



Single Electricity Market Committee

Trading & Settlement Code

I-SEM Policy Parameters and Scheduling and Dispatch Parameters

Decision Paper

SEM-17-046

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TABLE OF CONTENTS

1. Introduction	3
2. Imbalance Pricing Parameters.....	5
2.1 Background.....	5
2.2 Proposal	6
2.3 Comments Received.....	7
2.4 SEM Committee Response.....	12
3. Scheduling and Dispatch Parameters.....	17
3.1 Background.....	17
3.2 Proposal	17
3.3 Comments Received.....	18
3.4 SEM Committee Response.....	20
4. Response Period Duration.....	24
4.1 Background.....	24
4.2 Proposal	24
4.3 Comments Received.....	25
4.4 SEM Committee Response.....	26
5. PCAP and PFLOOR	28
5.1 Background.....	28
5.2 Proposal	28
5.3 Comments Received.....	29
5.4 SEM Committee Response.....	33
6. SEM Committee Decisions	37
APPENDIX A – List of Respondents	39

1. INTRODUCTION

In April 2017, the SEM Committee published amendments to the Trading and Settlement Code that enshrine the I-SEM Balancing Market design¹. On 12 May 2017, the SEM Committee published a consultation paper² (“the Consultation Paper” or “the paper”), together with two reports, one from SEMO³ (the “SEMO Report”) and one from the TSOs⁴ (the “TSO Report”), recommending values for nine Trading and Settlement Code (TSC) parameters.

The parameters set out in the SEM Committee Consultation Paper, the SEMO Report, and TSO Report were as follows:

- three parameters, De Minimis Acceptance Threshold (DMAT), Price Average Reference Quantity (QPAR) and Price Materiality Threshold, relating to the determination of the imbalance price;
- two parameters, Long Notice Adjustment Factor (LNAF) and System Imbalance Flattening Factor (SIFF), concerning scheduling and dispatch. Rather than being single values, LNAF is a function of each Generator Unit Notice Time, and SIFF is a function of System Shortfall Imbalance Index (SSII). While Notice Time is determined and submitted by each Participant, a third parameter is the time each day at which SSII is determined and used to set SIFF for subsequent schedule runs over a 24 hour period;
- the Response Period Duration, concerning the period of time that a participant has to remedy a position where it has insufficient credit, before ex-ante contracts are refused; and,
- two further parameters, PCAP and PFLOOR, which are a cap and floor on imbalance prices, offers, and bids, similar to the cap and floor in the current SEM.

¹ “Energy Trading Arrangements Trading and Settlement Code Amendments”, SEM-17-024, 12 April 2017.

² “I-SEM Policy Parameters & Scheduling and Dispatch Parameters”, SEM-17-029, 12 May 2017.

³ “Recommended Values for I-SEM Pricing Parameters Version 1.0”, SEM-19-029a, 10 May 2017.

⁴ “Recommended Values for I-SEM Scheduling and Dispatch Parameters”, SEM-017-029b, 10 May 2017.

The consultation closed on 5 June 2017. Ten responses were received, and the SEM Committee would like to thank respondents for their comments. This paper sets out the SEM Committee's response to the comments received and its decisions regarding the parameters consulted upon.

The structure of the remainder of the paper is as follows:

Section 2 discusses the background, proposals, comments received and SEM Committee response for DMAT, QPAR and the Price Materiality Threshold;

Section 3 discusses the background, proposals, comments received and SEM Committee response for the scheduling and dispatch parameters, LNAF and SIFF;

Section 4 discusses Response Period Duration;

Section 5 discusses PCAP and PFLOOR;

Section 6 sets out the SEM Committee decisions; and,

Appendix A lists the parties who responded to the consultation.

2. IMBALANCE PRICING PARAMETERS

2.1 BACKGROUND

As explained in the Consultation Paper, two parameters used in the determination of Imbalance Price are the De Minimis Acceptance Threshold (DMAT) and the Price Average Reference Quantity (QPAR).

- *DMAT*: DMAT is used to exclude small Accepted Offer Quantities and Accepted Bid Quantities from the calculation of Imbalance Price, on the grounds that such small acceptances may be unintended, being due to rounding errors, or may in some other way be unrepresentative of the cost of balancing the system in an Imbalance Pricing Period, e.g. due to being very short in duration. It sets a de minimis threshold acceptance quantity below which a Bid Offer Acceptance will not feed into the calculation of the Imbalance Price.
- *QPAR*: In SEM-15-065⁵, the SEM Committee decided that consideration should be given to whether Imbalance Price should be set on an average of a number of MWh rather than the cost of the marginal energy balancing action alone. QPAR sets the MWh quantity of actions to be included in the calculation of this average. The SEM Committee noted that the use of averaging should not distort incentives to trade ex-ante, and stated that, consequently, the use of such averaging should be both evidence-based and time limited if any value of QPAR other than 1 MWh is adopted.

E.2.1 of Part B of the TSC requires SEMO, if requested by the RAs, to report to the Regulatory Authorities proposing values of DMAT and QPAR. The SEMO Report that was appended to the Consultation Paper put forward SEMO's recommendations for values to be used from I-SEM Go-Live.

A further parameter, the Price Materiality Threshold is used not in the determination of Imbalance Price but in the determining whether Imbalance Price is recalculated following a Dispute. Similarly to DMAT and QPAR, B.19.3.1 of Part B of the TSC requires SEMO to propose a value of the Price Materiality Threshold, and the SEMO Report makes a recommendation of the value to be applied from I-SEM Go-Live.

⁵ "I-SEM ETA Markets Decision Paper", SEM-15-065, 11 September 2015.

2.2 PROPOSAL

DMAT

In the SEMO Report, SEMO stated that the circumstances, which give rise to the small acceptances that DMAT is intended to exclude from the Imbalance Price calculation, are difficult to model and that *“it would not be possible to accurately represent or assess this micro effect of removing small volumes from five minute pricing”*. Thus, instead, SEMO first considered the approach of scaling of the equivalent parameter in BETTA. Specifically, the BETTA parameter is applied to 30 minute settlement periods whereas, in I-SEM, the parameter is applied to the five minute Imbalance Pricing Period. This suggests that the value of DMAT equivalent to the BETTA value of 1 MWh is 0.17 MWh.

The SEMO Report then considered that the quantity differences that could arise on a five-minute basis between an FPN curve ramping at a typical ramp rate and a dispatch curve static at the average value of the FPN curve over five minutes. Average ramp up and ramp down rates of 5.92 MW/min and 8.85 MW/min, SEMO suggests would result in acceptances of 0.296 MWh and 0.4425 MWh. On this basis, SEMO recommended a value of 0.4 MWh, considering it to strike a balance between excluding actions *“which could have unintended consequences”* by the scheduling and dispatch tools, while still capturing actions *“which are intended to set price”*. The SEMO Report considered that the recommended value may be interpreted as slightly conservative but that it *“should work to reduce volatility in the Imbalance Settlement Price and make forecasting this price easier”*.

QPAR

As with DMAT, the SEMO analysis of QPAR in the SEMO Report considered the GB experience as a benchmark for QPAR. It noted that peak demands in SEM are approximately only 12% of those in BETTA, and, as with DMAT, that the I-SEM parameter applies to five minute Imbalance Pricing Periods whereas the equivalent BETTA parameter applies to 30 minute Imbalance Settlement Periods (“ISPs”). The SEMO Report argued that both these differences suggest that values of QPAR in I-SEM should be lower than the equivalent PAR values in BETTA. It also noted that differences in the flagging and tagging approach between I-SEM and BETTA further suggest that a smaller equivalent QPAR value would be more appropriate for I-SEM. Taking these scaling considerations into account, SEMO then modelled the effect of a range of potential QPAR values on average prices and standard deviations, noting that the objective was to balance a number of conflicting criteria.

The SEMO analysis considered half-hour equivalent QPAR levels of 1 MWh, 20 MWh, 40 MWh, 60 MWh and 100 MWh, with a QPAR of 60 MWh being considered equivalent to the PAR of 500 MWh that has been used in BETTA over recent years. The SEMO Report concluded that a QPAR of 60 MWh, as compared to 1 MWh, has only a small impact on the standard deviation of imbalance prices, while decreasing the price compared to the marginal price over peak periods and to increase the price compared to the marginal price at non-peak periods. On this basis, SEMO recommended a QPAR of 1 MWh be implemented for I-SEM Go-Live.

Price Materiality Threshold

In the SEMO Report, SEMO calculated the proposed value of the Price Materiality Threshold by considering the change in Imbalance Settlement Price or set of prices required to have a financial impact equal to or greater than the proposed value for the Settlement Recalculation Threshold⁶. On this basis, SEMO recommended that the Price Materiality Threshold be set at 15% for I-SEM Go-Live.

