Single Electricity Market

(SEM)

Consultation on compliance of the SEM market arrangements with EU Electricity Balancing Guideline (EU Regulation 2017/2195)

SEM-21-016

09 April 2020

CONTENTS

1. BACKGROUND

The Guideline on Electricity Balancing (2017/2195)[1] the "EBGL" entered into force in late 2017. EBGL sits alongside the other EU market codes like the Forward Capacity Allocation (FCA) and Capacity Allocation and Congestion Management (CACM) to describe the market rules, together known as the EU target model. EBGL is designed to facilitate the integration of balancing markets in Europe, creating efficiencies and enhancing overall European security of supply. It also facilitates demand response and renewables participation in the market. The EBGL harmonises the different European electricity balancing rules and facilitates the exchange of balancing resources between European TSOs. Article 64 of EBGL provided provisions for Ireland and Northern Ireland that this regulation would not apply until 31 December 2019.

Since December 2019 the Regulatory Authorities (RAs), the TSOs, and SEMO have been carrying out a compliance assessment between EBGL requirements and local market arrangements. This exercise has involved regular meetings and calls which focused on analysing whether the detail of the local design matches the detail of the requirements in EBGL. This process is complicated due to structural differences between the SEM and European markets requiring a degree of interpretation e.g. the central dispatch Integrated Scheduling Process approach makes differentiation between energy and non-energy less easy to determine than under self dispatch approach.

This work followed on from a detailed analysis carried out during 2019 of how the SEM might integrate with the EBGL platforms for the exchange of replacement reserves (RR), and manual Frequency Restoration Reserves (mFRR). This work was somewhat surpassed by events in terms of the Brexit Withdrawal Agreement but the work was concluded as far as possible to provide a conceptual understanding of how the SEM could integrate with these platforms when the SEM is recoupled with the rest of the Internal Electricity Market through the Celtic Interconnector in 2026. A high-level summary of this work was published as an information note on the SEMO website[2]. This work has informed TSOs and the RAs' understanding of the EBGL significantly, and this work will put the market in a good position for the eventual linking up of these platforms with the SEM.

The TSOs published a consultation on the Terms and Conditions for Balancing Services under Article 18 of the EBGL in November 2020. Following this consultation, the TSOs made a submission to the Regulatory Authorities on 22 January 2021. This process has also fed into the compliance assessment from the RAs, the TSOs, and SEMO of the SEM arrangements with the EBGL.

The analysis has included all relevant articles in EBGL, with particular focus given to the following topics:

- Balancing Energy Pricing and Settlement (Articles 30, 44-49);
- Imbalance Pricing and Settlement: Articles (52-55);
- Publications and data (Articles 12, 59, 60);

[1] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017R2195&from=EN

[2] https://www.sem-o.com/documents/general-publications/Note-on-Converting-SEM-Bids-to-EB-GL-Standard-Products.pdf

- Terms and conditions requirements, modifications, and approval (Articles 4-7, 10, 18, 24, 26);

The analysis has also taken into account the relevant EBGL methodologies, such as the Imbalance Settlement Harmonisation Proposal (ISHP) and the Pricing Proposal (PP). These are pan-EU methodologies, produced by all TSOs and approved by Agency for the Cooperation of Energy Regulators (ACER) in conjunction with National Regulatory Authorities.

The compliance of each of these areas was assessed against the EBGL by the RAs, the TSOs and SEMO. The RAs recognise that the issues covered by this paper and the accompanying EirGrid and SONI paper are particularly complex topics and relate to core elements of the design and operation of the balancing market and the signals for balance responsibility for market participants. Both this consultation paper and the TSOs' submission assumes a reasonable level of familiarity with the balancing market pricing rules as a starting point. For further background on balancing market pricing rules, please see the SEMO training materials published on SEMO's website[3].

[3] https://www.sem-o.com/training/modules/

CURRENT ARRANGEMENTS

The current arrangements in the Single Energy Market (SEM) require all Balancing Service Providers (BSPs) to submit upward and downward bids ('incs' and 'decs') to enable the Market Operator to activate balancing energy in real-time. The co-optimised Integrated Scheduling Process in the SEM ensures that sufficient margins are available in real-time to meet the minimum operational security requirements. In the SEM, market participants are free to trade all of their available volume in the ex-ante markets. If a dispatch instruction is required to achieve the co-optimised outcome of maintaining energy balancing and to maintain the minimum margins in real-time, the resulting volume difference versus the ex-ante trades will be settled through the balancing market, with considerations taken of whether the action is "energy" or "non-energy" in determining the prices which apply.

