Committee notes the comment that any change to the ASP mechanism may have unintended consequences. However, as discussed in Section 5.1, the SEM Committee considers that the ASP mechanism is currently not behaving as intended, and that Option 1 corrects a clear mismatch in the current mechanism. It is worth making clear that the objective of this review and decision has not been to seek more frequent triggering of ASP but rather to ensure the mechanism is functioning correctly and as envisioned in the market design; a correction which should allow triggering of ASP when appropriate.

The SEM Committee notes the comment that load-following factors limit the ability of capacity holders to sell excess capacity above the RO obligation. It is the SEM Committee's understanding that the load-following mechanism ensures that capacity obligations track system demand, such that, in total, capacity obligations do not exceed the generation or other capacity resources that can be dispatched. The current ASP review and consultation is not intended to preclude other developments in the SEM, and if participants can demonstrate that the mechanism has shortcomings, the SEM Committee would welcome a Modification Proposal.

The SEM Committee notes the comment that it is not clear that, without a cost benefit assessment, there is any benefit from the three proposed options. As discussed in Sections 5.1 and 5.2, the SEM Committee is inclined to agree that Option 2a is unlikely to deliver any tangible effect once the North-South Interconnector addresses locational scarcity issues, but that Option 1 rectifies a clear mismatch in the operation of the current ASP mechanism.

The SEM Committee acknowledges the comment that RO events have been triggered by SO-SO trades when there was sufficient capacity on the system. The SEM Committee notes that RO events do not necessarily imply that there is insufficient capacity to secure the system. Instead, under some circumstances, high prices and hence RO events may result from actions with high offer prices being taken, and not as a result of the ASP mechanism. In the context of this current ASP review, it follows that such RO events will not be affected by changes to the ASP mechanism.

The SEM Committee notes the comment made by one respondent that the RAs consider it necessary to increase market prices in order to protect consumers. However, the SEM Committee is clear that the long-term interests of consumers are best served by ensuring that the market delivers efficient prices. As discussed above, the SEM Committee considers that there is a clear mismatch in the current ASP mechanism, which means that, in its current form, it cannot function as intended.

Lastly, the SEM Committee notes the comment that unit unreliability is already accounted for in the CRM mechanism through de-rating factors, and through the RO Strike Price mechanism. The SEM Committee's view is that there is no single aspect of the CRM design that is instrumental to its efficient operation, and it is desirable that all components work effectively, as intended. As discussed above, the SEM Committee considers that there is a clear mismatch in the current ASP mechanism that warrants attention.

6. SEM Committee Decision

Following consideration of the responses received, the SEM Committee has decided that the first option set out in the consultation paper, with one minor adjustment, best addresses the issues identified through this review of ASP. Specifically,

1. The definition of Short Term Reserve Quantity in the TSC will be amended to refer to available Replacement Reserves only and the definition of Operating Reserve Requirement Quantity will remain the same.

2. To reduce confusion, the SEM Committee recommends that consideration is given to amending these terms in the TSC to “Available Reserve Quantity” and “Required Reserve Quantity” but will allow the Modifications Committee to

determine whether such a change of terminology would have any disproportionate impacts.

3. The SEM Committee recognises that BESS is currently the main component of interruptible load, and notes the comments made around the value of BESS and that a scalar should be applied to interruptible load. However, the SEM Committee understands that BESS will, as of Release N, no longer be included in interruptible load and will be modelled explicitly; thus, a scalar is not required for BESS. The SEM Committee understands from SEMO that a small volume of DSU capacity remains in interruptible load. Given the developments with Release N, the SEM Committee is satisfied that the remaining volume of DSU capacity in interruptible load continues to be counted in the Replacement Reserve calculation at present.

The SEM Committee has decided not to proceed with Option 2a or 2b set out in the consultation paper at present.

7. Next Steps

The RAs will progress work on the TSC Modification needed to implement this policy decision. As part of the TSC Modifications process, a period of industry consultation will follow.