2.3 COMMENTS RECEIVED

DMAT

Seven respondents commented on DMAT. One respondent was comfortable with the proposed threshold of 0.4 MWh. Three respondents were of the view that the proposed value was too high. Two respondents stated that the proposed value was too low, whilst a third implied that the proposed value was too low.

The respondent that was comfortable with the proposed value of DMAT felt that a higher threshold could contribute to a shortage of price-making acceptances.

Of the three respondents that were of the view that the proposed value was too high, one said that it did not see the relevance of the 'theoretical' analysis that had been carried out and suggested a modelling approach such as a comparison of historic Market Schedule Quantity and Dispatch Quantity. It argued that the consideration of ramping quantities was not relevant as these quantities would be 'non-marginal tagged' and that a DMAT should be set at 0.17 MWh or less (for five minute Imbalance Pricing Periods or "IPPs") to be consistent with using a QPAR of 1 MWh (for a thirty minute Imbalance Settlement Period),

⁶ See "Recommended Values for I-SEM Imbalance Settlement Parameters", SEM-17-009b, 2 May 2017.

and that comparisons with BETTA should take account of the larger size of the BETTA market.

The second of the three respondents said that the proposed threshold implied that any action of 4.8 MW or less would be excluded from price-setting, whereas the comparable figure in GB was 2 MW on a system ten times the size of I-SEM. It further said that the rationale for the higher figure proposed for SEMO appeared to relate to how the scheduling and dispatch systems will operate, which was unfortunate given that the TSOs had procured new systems for I-SEM that should not have incorporated such limitations. This respondent said that it would favour a DMAT at or below the GB level, or 1 MWh across the Imbalance Settlement Period.

The third respondent also made comparisons of I-SEM and the GB market and said that, logically, balancing actions may typically be expected to be smaller than in GB. It was also concerned that many of the closed acceptances resulting from the 'deemed closing or open acceptances' would be filtered out by the proposed level of DMAT, potentially leading to few balancing actions from which to set the Imbalance Price, which in turn would lead to prices that were more unpredictable, more volatile and that do not reflect underlying fundamentals. This third respondent recommended that a decision on the value of DMAT should be deferred until such time as a simple worked example tool is created, to test the interaction of DMAT with closed acceptances orders (including pseudo instructions).

Of the two respondents that considered the proposed DMAT value to be too low, one emphasised the importance of DMAT in preventing small spurious bid or offer acceptances setting unduly high or low imbalance prices, which would otherwise threaten players such as wind generators or small suppliers, who will unavoidably be exposed to market imbalance prices. This respondent felt there were reasons other than ramping that could result in small volumes setting imbalance prices and that to avoid such volumes setting price a DMAT of 5 MWh per half hour, equivalent to 10 MW, was appropriate.

The second of these two respondents felt that the absence of an equivalent to CADL⁷, used in BETTA, meant that I-SEM would rely more on either DMAT or the automated System Flagging, and noted the statement in the Consultation Paper that a sufficiently large value could remove from pricing the influence of acceptances, which would be difficult to forecast. This respondent recognised that the impact of very short duration actions would be dampened by the averaging of five minute Imbalance Pricing Periods over thirty minute

⁷ Continuous Acceptance Duration Limit.

Imbalance Settlement Periods, but considered it inappropriate that very short duration actions should be included at all in price-setting, citing the example of a 25 second offer taken at Turlough Hill which it argued would influence prices under the proposed value. This respondent suggested a value of 0.83 MWh for the Imbalance Pricing Period, also equivalent to 5 MWh over the Imbalance Settlement Period.

The respondent that implied that DMAT was too low was concerned that recent volatility in the SEM had arisen from the scheduling of small quantities of MWh and that it had no confidence that, in I-SEM, the proposed value of DMAT would reject such acceptances. This respondent did not suggest an alternative value but suggested an analysis of the speed of reaction of TSO dispatch instructions to changes in Commercial Offer Data, to ascertain whether DMAT is sufficiently sized.

QPAR

All ten respondents commented on QPAR. Two respondents were in favour of a QPAR of 0.17 MWh or 1 MWh for the thirty minute Imbalance Settlement Period, i.e. the “PAR1” approach, whilst eight respondents opposed or strongly opposed PAR1 and considered that a higher value should be used.

Of the two respondents favouring PAR1, one said that balancing responsibility was in line with EU market integration objectives and that a smaller QPAR gives a clear balancing signal compared to larger QPAR. It argued that a large QPAR may inhibit price formation, leading to more regular application of administered prices which would be undesirable from a consumer perspective, whilst a small QPAR would incentivise day-ahead and intraday trading, with positive impacts for liquidity and more competitive prices for the end consumer. The second of these three respondents said that, whilst earlier in the development of the balancing market pricing mechanism, it would have seen the Price Average Reference as a route to managing the transition to I-SEM, given subsequent decisions on NIV tagging and bidding controls, no further dampening or averaging should be carried out. It cited the fact that NIV tagging appeared to have a much greater effect than the entire range of PAR values assessed.

Of the eight respondents that opposed PAR1, one said that PAR1 was the most extreme setting which increases the risk of volatile pricing, particularly during the transition phase following Go-Live. It said that, given concerns about liquidity in the intraday markets and uncertainty in the modelling, it was incumbent upon the Regulatory Authorities to adopt a conservative approach, at least as an interim measure. It noted the comment in the

Consultation Paper, attributed to Elexon, that reducing QPAR could have a more detrimental effect on smaller participants which historically have had larger relative imbalances. It also said that renewable generators would be disproportionately affected by volatile pricing as, unlike thermal generators, they would have no stop-loss protection from administered scarcity pricing, and that imbalance pricing based on the average cost of balancing actions rather remains the norm in other major European markets.

Another respondent said that the proposal to implement a very marginal QPAR was its primary concern. It argued that PAR1 was likely to result in sharp and volatile prices, and that, contrary to the suggestion in the Consultation Paper, a marginal price is likely to be more difficult to forecast. It noted that the GB target of 1 MWh was being achieved only after a transition period spanning several years, as was yet to reach PAR1. Further, it said that imposing uneconomic costs on the market in pursuit of an economic ideal was inappropriate, particularly until smart metering was available to the demand side and given the less than mature development of the intraday market. This respondent favoured a QPAR of 60 MWh, to reduce the impact of spurious outputs if a novel and untested approach to imbalance pricing.

A third respondent acknowledged that high QPAR values would tend to drive more benign imbalance prices, which could reduce the incentive to balance responsibly, but lower values of QPAR would tend to drive more extreme imbalance prices, and that these could threaten wind generators and small suppliers, and that this would violate the EU's priority dimensions. Recognising that it is possible to tighten QPAR at a later date, this respondent said it believed that a value of 1 MWh was inherently dangerous to the market, and recommended a value of 50 MWh, as being well established in the successfully functioning BETTA market.

A fourth respondent said that a phased approach should be used, progressing to a QPAR value of 1 MWh, and that, whilst there may be merit in PAR1 providing a clearer signal to the market, not all participants would be able to respond to this signal, particularly windfarms, and that the problem was particularly acute given the uncertainty around intraday market liquidity. This respondent believed that a more prudent approach should be adopted with a larger QPAR value, subject to subsequent review.

A fifth said that, whilst it agreed with the SEM Committee that, in the medium term, PAR1 may provide the truest reflection of the cost of balancing, it supported a more cautious start to the I-SEM market, with a higher value of QPAR. This was supported by reference to the transitional approach to reducing PAR from 500 MWh to the current 50 MWh used in GB, the new and complex nature of the I-SEM imbalance arrangements, and given the overall

desire in the market for a smooth transition from SEM to I-SEM. This respondent also noted that higher QPAR would allow a smaller DMAT.

A sixth respondent said that SEM-15-065 had noted there were a number of options to mitigate against volatility but that options had been effectively removed by the imbalance pricing methodology chosen, leaving QPAR as the only option left to be used in the event of excessive volatility. It said that the Consultation Paper had acknowledged that greater volatility caused by such a purely marginal approach could create uncertainty, which would have adverse impacts on ex-ante market liquidity, as participants would be more conservative. It argued that these impacts would be particularly pronounced under five minute pricing. This participant recommended a QPAR of 60 MWh, with regular review periods to revisit this value. It acknowledged that a fully marginal pricing should be the end goal but did not agree that moving directly to fully marginal at Go-Live under untested arrangement with inexperienced participants would be sensible or prudent.

The remaining two respondents that opposed PAR1 made similar points, including that PAR1 did not give a smooth transition and risked volatile prices during the initial stages of the new market, that average pricing the norm in other European markets, and the concerns regarding intraday liquidity. One said that, whilst it disagreed with the conclusion that QPAR would not impact the imbalance price, if the SEM Committee was of this view then it should not have a difficulty in setting QPAR at a higher level. Similarly, the other respondent said that the analysis was unduly concerned with the relative sizes of the BETTA and I-SEM markets, that it was unsurprising that the analysis showed an insensitivity to QPAR values given that the values assessed would typically be averaging across a single bid-offer acceptance, and that if the analysis showed such insensitivity then the rational decision would be to choose a QPAR value that was least sensitive to the limitations of the approach.