In the current approach System Operator (SO) Flags and Net Imbalance Volume (NIV) Tags are part of an iterative process to determine which actions were primarily for energy purposes and which actions were primarily for non-energy purposes. SO flagging identifies units which appear to be meeting binding system requirements. Non-Marginal (NM) flagging identifies units and actions which cannot be considered marginal because they are not representative of the price of the next theoretical action. The most expensive action which is not SO or NM flagged sets the Marginal Energy Action Price (PMEA). The Replacement Bid Offer Price (PRBO) process uses this marginal price to replace the bid offer price for any action with a price that was out of merit against this price.

The current imbalance pricing approach is set out broadly in the following steps:

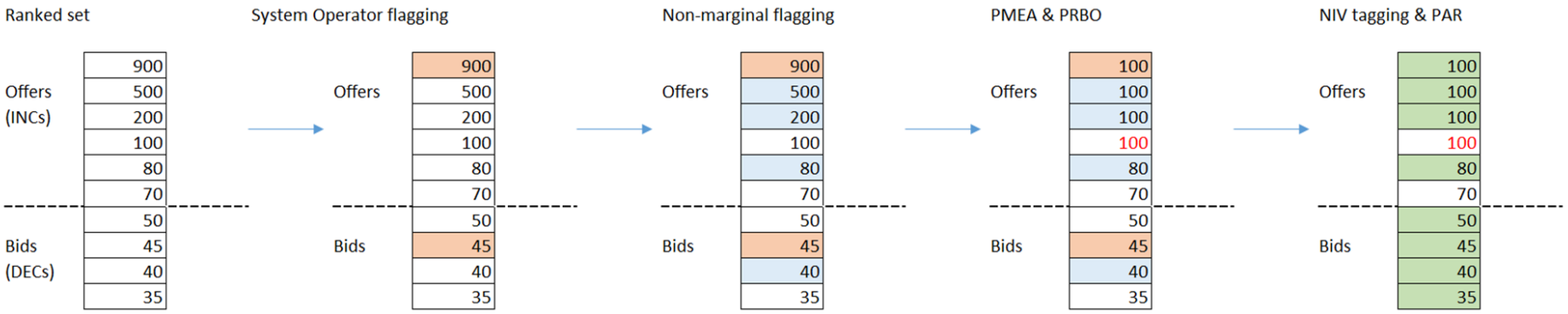
1. Accepted Bids and Offers are used to derive a single ranked set where they are sorted in order of price.
   All actions with volumes smaller than the De Minimis Acceptance Threshold (DMAT) are excluded from the ranked set. The Net Imbalance Volume Quantity (QNIV) is calculated based on the sum of the volumes of actions taken;
2. The System Operator Flags are determined by testing if a unit is contributing to a binding network or operational constraint;
3. Non-Marginal Flags (FNMs) are determined by testing if a unit is against its physical output limits (unit's scheduled output is at its Minimum Stable Generation; Maximum Generation; or represents the maximum change possible when ramping from the scheduled output), or an action is not the most recent potentially marginal action taken on the unit (volumes associated with instructions earlier than the most recent, and in price bands not representing the dispatched output of the unit);
4. The Marginal Energy Action Price (PMEA) is the most expensive unflagged action in the ranked set. If QNIV is positive (system short) PMEA is the highest priced unflagged action, if QNIV is negative (system long) PMEA is the lowest priced unflagged action;
5. All actions which have less economic prices than the PMEA have their prices replaced by PMEA for the remainder of the process;
6. In Initial NIV Tagging it is assumed that all actions in the opposite direction to the NIV are Initial NIV Tagged, and then all actions in the same direction as the NIV which have been SO or NM Flagged are Initial NIV Tagged;

7. This step of NIV Tagging makes the volume of untagged actions match the QNIV. A volume (the Residual Tagged Quantity) is calculated of additional actions which need to be tagged or untagged in order to have a number of untagged actions equal to QNIV;
8. The Imbalance Price is calculated based on the volume-weighted average price of the most expensive X MWh which is not NIV Tagged. The X MWh is defined by the Price Average Reference Quantity (QPAR) parameter, which is currently set to a value of 10MWh for an Imbalance Pricing Period, equivalent to 60MWh for an Imbalance Settlement Period.

Please see examples in figure 1 below.

Figure 1: Examples of flagging and tagging approach.