Price Materiality Threshold

Four respondents expressed views on the level of Price Materiality Threshold proposed by SEMO.

Two respondents supported the proposal to set the Price Materiality Threshold at 15%. One of these respondents considered that a value of 15% would not place an excessive administrative burden on SEMO i.e. the benefits of the change in imbalance price (following an upheld dispute) outweighs the associated system costs consistent with SEMO's reference to the Settlement Recalculation Threshold of €15,000. The other respondent indicated that there was no evidence available to support a value other than the 15%

proposed by SEMO and stressed the importance of ensuring that the level of Price Materiality Threshold is reviewed after a period of initial I-SEM operation.

The other two respondents suggested that the Price Materiality Threshold should be lower on the basis they believed that significant quantities may be traded within the balancing market. One of these respondents suggested the Price Materiality Threshold should be set at 10% and reviewed after a period of initial I-SEM operation. The other respondent proposed that the Price Materiality Threshold should be set at either 5% or an absolute imbalance price change of 2.5 €/MWh.

2.4 SEM COMMITTEE RESPONSE

DMAT

The SEM Committee acknowledges the comments that the proposed value of DMAT is too high. While the SEM Committee agrees that actions that are limited by maximum ramp up or ramp down rates may be non-marginal tagged, it is of the view that it is still possible that there could be similar actions that are not limited at the maximum ramp up or ramp down rates, and hence which would not be non-marginal tagged. It is possible also that acceptances could arise from the Physical Notification, rather than the dispatch instruction, changing at or near the ramp up or ramp down rate with the dispatch instruction remaining at a constant output level, again resulting in an action that is not non-marginal tagged.

The SEM Committee notes also the comments that the equivalent parameter in GB was less than half the size on a system ten times as large. However, the SEM Committee does not consider that DMAT should necessarily scale with the size of the system and that it is just as likely that the smaller size of the I-SEM system manifests itself in fewer, rather than smaller, actions being taken. As regards the comment that it was unfortunate that new systems being procured by the TSOs incorporated limitations that give rise to the need for a large DMAT, the SEM Committee understands that the systems being procured are industry standard systems, which again suggests the limitations are independent of the size of the system.

The SEM Committee acknowledges also the comments that the proposed value of DMAT is too low, and the concerns that small actions could give rise to volatility. The SEM Committee notes that, with a value of QPAR of 0.17 MWh for a five-minute IPP, equivalent to 1 MWh for the ISP, any action larger than 0.17 MWh would be weighted by one sixth, i.e. approximately 17%, in the calculation of the Imbalance Settlement Price. However, with a larger QPAR, say 10 MWh (equivalent to 60 MWh for the ISP), this weighting would reduce

to less than a third of one percent⁸. For actions of, say, 0.4 MWh the weighting would still be less than one percent, and for actions of, say, 1 MWh less than two percent. Thus, for any value of DMAT smaller than 0.4 MWh, the largest action that could contribute to the Imbalance Price that would not have done so with the TSOs' recommended value of 0.4 MWh, would be weighted by less than one percent. The SEM Committee considers that this would, on the evidence available not contribute to excessive volatility.

Thus, in view of the considerations regarding QPAR (see below), the SEM Committee considers that it is appropriate to set DMAT to 0.17 MWh (1 MWh ISP equivalent). The SEM Committee notes that this is equivalent to an action of only 2 MW, and considers it unlikely that TSOs would issue instructions for smaller imbalances, and hence doubts that smaller quantities could be considered as economically significant.

QPAR

The SEM Committee acknowledges the comments supporting PAR1, i.e. a QPAR value of 0.17 MWh, equivalent to 1 MWh for a thirty minute ISP. The SEM Committee agrees that a small QPAR should give a clearer balancing signal when compared to a large QPAR. It is not convinced that a small QPAR would be likely to result in more application of administered pricing. In the event that there are insufficient untagged actions to meet the Net Imbalance Volume (NIV), the pricing algorithm provides for the untagging of system actions but using the price of the marginal energy action; administered pricing will be triggered only by scarcity events which are unlikely to be affected by QPAR.

The SEM Committee notes also the comment that, given decisions on NIV tagging and on bidding controls, no further averaging of prices should be carried out using QPAR. Again, the SEM Committee does not find this argument compelling, as the decisions on NIV tagging and bidding controls are designed to achieve different things: bidding controls are intended to reflect the prices that might be seen under competitive conditions, and NIV tagging is to ensure that prices are not made more extreme by the need to call additional actions as a result of system constraints.

The SEM Committee also acknowledges that a large proportion of the comments opposed the PAR1 proposal. The SEM Committee notes the comments that the modelling undertaken by the SEMO is subject to uncertainty, although considers that this is true of

⁸ With a QPAR of 10MWh in the IPP, an action of 0.17 MWh would be weighted by $(0.17 \text{ MWh} / 10 \text{ MWh})$, i.e. 1.7%, in the IPP price. This would then constitute $(1.7\% / 6)$, i.e. 0.28%, of the price for the ISP.

many modelling exercises. That said, the SEM Committee notes that the modelling suggests that there is a modest reduction in standard deviation in the daily price profile without impacting significantly on the average daily profile. It considers that, were the effect of seasonal variation of prices to be removed, the reduction in standard deviation would be more significant still. While, in principle, this could be diluting incentives for flexibility, the SEM Committee notes the concerns expressed by many of the respondents that larger QPAR value could lead to problems for smaller participants, particularly at the beginning of a new set of trading arrangements.

Accordingly, the SEM Committee considers that a higher level of QPAR than that proposed by the SEMO is appropriate at Go-Live, and considers that a QPAR of 10 MWh, equivalent to 60 MWh for the ISP, is appropriate.

The SEM Committee continues to consider fully marginal pricing the appropriate objective, and expects that QPAR will be reduced as soon as experience of live market operation shows that there is no compelling evidence that this cannot be done, and that priority will be given to this matter in the first review of parameters post Go-Live.

Price Materiality Threshold

The SEM Committee notes that there were a range of views from respondents regarding the appropriate value for the Price Materiality Threshold. The SEM Committee observes that no respondents considered that the Price Materiality Threshold should be set at a level in excess of the 15% value (as proposed by SEMO) and a number of respondents proposed that the value for Price Materiality Threshold should be lower than 15%. The SEM Committee is mindful that only one respondent agreed that the Price Materiality Threshold should be determined to be consistent with the Settlement Recalculation Threshold (SRT) of €15,000.

In considering the responses to this SEMO proposal, the SEM Committee is cognisant that an underlying assumption in the SEMO proposal is that the Price Materiality Threshold should align with the Settlement Recalculation Threshold. Having considered the issue, the SEM Committee is not convinced that there is a strong rationale for linking the values of the Settlement Recalculation Threshold and the Price Materiality Threshold, and consequently considers that it is appropriate to consider the value of Price Materiality Threshold on its own merits.

The SEM Committee accepts that the extent of impact from a change in imbalance price may not be uniform across all stakeholders given the nature of the I-SEM imbalance regime

as highlighted by a number of respondents and thus the materiality on individual stakeholders is relevant. The SEM Committee also notes that the costs associated with a re-pricing event may be less than those for a full ad-hoc re-settlement as per the Settlement Recalculation Threshold. On this basis, the SEM Committee considers it prudent to set the Price Materiality Threshold at 5% rather than the 15% suggested by SEMO. The SEM Committee notes that a single pricing dispute could relate to a number of consecutive Imbalance Settlement Periods. The SEM Committee also notes that the definition of a Pricing Dispute states that a '*Pricing Dispute means a Dispute in relation to the calculation or publication of an Imbalance Settlement Price*'. The SEM Committee interprets this definition to not preclude a single pricing dispute relating to the calculation of one, or a number of imbalance prices. Further, the SEM Committee is of the view that the TSC, specifically B.19.4.1 and B.19.9.3⁹ when considered together, provides a reasonable level of flexibility to allow the participant to provide supporting evidence to the Dispute Resolution Board (DRB) , to allow the DRB to assess whether the Threshold is likely to be met in the event it is upheld.

Concerning the application of the Price Materiality Threshold, the SEM Committee notes that in the event of a Pricing Dispute, the DRB has the authority to require SEMO to perform a number of actions, including procuring a resettlement. The SEM Committee considers that any revised prices are likely to be captured within the routine settlement processes, given the limited window for raising a price dispute, however there is the scope for a resettlement (if needed) where a pricing dispute is upheld by the DRB.

Furthermore, the SEM Committee notes that a number of respondents considered that the Price Materiality Threshold should be reviewed following an initial period of I-SEM operation. The SEM Committee also notes that B.19.3.1(b) of the Part B of the Trading and Settlement Code requires SEMO to propose a Price Materiality Threshold from time to time subject to be approved by the Regulatory Authorities. Thus, the SEM Committee does not consider that it should seek to impose a scheduled review of Price Materiality Threshold on SEMO as it expects SEMO to bring forward suggested changes to the Price Materiality Threshold if

⁹ Part B Chapter B.19.4.1 of the Trading and Settlement Code states 'The Party raising a Pricing Dispute shall provide supporting evidence to enable the DRB to assess under paragraph B.19.9.3, the likelihood that the matter being disputed will, if the Dispute is upheld, satisfy the Price Materiality Threshold'. Paragraph B.19.9.3, requires in the case of a Pricing Dispute, 'within five working days after the appointment of the DRB, or such longer time as may be agreed by the Disputing Parties, the DRB must consider and advise the Disputing Parties of its assessment as to the likelihood that the matter being disputed will, should the Dispute be upheld, satisfy the Price Materiality Threshold'.

considered appropriate consistent with the objectives of the SEM set out in A.2 of the Part B of the Trading and Settlement Code.

3. SCHEDULING AND DISPATCH PARAMETERS

3.1 BACKGROUND

The Consultation Paper explained that LNAF and SIFF, together with the time at which the SSII is determined, are a means of giving effect to the objectives of scheduling and dispatch from the market design decisions, in particular, balancing the trade-off of “early” energy-balancing actions against the cost of non-energy actions. LNAF is a multiplier applied to the start-up costs of Generator Units, which increases with increasing length of notice provided in any instruction to synchronise. SIFF is another multiplier applied to the start-up costs which reduces with reducing forecast system imbalance.

The paper further explained that Condition 10A of the proposed EirGrid Transmission System Operator Licence, and Condition 22A of the proposed SONI Transmission System Operator Licence, will require the licensees to report to the Regulatory Authorities proposing parameters to be applied in the scheduling and dispatch process. The TSO Report, appended to the Consultation Paper, made proposals as to the values of these parameters to apply from I-SEM Go-Live.

3.2 PROPOSAL

The TSO Report described modelling undertaken by EirGrid and SONI to assess the effect of candidate LNAF and SIFF parameters. It reported that LNAF has the desired effect of favouring short notice units over long notice units, and provides a “systemised implementation” of the licence requirement to enable ex-ante markets to resolve energy imbalances, as far as is practical. However, it also reported that the modelling results raised a number of areas of potential risks, such as: (i) increased hours of reserve shortage; (ii) increased hours of unserved energy; (iii) increased instances of starts/two shifting on short notice units; (iv) increased running of Demand Side Units for energy production; (v) decreased running hours for longer notice generators; and (vi) increased production costs (and thereby consumer costs) as the TSOs forego cheaper generators in favour of expensive short notice units.

The TSOs thus proposed that LNAF is set to zero at I-SEM Go-Live, for a period of one year. The TSOs suggested that, after a period of live operation, SEMO and the TSOs will carry out analysis on the results of actual market activity and system operation, and make further recommendations to the Regulatory Authorities.

The TSO Report considered different approaches to setting the SIFF either as a binary value or as a more graduated function of notice time. The TSOs considered that, while there was

a logic to applying a higher SIFF at times of higher SSII, this effect could be achieved through the values of LNAF itself. Further, the TSOs observed that as the intent of LNAF is to change the scheduling choices made, it was not clear that applying a limited LNAF (i.e. through a fractional SIFF value) would deliver this outcome. The TSOs further observed that, as the intent of LNAF is to change the scheduling choices made, it was not clear that applying a more graduated SIFF would deliver this outcome, and that the LNAF needs either to be applied or not.

The TSOs considered that it is not clear that a graduated SIFF would have the desired effect and may hamper the effect of LNAF. On this basis, the TSOs recommended that SIFF is a binary value, i.e. either 0 or 1, with the change occurring at a defined value of SSII. The TSOs reported that the modelling did not suggest an optimum value, and hence recommended that it is set to zero, consistent with its recommendation on LNAF.

As regards the timing of the determination of SSII, and hence timing of the setting of SIFF, the TSOs suggested that it is desirable that this is done as late as possible, in order to incorporate the most up-to-date information, such as wind and demand forecasts and changes in Physical Notifications resulting from intraday trading, but early enough to influence the scheduling of long notice plant, although noting that such long notice plant is unlikely to be used until the morning pick-up. Hence, the TSO Report recommended that the SSII is determined between 19:00 and 22:00, and at least one hour prior to the start of the final Long Term Schedule (LTS) run for the next day, with the exact timing to be advised following a decision on the timing of the LTS run.

3.3 COMMENTS RECEIVED

Four respondents agreed with the TSOs' position that LNAFs should be set to zero at Go-Live, whilst two respondents favoured non-zero LNAFs.

Of the four respondents that agreed with LNAFs being set to zero, all nevertheless agreed with the application of LNAFs in principle, with their main concerns with LNAFs relating to the TSOs' modelling and possible market outcomes. One respondent stated it was, in principle, strongly in favour of non-zero LNAFs, but suggested that the predictability of the effect of the LNAFs in the absence of operational data is limited, and that this is undesirable to TSOs and market participants alike. This respondent also had some concerns that the approach taken could have negative impacts on encouraging units to respond in terms of unit efficiency improvements, reduction of costs and/or notice times. A second respondent stated that the results of the modelling were inconclusive and therefore should not be applied at Go-Live but proposed that the value be consulted upon annually.

The four respondents that agreed with LNAFs being set to zero also raised concerns about unintended or unexpected market outcomes arising from their application at Go-Live. One noted that the modelling of the LNAFs indicated a high number of unserved hours and reserve shortfalls. While commenting that this might be explained by aspects of the modelling approach, the respondent suggested that this would need to be clarified before a decision to implement a non-zero value. A second respondent stated that while it was strongly in favour of appropriate incentives to increase flexibility on the system, given the risks outlined in the TSOs' recommendation report, it proposed a prudent approach of setting LNAFs to zero at Go-Live. This respondent nevertheless strongly supported the revisiting of the parameter value within no longer than 12 months after Go-Live, which will be informed by detailed empirical analysis to establish the actual impact of non-zero LNAF values.

Of the two respondents in favour of applying non-zero LNAFs at Go-Live, one stated that, while it was not generally in favour of the application of administrative interventions in a market to rectify the absence of a particular behaviour and that the LNAF approach, as designed by the TSOs, was 'a somewhat crude measure and will likely have unintended consequences', it remained of the view that the parameters will be needed at Go-Live. This respondent went on to say that any unintended consequences should be easily addressed through the absolute powers of the TSO to take any necessary actions for security of supply or system integrity. In addition, it commented that the TSOs have not considered the impacts of LNAFs on the wider market, explaining that the assessment of the LNAFs was too focused on generator running hours, and did not sufficiently consider the behavioural impact on demand participants to avoid the Balancing Market. This respondent also argued that the SEM Committee had made a decision that the TSOs would avoid taking early actions and that it would not expect the SEM Committee to publish proposals that were not in line with the SEM Committee's own explicit decisions. The respondent also noted that the April 2017 decision on bidding controls¹⁰ stated that the TSOs will be discouraged from taking early energy actions by the use of LNAFs and that the proposals to now drop LNAFs for I-SEM Go-Live would appear to undermine the rationale from April 2017. This respondent further noted that the TSOs recommendation for zero LNAFs did not consider the impacts on the wider market, and their purpose in encouraging demand to contract earlier with longer notice dispatching of more efficient plant. It stated that it was generally against LNAFs but was of the view that they must be turned on at Go-Live to limit early

¹⁰ "Complex Bid Offer Controls in the I-SEM Balancing Market - Decision Paper - SEM-17-020

actions by the TSOs to incentivise demand to contract as would be expected under normal market conditions.

The second respondent favouring non-zero LNAFs at Go-Live and argued that without these factors, the Security Constrained Unit Commitment (“SCUC”) would consistently generate scheduling and commitment actions that are in direct breach of the TSO licence conditions and contra to the stated I-SEM Market Design. The respondent went on to say that it believed that the LNAF, SIFF and SSII are absolutely required in some combination to allow the I-SEM markets to work as intended and that the proposal to not implement non-zero LNAFs is non-compliant with the TSO Licence Condition, I-SEM HLD, I-SEM Detailed Design, CACM Guideline and recently agreed Balancing Guideline. The respondent argued that, if the TSOs could demonstrate that ‘risk indicators’ were leading to bad outcomes, LNAF could be set to zero following Go-Live, but that at I-SEM market Go-Live, LNAF must be in place.

3.4 SEM COMMITTEE RESPONSE

The SEM Committee acknowledges the comments that were raised in relation to the modelling underlying the proposal in the TSO Report. The issues raised on the assumptions made as part of the modelling included: the use of a binary rather than graduated SSII; the selection of the Notice Time Groups; and, the application of linear interpolation within those groups.