In the below example the system is short (QNIV positive), all actions are the same size:



In the below example the system is long (QNIV negative), all actions are the same size:

COMPLIANCE ASSESSMENT

This paper and the accompanying EirGrid and SONI paper summarises the analysis carried out on the SEM arrangements' compliance with the EBGL. The issues described below focus on areas where it is possible the local approach may be different to the EBGL requirement, or it is not clear that the local approach is compliant. Based on this analysis the RAs are of the view that for the areas in the EBGL which are not referenced as part of the issues described below, the requirements are either not relevant to the SEM at this time or the SEM is compliant with the relevant requirements.

As part of this compliance assessment process the RAs, TSOs and SEMO identified 23 open issues which required further detailed analysis to determine compliance. These 23 issues are detailed below. In this paper, the RAs aim to present the issue at a high level, to introduce the topic, with the majority of the detail being in EirGrid and SONI's paper published alongside this consultation analysing EBGL compliance. This reflects the analysis carried out by the RAs and TSOs which looked at how an explanation/interpretation of an area might be considered meeting the EBGL requirement or identifying what may need to be changed in order to gain compliance. Rather than delaying the delivery of this work to industry until a common minded-to position could be reached, the RAs consider there is greater value in issuing this consultation now.

Pricing issues

1. Marginal Energy Action Price and Replacement Bid Offer Price process

Description of issue(s)

In the current approach System Operator (SO) Flags and Net Imbalance Volume (NIV) Tags are part of an iterative process to determine which actions were primarily for energy purposes and which actions were primarily for non-energy purposes. This is considered in section 2.2.1 of EirGrid and SONI paper analysing EBGL compliance. SO flagging identifies units which appear to be meeting binding system requirements and are therefore having their dispatch influenced at least partially by non-energy reasons, and Non-Marginal (NM) flagging identifies units and actions which cannot be considered marginal because they are not representative of the price of the next theoretical action. The most expensive action which is not SO or NM flagged sets the Marginal Energy Action Price. This price replaces the bid offer price for the remainder of the calculation for any action with a price that was out of merit against this price. Net Imbalance Volume Tagging calculates which actions meet the imbalance requirement, starting by considering all previously flagged actions, and actions in the opposite direction to the Net Imbalance Volume, as initially tagged, and then determining the final tagging of each action based on the amount needed to be untagged to meet the Net Imbalance Volume.

There are a number of areas open to interpretation in this topic. One question is what are the "energy" actions to be considered valid for calculating the bounds in Article 55? Also based on this, is it valid to allow the Marginal Energy Action Price (PMEA) to replace the Bid Offer Price (PBO) of actions included in calculating this bound and in setting the final price?

There may be a number of approaches to determining which actions are energy or non-energy which are compliant with the EBGL requirements. From the analysis carried out, the following appears to be the interpretation of how this is done for the current approach: All actions in the ranked set which are taken according to a normal market-based common merit order approach, which are in the direction of the NIV, which are not NIV Tagged, and which are in-merit against the marginal energy action price, are considered energy. All other actions are considered non-energy. It could be argued that based upon this interpretation, the requirements of Article 55 are met. In this approach all actions which are NIV Tagged or are out-of-merit versus the marginal energy action are seen as non-energy and should not have their bid or offer price in the final price or the Article 55 boundary condition, otherwise an energy action and their bid or offer is valid. This approach uses three primary pieces of data in the ex-post energy/non-energy identification process: System Operator Flags, Net Imbalance Volume Tags, and the prices used for the actions in setting the final price. These prices include the Bid Offer Price, Marginal Energy Action Price, and Bid Offer Replacement Price.

In following an approach where the prices of out-of-merit volumes are replaced with the marginal price and are included in the average, the calculated price tends to move more towards the marginal price when calculating a weighted average. Therefore, it could be argued the requirements of Article 55 for the price to be the greater than or less than the "volume weighted average of the energy action prices" would be met by a price which includes bid offer replacement prices in the calculation which work to make the price move towards the marginal price in the right direction away from this volume weighted average price required for Article 55.

If it were deemed necessary to remove the PMEA/PRBO functionality in the pricing approach, there may be possible impacts on prices in some periods. For example, actions which have been determined in the flagging step as "out of merit" and used for non-energy purposes would have their price included in setting the final price, because they are included within the NIV. This could lead to spikier outturn prices as, when NIV is positive (system short, or negative system imbalance), it can increase the price and when NIV is negative (system long, or positive system imbalance) it can decrease the price. Imbalance prices may in this situation more closely follow the NIV, but no longer as strongly representing the impact of other metrics such as the level to which the system is constrained.

The RAs would welcome stakeholder views and opinions on the above topic.