The SEM Committee notes that one respondent in favour of applying LNAFs at Go-Live, identified a number of concerns with the modelling results and the TSOs’ analysis. In response to these comments, the SEM Committee considers it noteworthy that the values and methodology were generally seen as not unfit for purpose, and, while respondents did raise legitimate questions and comments, the approach adopted by the TSOs in their modelling appears broadly acceptable as a basis for future parameter setting processes regardless of the value at Go-Live.

In relation to the specific comment in relation to the inconclusiveness of the findings, the SEM Committee is broadly in agreement. While there are benefits of ensuring that the TSOs’ scheduling and dispatch tools are designed such that early actions are avoided, the uncertain impact of the values on the wider market arrangements, in particular at Go-Live, may not outweigh the benefits of reducing early TSO actions. The SEM Committee is of the view that subsequent assessments of LNAF that will be conducted when operational data is available, will consider whether the LNAF should provide a stronger or weaker impact than

that proposed by the TSOs. It agrees with the comments that noted that a future decision, supported by outturn data, will allow a far clearer view of the likely outcomes.

In relation to the comments from the two respondents in favour of applying the LNAFs at Go-Live, the SEM Committee is of the view that the majority of these comments can be grouped into two broad themes: (i) having zero LNAF values at Go-Live contradicts and conflicts with a number of previous SEM Committee decisions, licence conditions and EU requirements; and (ii) the concern that there will be no measures in place to reduce the likelihood of early actions.

The SEM Committee does not agree that, if LNAFs are set to zero at Go-Live, the TSOs' scheduling and dispatch tools might not comply with previous SEM Committee decisions or licence obligations. The SEM Committee views the scheduling and dispatch parameters as an expedient but not essential tool in ensuring that the TSOs minimise their impact on ex-ante markets.

In response to the comment that suggested that not applying LNAFs at Go-Live is non-compliant with the CACM and Electricity Balancing Guidelines, the SEM Committee has reviewed obligations pertaining to the TSOs in CACM, and does not consider that any tensions arise and, in the absence of a specific, identified problem, does not agree with the comment. In relation to the Electricity Balancing Guideline, the SEM Committee notes the drafting included therein in relation to minimising the impact TSOs have on open ex-ante markets. This drafting echoes strongly the drafting of the Detailed Design, and is a position that is supported by the SEM Committee. That said, and notwithstanding the SEM Committee's position that the operational measures put in place go a long way to complying with such a requirement, the SEM Committee notes that Ireland and Northern Ireland have a derogation from the Balancing Guideline until 2019 and is therefore not applicable at I-SEM Go-Live.

Notwithstanding compliance or otherwise with the Guidelines, the SEM Committee does not agree that there will be no measures in place to reduce the likelihood of early actions. The SEM Committee notes that the TSOs' new scheduling and dispatch systems are different from the existing systems, and that new processes and procedures are being implemented to facilitate the continuous nature of the market, resulting in more dynamic decision-making by the TSOs. The TSOs respecting units' notification times is a particularly clear example of their implementation of the Detailed Design requirement to minimise their impact on ex-ante markets, while continuing to facilitate priority dispatch and minimising costs of non-energy

actions. Through this, the TSOs will not call an early unit on unless it is clearly required to avoid an issue arising.

In addition to these operational processes, the TSOs will also be publishing a wide range of data and reports which will flag to market participants the outcome of the PNs submitted by participants, units currently active, and the results of the various scheduling runs. In addition to these, the TSOs will also be publishing a Forecast Imbalance report. The impact of this additional information will be that ex-ante markets have a clear signal and the necessary information to resolve any likely energy imbalance identified while the intraday market is open. Thus, while the SEM Committee notes the comment that *'the TSOs' scheduling and dispatch tool will now effectively ignore this obligation [TSOs' licence conditions] and generate schedules and commitment runs that look much like SEM, rather than I-SEM'*, it does not agree with the statement. While TSOs will optimise the dispatching of the system to minimise the cost of diverging from PNs, the decisions it will make to achieve this outcome will be flagged in advance to allow ex-ante markets the opportunity to resolve any imbalance identified in the TSO reports.

One other comment from one of the respondents supportive of positive LNAFs at Go-Live concerned the positive signals it would provide to demand participants. It commented that active LNAFs would provide a clear signal to suppliers to minimise their exposure to the balancing market. The respondent noted that these specific benefits arising from this element of the measure were not captured in the TSO modelling and that they are a material consideration in the consideration of whether to apply positive LNAF values or not. The SEM Committee agrees that the application of positive LNAF values would be expected to lead to this incentive effect as the TSOs' delaying of early energy actions could potentially lead to a greater reliance on shorter notice plants, and thus higher imbalance prices.

Thus, at this point, the SEM Committee considers the measures set out above are sufficient to ensure that the TSOs meet their revised licence obligations, and the intent of the Detailed Design. The SEM Committee does not agree that the setting of the LNAFs to zero for Go-Live contradicts the Detailed or High-level design, or that the Detailed Design (SEM-15-065) needs to be reopened. Nevertheless, the SEM Committee recognises that it is important to participants that they can be reassured that the nature and timing of TSO actions does not unduly interfere with the incentives to trade into balance in the intraday market. Hence the SEM Committee will ensure that the terms of reference for the audit of the Scheduling and Dispatch process, provided for in the revised TSO licences, will address the compliance of the TSOs with their obligation to take account of the objective of enabling the ex-ante market to resolve energy imbalances as far as practicable.

Moreover, the SEM Committee has decided that the TSOs will, particularly with the benefit of operational data, consult on a methodology to re-evaluate the determination of LNAF and SIFF values, striking the appropriate balance between enabling the ex-ante markets to resolve energy imbalances and the cost of non-energy actions by the Licensee, as required under their licence.

The SEM Committee has decided that this review shall be completed to facilitate the next set of parameter setting, in time for the setting of LNAF and SIFF from 1 January 2020.

4. RESPONSE PERIOD DURATION

4.1 BACKGROUND

As described in the Consultation Paper, G.12.3 of Part B of the Trading and Settlement Code provides for the refusal of contracted quantities notified to SEMO in the event that a Participant has insufficient credit cover. It also allows a period of time, known as the Response Period after the 'Breach Limit' is exceeded, before contracted quantities are refused, for the Participant to remedy the situation typically by either posting additional collateral or by purchasing energy in the ex-ante markets.

The parameter is applied in G.12.3.1, such that a Response Period commences when the Required Credit Cover Report containing the Credit Increase Notice is provided to the applicable Participant and expires after the Response Period Duration. G.10.1.3 provides for the Regulatory Authorities to determine the Response Period Duration from time to time.

4.2 PROPOSAL

In the Consultation Paper the SEM Committee noted that, in setting the appropriate Response Period Duration, a number of factors need to be taken into account, including the time it takes to arrange a transaction with a Participant's bank, the time it takes to trade out of the position, and the time it takes for SEMO to administer any increase in collateral posted by a Participant notified of a credit breach.

The SEM Committee was also cognisant of the impact of sudden changes in price, say such as could be caused by Administered Scarcity Pricing, could have on Participants' Required Credit Cover. Particularly given that such effects are not within the control of the individual Participant, the SEM Committee considered that Participants should be able to respond to any resulting breach in the normal course of business. The SEM Committee also noted that provisions similar to the Response Period exist in BETTA, and noted that BETTA provides for a five hours time to rectify¹¹.

The SEM Committee also considered the timing of Credit Assessments. Assuming Participants would be notified that they had exceeded the Breach Limit within an hour of the Credit Assessment, the SEM Committee considered that five Working Hours would be a reasonable period, providing Participants the opportunity to either trade out of the credit breach by buying energy, or arranging and posting additional collateral with SEMO.

¹¹ See Section M, paragraph 3.2.2 of the Balancing and Settlement Code

4.3 COMMENTS RECEIVED

Seven respondents expressed views on the Response Period Duration.

Two respondents considered that the five hours proposed as the Response Period Duration was acceptable. These respondents highlighted that the associated requirement to rectify a shortfall in credit collateral could be successfully managed via routine monitoring of their I-SEM collateral position and a prompt financial response.

Five respondents considered that the five working hours proposed as the Response Period Duration was unacceptable, as it would not allow participants sufficient time to respond prior to SEMO starting to reject contract notifications and a trading halt being applied by SEMOpX. However, three of these five respondents suggested alternative arrangements, with slightly longer durations that they considered to be acceptable. The first respondent suggested that the Response Period Duration should be between seven and twelve working hours depending on which Credit Assessment resulted in the issuing of a Credit Cover Increase Notice as per G.12.1.2 of Part B of the Trading and Settlement Code. The second respondent highlighted that the five hours working proposed did not strictly align to the arrangement is BETTA and proposed that the Response Period Duration should be determined to be twenty-four hours including five consecutive working hours but also expressed concern that the credit regime may allow participants to create a significant exposure. The third respondent suggested that that the Response Period should end at 1730 on the next day after the Credit Cover Increase Notice.

Respondents also provided detailed examples reflecting why they considered there should be longer period before the rejection of contract notification starts based on the expectation of interactions between their banking arrangements and those of the I-SEM. One highlighted that it would not be possible to increase a Letter of Credit within the proposed timeframe and therefore the only option to increase collateral would be via a further cash deposit being lodged with SEMO.

One respondent suggested that the definition of working hours applicable to the Response Period Duration should be 0900 to 1700 to align to the typical bank working day rather than reflecting SEMO's working day between 0900 and 1730. A second respondent suggested that SEMO should bring forward modifications to Agreed Procedure 9 to reflect the inclusion of the Response Period Duration within the Part B of the Trading and Settlement Code and this should also include the definition of working hours. This same respondent also expressed concern that the collateral management regime was complex and challenging for participants to comprehend; as such SEMO's credit assessments should be more often each

day. This respondent also highlighted that the potential exposure period resulting from the application of the Response Period Duration could be up to four days over a long weekend. A third respondent claimed that implementing five hours as the elapsed time for the Response Period Duration would impact on the level of competition within the I-SEM.

One respondent expressed concern that the relevant SEMOpx rules / procedures covering the cancellation of third party intermediary agreements due to the application of a trading halts by SEMOpx were, at present, insufficiently specified. It argued that, as a result, it was very difficult to assess the impact on those firms planning to offer third party intermediary services within the ex-ante markets. This respondent proposed that the decision on Response Period Duration should be deferred until the associated SEMOpx matters are confirmed.

4.4 SEM COMMITTEE RESPONSE

The SEM Committee is mindful that there were a range of views from respondents regarding the appropriate elapsed time for the Response Period Duration. The SEM Committee welcomes the support of two respondents for the proposal, and notes that they said that they can adequately manage their collateral within the proposed five working hour period. The SEM Committee notes also that there was concern expressed that the potential level of credit exposure could be material and, in this context, the SEM Committee notes that any unsecured bad debt is socialised across participants. However, the SEM Committee notes that other respondents raised concerns, and presented detailed suggestions, regarding the arrangements related to the Response Period Duration, rather than simply the value of the parameter.

The SEM Committee does not consider it appropriate to defer a decision on the Response Period Duration pending SEMOpx finalising the arrangements for the separation of units from a third party intermediary as suggested by one respondent. The SEM Committee considers that, instead, the determination of the Response Period Duration at this stage will allow for SEMOpx's procedures to be finalised within a known framework.

The SEM Committee accepts the suggestion that it would be prudent to align working hours with normal banking hours i.e. between 0900 and 1700 on working days, rather than with normal SEMO working hours, i.e. from 0900 to 1730, given that participants will be seeking to engage with banks during the Response Period Duration.

The SEM Committee notes the comment that Agreed Procedure 9 should be amended to align to the corresponding provisions in Part B of the Trading and Settlement Code related to

Response Period Duration. The SEM Committee has asked SEMO to consider this matter and bring forward a Modification to Part B of the Trading and Settlement Code prior to I-SEM go-live if required.

The SEM Committee considers that it would be reasonable to extend the Response Period Duration, given the range of conflicting views expressed by respondents. Specifically, the SEM Committee considers that, from Go-Live, the Response Period Duration should include five consecutive working hours, where a working hour is between 0900 and 1700 on a working day. This approach will give participants longer to respond following credit assessments that take place later in the day whilst not materially increasing the overall risk associated with unsecured bad debt.

Lastly, in relation to the comment that suggested that a decision on this parameter should be delayed until the SEMOpX arrangements have been finalised, the SEM Committee also notes that G.10.1.3 of Part B of the Trading and Settlement Code allows it to change to the Response Period Duration as necessary. Furthermore, the actions any NEMO operating in the I-SEM decides to take in relation to contract rejection are distinct from the Part B Trading and Settlement Code arrangements.

5. PCAP AND PFLOOR

5.1 BACKGROUND

As described in the Consultation Paper, E.3.6.3 of Part B of the TSC provides that the Market Price Cap (PCAP) and the Market Price Floor (PFLOOR) set maximum and minimum limits to Imbalance Settlement Price. D.4.1.1 provides for the values of PCAP and PFLOOR to be determined by the Regulatory Authorities.

In the SEM, the PCAP and PFLOOR have been set at 1,000 €/MWh and minus 100 €/MWh since SEM Go-Live in 2007¹², although in SEM, PCAP and PFLOOR apply only to System Marginal Price (SMP). Overall price, i.e. SMP plus capacity rewards cannot, in a settlement period exceed the Value of Lost Load (VoLL), which was set at 10,000 €/MWh for 2007/08, and then increased with inflation, giving a figure in 2017 of 11,047.73 €/MWh. The Consultation Paper explained that PCAP in I-SEM analogous to VoLL in the SEM.

The paper further explained that, in I-SEM, the ex-ante markets will also be subject to price caps and price floors. In the day ahead and interim intraday auctions, a cap and floor are applied on an EU-wide basis in the EUPHEMIA algorithm, at 3,000 €/MWh and minus 500 €/MWh, although these values are under review. Article 41 of CACM¹³ requires the proposal from the NEMOs to the RAs to take into account an estimation of the value to be applied in the case of lost load. In the cross-border intraday continuous trading, under XBID, the cap and floor are currently set at 9,999 €/MWh and minus 9,999 €/MWh. As with the day ahead values these values are also under review at an EU level. The paper stated that these same values will apply also to the interim continuous *within-zone* intraday trading solution proposed for I-SEM Go-Live.

5.2 PROPOSAL

PCAP

The SEM Committee noted that the full Administered Scarcity Price (ASP) will equal the EUPHEMIA price cap of 3,000 €/MWh for a transitional period until 2022/23, but thereafter will increase to VoLL. Moreover, given that, during a scarcity event, ASP is intended to be a

¹² “The Value of Lost Load, the Market Price Cap and the Market Price floor - A Response and Decision Paper”, AIP-SEM-07-484, 18 September 2007.

¹³ “Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management”

floor on the Imbalance Settlement Price, the SEM Committee considered that it was appropriate to set a PCAP higher than the full ASP, at least during the period until 2022/23 that ASP is set below VoLL.

Further, while noting the price caps and floors in the ex-ante markets will not be within the SEM Committee's direct control, the SEM Committee considered it important to ensure that PCAP and PFLOOR in the balancing market does not distort incentives on participants to trade into balance through the ex-ante markets. Specifically, the SEM Committee was concerned that if PCAP were set below the ex-ante market price cap, then PCAP would become a de-facto price cap in the ex-ante markets, which would remove the incentive to trade into balance ex-ante at any price above PCAP.

Hence, the SEM Committee considered that setting PCAP at VoLL is most consistent with the I-SEM design and hence proposed that PCAP be set at 10,000 €/MWh as adjusted by inflation since 2007/8.

PFLOOR

The SEM Committee noted, in the light of the publication of the Clean Energy Package, the direction of travel of allowing prices to reflect scarcity and surplus, and considered that, as with PCAP, balancing market prices should be no more constrained than the ex-ante markets. It noted also that there is no obvious equivalent of VoLL for negative prices. Nevertheless, the SEM Committee proposed that PFLOOR be set at minus 10,000 €/MWh.

5.3 COMMENTS RECEIVED

Five respondents commented on the proposed values of PCAP and PFLOOR. One respondent noted that the SEM Committee commented, in the Consultation Paper, that PCAP and PFLOOR have distinct rationales and provide different market incentives, and agreed with the SEM Committee view that PFLOOR need not be set at the negative of the PCAP level. The SEM Committee's proposal on PCAP, and its rationale provided for setting it at VoLL, was broadly supported by the majority of respondents, while the proposal for PFLOOR, at minus 10,000 €/MWh, was rejected by all the respondents that commented.

PCAP

Three supported setting PCAP at VoLL. A fourth respondent proposed a PCAP set to the day ahead market price cap level of 3,000 €/MWh and the fifth suggested that PCAP should remain at the existing SEM level of 1,000 €/MWh.

One of the three respondents supporting a PCAP of VoLL did so on the basis that this is the maximum level to which PCAP could be rationally set, noting that VoLL is the level to which ASP is planned to rise. It considered that the removal of artificial price cap limitations in energy markets, and thus setting PCAP to VoLL, was likely to be a requirement under State Aid rules when getting approval for the CRM regime for I-SEM. It suggested that while VoLL was the correct PCAP level, the value of VoLL should be reviewed, stating that this had not previously been done, and that a value deemed appropriate for another market(s) should not be accepted at face value as appropriate for I-SEM. It requested the SEM Committee review VoLL to determine a true value.

A second respondent noted that the Administered Scarcity Price is being set to 3,000 €/MWh at Go-Live, with a yet to be defined pathway for it to rise subsequently to VoLL. It questioned whether a transitional approach to PCAP and PFLOOR might also be appropriate to avoid unintended consequences arising. However, it placed more weight on this argument in the context of PFLOOR (see later comments) than it did on PCAP. It concluded that PCAP may need to be set at VoLL to allow plant that was unsuccessful in the CRM auction to bid at up to VoLL, and to allow plant the ability to recover fixed costs at times of system tightness. It thus supported the SEM Committee proposal. This respondent noted also that PCAP is not only the maximum market price but is also the limit on offers. It stated that given that PCAP will limit offers, it is likely the higher PCAP will need to remain. It suggested that the SEM Committee and TSOs consider removing paragraph D.4.4.3 of the TSC.

The third respondent questioned whether PCAP set a limit on energy rewards only, or energy plus capacity rewards. It considered that if PCAP related to solely energy market rewards then a cap of VoLL was appropriate. It cited consistency of price cap levels across the day ahead market (DAM) and the continuous intraday market as its rationale.

A fourth respondent considered that, while setting PCAP at VoLL was theoretically correct, it would be more appropriate to set PCAP at the DAM price cap level at Go-Live, with the cap being reviewed over time. It considered that avoiding distortions between the Balancing Market and the DAM was more important than considerations of reducing distortions between IDM and BM trading, noting that the DAM design was completed, while the IDM design was uncertain, and there are industry concerns about the level of liquidity that may exist in the IDM. It further argued that setting PCAP at VoLL would provide a signal to wind generators, who it considered would be unlikely to hold reliability options, to trade in the Balancing Market rather than the DAM. Additionally, it suggested that a PCAP of VoLL would give rise to supplier exposure should hole-in-the-hedge issues arise in the CRM.

The fifth respondent considered that the PCAP level of the SEM had worked well for the last ten years and served as protection against extreme prices, which might be inadvertently set, and might financially endanger smaller suppliers and wind generators.

PFLOOR

None of the respondents supported the SEM Committee proposal to set PFLOOR at minus 10,000 €/MWh. All respondents considered that a less negative floor price would be appropriate. One respondent suggested that a value between 10% to 15% of that proposed by the SEM Committee might be appropriate, while two other respondents suggested that a PFLOOR be set at minus 500 €/MWh. One respondent suggested a PFLOOR less negative than that suggested by the SEM Committee but in excess of the existing SEM level of minus 100 €/MWh, while the fifth respondent considered that the existing SEM value should be maintained.

Regarding setting PFLOOR at minus 10,000 €/MWh, the first respondent considered that setting PFLOOR based on the data handling capabilities of a trading platform, i.e. XBID, was not appropriate. The second respondent commented that the SEM Committee had placed too much emphasis on aligning PFLOOR to an EU-wide approach to XBID, noting that pan-European consistency of the XBID price floor was likely some years away and that the SEM Committee had discretion on the setting of price caps and floors in the interim. The third respondent commented that the DAM, rather than the IDM, was the more relevant market to consider when seeking to avoid distortions between markets. These respondents explicitly accepted the rationale that prices should be allowed to go negative, and the validity of the signals this sent to the market.

Additional arguments against setting PFLOOR at minus 10,000 €/MWh were varied. The first respondent argued that it accepted that there was no obvious limit on the incentive to how much a party would be prepared to be paid to consume energy. It argued that there should, ideally, be an economic rationale for the PFLOOR value, as there is for the proposed PCAP value of VoLL. It suggested that the experience of other markets, should be considered, noting that in GB the experience has been that instances of negative prices are few, and that on only three occasions had the price been set at or lower than minus 100 £/MWh. It noted that conventional generation may be prepared to bid negatively for certain hours. A second respondent commented that it was not clear in Ireland or Northern Ireland that there were underlying fundamentals that would drive low negative prices.

The first respondent suggested that the situation for renewable generation with support payments was somewhat different to that of a thermal generation unit, noting that, all things being equal and assuming zero marginal costs of production, such generation would be willing to bid negatively only up to the value of their support payments, rather than infinitely negative prices. The second respondent noted that the TSO is required to accept decremental bids from demand down to PFLOOR to avoid the curtailment of wind and that the SEM Committee should give consideration to this aspect of the PFLOOR provisions.

The first respondent argued that market price caps and floors are set as a form of market power mitigation measure, citing the example of a generator behind a constraint being able to bid large negative prices to reduce output. It considered that PFLOOR should reflect the reasonable underlying costs that would drive negative prices in I-SEM, for example the costs (plus a margin) of shutting down and re-starting a thermal unit. It suggested a PFLOOR of between 10% to 15% of the level suggested by the SEM Committee would be more appropriate. The second respondent said that, as some existing DSUs bid at the SEM PFLOOR of minus 100 €/MWh at the moment, this suggested a PFLOOR lower than such bid prices, but less than the value suggested by the SEM Committee. It considered that setting PFLOOR at a highly-negative level, as proposed by the SEM Committee, could influence behaviour, noting that, while the risk of high prices in the Balancing Market could incentivise parties to be long, a high negative price would send a blunt signal not to go long. Further, if a DSU was called, having bid at PFLOOR, it is likely that it would be NIV tagged, thereby increasing imbalance price. Wind trading at the imbalance price would see this higher price, and DBC costs would increase. This second respondent recommended a PFLOOR of minus 500 €/MWh noting that this was aligned with the DAM price floor. The third respondent also suggested setting PFLOOR at this value, as it considered that both PCAP and PFLOOR should be aligned with the DAM cap and floor levels.

The fourth respondent agreed with the SEM Committee principle of avoiding distortions between ex-ante markets and the Balancing Market, but suggested that this required PFLOOR to be determined at a less negative value, i.e. somewhere between the proposed value of minus 9,999 €/MWh and zero.

The fifth respondent favoured maintaining the existing SEM PFLOOR level of minus 100 €/MWh, citing the incident of a highly negative price being set at the GB market price floor of minus 9,999 £/MWh in 2004. It considered that this demonstrated the risks that extreme prices, even if inadvertently set, posed to smaller participants.

5.4 SEM COMMITTEE RESPONSE

The SEM Committee notes that most respondents supported the principle of setting PCAP at VoLL. This said, respondents' views on the rationale for this approach were not completely accepted, and that, notwithstanding the agreement in principle to setting PCAP at VoLL, there were concerns raised about the appropriateness of this value at Go-Live, and in one response opposition to any increase in its level from the existing level of PCAP in the SEM. Further, while the use of VoLL was accepted, one respondent questioned whether VoLL itself (and thus PCAP) were set at the correct level for the I-SEM jurisdictions. Finally, one respondent suggested that the level of PCAP required changes to the TSC, specifically D.4.4.3. These issues are addressed in turn.

PCAP

In formulating its proposals on PCAP and PFLOOR the SEM Committee considered that, in order to encourage balance responsibility any Balancing Market cap and floor price, PCAP and PFLOOR, should be set at least at the levels in ex-ante markets. Regarding the linkage between ex-ante price limits and those in the Balancing Market, one participant expressed the view that setting price caps on the data handling limitations of a particular scheduling tool was not economically sound. The SEM Committee acknowledges also the view that alignment of the PCAP to an ex-ante market price cap to be desirable, but considered that the intraday market was not a suitable reference. The SEM Committee notes these comments but notes that, its proposal was based on the economic rationale of setting PCAP at VoLL. While the SEM Committee did observe that the PCAP should be at least that in the ex-ante markets, this observation was not the basis for recommending PCAP be set at VoLL.

The SEM Committee's proposal to set PCAP at VoLL was primarily that, in the I-SEM, VoLL is the energy rationing price and that the Balancing Market should be allowed, if necessary, to rise to this level. The SEM Committee agrees with and accepts the comments that PCAP should allow for generators to recover all start up and other costs through this market. Thus, the SEM Committee considers that setting a PCAP at below this level is not robust. The SEM Committee notes that this view was supported in a number of responses, and that this is consistent with the level that ASP will rise to after a transitional period. Regarding the comment that pathway for the value of ASP to transition to VoLL was "...yet to be defined." the SEM Committee wishes to clarify that ASP will be based on a percentage of VoLL from 2022/23, as set out in the CRM Detailed Design Decision 2 (SEM-16-022).

Regarding the suggestion that setting PCAP at VoLL may encourage wind generation to trade in the Balancing Market rather than the DAM the SEM Committee considers that the DAM price will reflect expectations of prices in the Balancing Market, and that outturn prices may prove to be either lower or higher. It considers that participants' commercial behaviours will reflect these potential risks and rewards, and considers that it is thus appropriate that the on-the-day price cap should be higher than at the day-ahead stage. In relation to the concern raised on the potential increase in the level of the hole-in-the-hedge arising from a higher PCAP, the SEM Committee notes that this is a known issue and it is for this purpose that the Socialisation Fund exists.

The SEM Committee notes and concurs with the view that, in the broader I-SEM context, the setting of PCAP cannot be decoupled from the CRM arrangements and, in particular, the requirement under State Aid rules to remove barriers to energy market investment, such as price caps. Thus, it concurs that a PCAP set at VoLL would ameliorate potential objections to the CRM arrangements that might arise if it were to be set at a lower level.

The SEM Committee notes the comment regarding the level of VoLL, and its appropriateness for I-SEM. The SEM Committee does not agree with the comment that the I-SEM is accepting a value of VoLL deemed appropriate for another market(s), the basis of which may not be known or appropriate for I-SEM. The VoLL proposed for I-SEM is a continuation of the value set for the SEM at SEM Go-Live which, along with the SEM PCAP and PFLOOR levels implemented at SEM Go-Live, was determined following consultation¹⁴. The SEM Committee does not consider that the approach taken at the time, which was derived from the fixed and variable costs of peaking plant and the generation security standard, requires re-visiting as a consequence of the transition from the SEM to the I-SEM. It notes also that respondents considered, at the time, that the future stability of VoLL was an important consideration in setting its value, and supported it being increased by inflation each year. Thus, the SEM Committee does not agree that a review of VoLL is required at this stage.

One participant commented that, as PCAP is not only a cap on prices but also on offers, then it would be likely that a higher PCAP would need to remain. The SEM Committee is unclear as to the PCAP level to which this statement referred, and notes that the participant explicitly supports a new I-SEM PCAP level set at VoLL for I-SEM, i.e. above the value in the current SEM arrangements. Further, the SEM Committee does not agree that section

¹⁴ "The Value of Lost Load, the Market Price Cap and the Market Price floor - A Response and Decision Paper", AIP-SEM-07-484, 18 September 2007.

D.4.3.3 should be deleted; no rationale for this change is provided, while the effect would be to allow a participant, to offer prices into the market in excess of the economic rationing price. While such an offer, if accepted, would not set price it may be able to earn a make whole payment. With no cap on offer price, an uncapped make whole payment could be significant.

In the light of the considerations set out above, the SEM Committee has thus decided that PCAP at I-SEM Go-Live will be set at the present level of VoLL (i.e. 10,000 €/MWh as set in 2007 and adjusted by inflation as per AIP-SEM-07-484).

PFLOOR

Regarding PFLOOR, the SEM Committee notes that there was opposition to the proposed level of minus 10,000 €/MWh. Concerns expressed related both to the SEM Committee's rationale for the approach, and what were considered to be the unintended or undesirable consequences of setting a large negative price floor. These are addressed in turn.

The SEM Committee's proposed approach was to set PFLOOR of at least the level of the ex-ante market price floors, noting that these were different for the DAM and continuous intraday auction – the latter being the lowest price floor at minus 9,999 €/MWh, arguing that to do otherwise would be distort incentives to trade into balance ex-ante as any, less negative, PFLOOR in the Balancing Market would become a de-facto ex-ante price floor. The SEM Committee notes one respondent questioned the economic logic of setting a PFLOOR at a price determined only by a calculative limit of another market but others, accepted the principle of setting PFLOOR at an ex-ante market floor price level although considered, for various reasons, that the DAM was a more appropriate market to align Balancing Market cap and floor prices with. The SEM Committee considers that, in principle, its view that Balancing Market prices should be no more constrained than those that can be set ex-ante remains sound. That most respondents all suggested a PFLOOR at, or lower than the DAM price floor of minus 500 €/MWh demonstrates a broad support for this approach, with the objections to the XBID floor being based on concerns about the illiquidity of the IDM, and the lack of economic rationale for the XBID floor price. The SEM Committee does accept that there is, at this time, there is no binding EU requirement to set prices at the XBID floor price, and that it can thus consider the broader arguments as to the appropriate level of PFLOOR, focusing on potential market distortions and unintended consequences were it to be set at minus 10,000 €/MWh.

The SEM Committee agrees with the comments that there are no economic fundamentals in the I-SEM that would suggest that conventional generation would be prepared to remain on the system at prices below minus hundreds of €/MWh, and that the evidence from other markets over a number of years is that prices are infrequently negative to that degree. Consequently, regardless of PFLOOR, the SEM Committee would not expect prices to be negative for any sustained period of time, nor that prices would need to go to extreme negative values for generation via their bids to choose to be de-loaded rather than to generate. The SEM Committee concurs with the comments that the level of PFLOOR required to provide a de-loading incentive to conventional generation and to accommodate likely Demand Side Unit (DSU) bid prices, warrants a PFLOOR below the present level in SEM. The SEM Committee further concurs that the suggested PFLOOR of 10% to 15% of the value proposed i.e. between minus 1,000 €/MWh to minus 1,500 €/MWh would be appropriate.

The SEM Committee recognises that DSUs could make negative price bids to increase demand, to avoid the curtailment of wind, and that accepting such bids could increase Dispatch Balancing Costs. The SEM Committee considers that such concerns are, at this stage, inevitably speculative. However, SEM Committee recognises the potential for unintended consequences to result from a PFLOOR of minus 10,000 €/MWh and that hence a higher PFLOOR of minus 1,000 €/MWh would be appropriate at I-SEM Go-Live.

6. SEM COMMITTEE DECISIONS

This section contains a summary of the SEM Committee decisions set out within this paper.

Imbalance Pricing Parameters

The SEM Committee has decided that, at Go-Live, QPAR shall have a value of 10 MWh (equivalent to 60 MWh for an Imbalance Settlement Period). Nevertheless, the SEM Committee continues to consider fully marginal pricing the appropriate objective, and expects that QPAR will be reduced as soon as experience of live market operation shows that there is no compelling evidence that this cannot be done, and that priority will be given to this matter in the first review of parameters post Go-Live.

The SEM Committee has decided that, at Go-Live, DMAT shall have a value of 0.17 MWh (equivalent to approximately 1 MWh for an Imbalance Settlement Period).

Scheduling and Dispatch Parameters

The SEM Committee has decided that, at Go-Live, LNAF and SIFF will be zero. The SEM Committee will consider the time to set SSII at such time as LNAF parameters is to be set to a non-zero value.

The SEM Committee has decided that the terms of reference for the audit of the scheduling and dispatch process required under the TSOs' licences, will address the compliance of the TSOs with their obligation to take account of the objective of enabling the ex-ante markets to resolve energy imbalances as far as practicable.

In addition to this, the TSOs will engage with industry on the LNAF methodology to re-evaluate the determination of LNAF and SIFF values to be completed in time for the setting of LNAF and SIFF to apply from 1 January 2020.

Price Materiality Threshold

The SEM Committee has concluded that 5% is an appropriate threshold for the Price Materiality Threshold from the start of the revised SEM arrangements.

PCAP / PFLOOR

The SEM Committee has decided that:

- PCAP will be set at VoLL (i.e. 10,000 €/MWh set in 2007 and adjusted by inflation as per AIP-SEM-07-484); and,

- PFLOOR will be set at minus 1,000 €/MWh.

The SEM Committee considers that these parameter values maintain the correct economic incentives within the I-SEM regime while mitigating against unintended or unforeseen consequences that could arise from a lower PFLOOR at Go-Live.

Response Period Duration

The SEM Committee has decided that the Response Period Duration will be set as a period of five consecutive hours between 0900 and 1700 on a working day from the start of the I-SEM.

The SEM Committee has asked SEMO to consider whether Agreed Procedure 9 requires modification to align to the corresponding provisions in Part B of the Trading and Settlement Code.

The SEM Committee has asked SEMO to monitor the initial operation of the Response Period Duration within the I-SEM and highlight any issues that arise. The values set out in this paper apply from go-live of the revised SEM arrangements. The SEM Committee expects these parameters to apply from Go-Live until 31 December 2019, and be reviewed for their appropriateness annually thereafter. A consultation will be carried out in May 2019 to determine the values to apply from January 2020, based on a year's data being available.

In regard to the parameters determined in this paper, the Trading and Settlement Code and Licences variously provide for the Regulatory Authorities to amend the values of parameters outside the normal, annual parameter-setting process. While this would only arise in exceptional circumstances, the SEM Committee has obligations to balance regulatory certainty with ensuring that no unnecessary consumer harm arises. On this basis, the RAs will keep all parameters under observation and may propose changes in the interim if necessary via consultation.

APPENDIX A – LIST OF RESPONDENTS

Ten non-confidential responses were received from the following parties:

1. Bord Gáis Energy
2. Brookfield
3. Electric Ireland
4. Enerco
5. ESB GWM
6. Gaelectric
7. IWEA and NIRIG (Joint Response)
8. Prepay Power
9. SSE
10. Viridian

These responses are published on the SEM Committee website.

One response included an appendix that the respondent requested be treated as confidential.