2. 5-minute ranked set basis with 30-minute price averaging versus a 30-minute ranked set

Description of issue(s)

There are a number of areas open to interpretation in this topic. The current approach uses five minute pricing automated in the pricing process (in particular flagging energy vs non-energy) using the Real Time Dispatch system. This is especially the case for System Operator Flagging as part of the process to determine which actions are energy or non-energy. The five minute period prices are converted to a single half hour price because this is the current Imbalance Settlement Period duration, and is the granularity available for metered quantities. It is not immediately obvious if this approach with calculations on a 5 minute period basis meets every detail of the requirements of the EBGL and methodologies. This is considered in section 2.2.2 of EirGrid and SONI paper analysing EBGL compliance.

Article 55 of EBGL sets out boundary conditions for the imbalance price, setting out conditions for a minimum price (based on weighted average price of positive activated balancing energy) when the system is short (positive NIV, described as a negative imbalance in EBGL), and a maximum price (based on weighted average price of negative activated balancing energy) when the system is long (negative NIV, described as a positive imbalance in EBGL). Considerations include what prices should be considered for the boundary conditions in Article 55, how the imbalance price is calculated, and if this would change how we determine what is an energy action.

One possible approach to a half hour ranked set is to keep the current flagging approach, and approach of calculating quantities and prices on a 5 minute basis, but to take all the quantities in a half hour altogether for the pricing calculation rather than in each 5 minute period separately.

An argument against changing to a half hour ranked set is that this could be seen as a regressive step in terms of moving from more accurate fine-granular information to less accurate coarse-granular information. This may lose some of the value of having 5 minute based calculations by spreading it across the half hour and potentially making it more difficult to move to 15 minute Market Time Unit (MTU) or Imbalance Settlement Period (ISP) in the future.

The possible impact of changing to a half hour ranked set is that the price could at times be higher, driven by shorter more expensive actions being able to set the price for a whole half hour rather than just influencing 5 minutes of the half hour average. However, the price could also be made more benign by removing some of the individual 5 minute signals through tagging across all periods. Overall, the effect on prices may not be too large in most periods.

The RAs would welcome stakeholder views and opinions on 30-minute ranked set.

3. Non-Marginal Flagging functionality

Description of issue(s)

The main issue under consideration in this topic is whether or not “marginal” in the context of compliance with EBGL should be taken as either:

> The economic term taken as the policy and practice in the SEM for the past 10+ years, including explicit SEMC I-SEM design decisions, which only consider the cost of the next action which would theoretically be taken to resolve an infinitesimal change in imbalance in any direction; or
>
> The practice in Europe, though not explicitly defined as being so, which takes the most expensive action which is meeting the energy requirement as marginal.

This is considered in section 2.1.1 of EirGrid and SONI paper analysing EBGL compliance. In Europe it may be a case that the two definitions of marginal are merely the same thing, given that it is largely a portfolio-based approach which considers only products of energy being provided, not energy as provided by a specific physical source which can have unit-based constraints applied. Based on SEM Committee decisions, the current policy is to have unit-based markets which therefore would have to look at this issue where other European markets do not, and therefore comparing the SEM approach to the standard approach may not be valid.

Non-Marginal Flagging is used to find the “needle in the haystack” of the last action taken and represents the next action which would be taken at the marginal cost. Actions on units which are against unit constraints (maximum generation, minimum generation, ramping) or actions in price bands or older orders which do not represent the current output level of the unit, are flagged out as they cannot be the “next action”. This Non-Marginal Flagging functionality follows the current definition of “marginal” in the SEM, but could result in the most expensive action meeting the energy requirement being flagged as non-marginal, which may not align with the current practice in other European markets.

If this NM flagging functionality was removed, the price could be influenced or set by a more expensive unit which is against its maximum generation, minimum generation, or ramp limits, which would otherwise have not influenced the price. It would greatly increase the number of actions available to set the price and decrease the number of actions which are “Initial NIV Tagged” because the rule that all bar the last quantity on the unit should be NM flagged would be removed. If NM flagging functionality was removed it may increase average imbalance prices with potentially more expensive units now influencing it.

The RAs would welcome stakeholder views and opinions on the above topic.

4. Administered Scarcity Pricing

Description of issue(s)

This issue relates to the requirement in Article 55 of EBGL that the imbalance price for positive imbalances (e.g. when the system is long) shall not be greater than the weighted average price for negative activated balancing energy. This is considered in section 2.1.3 of EirGrid and SONI paper analysing EBGL compliance. The boundary conditions created by Article 55 in these conditions of a long system mean they act effectively as a price cap (as opposed to a price floor when system is short). This creates an interaction with the Administered Scarcity Price (ASP) component, as allowed for in the Imbalance Settlement Harmonisation proposal.

In market conditions where the system is long and the ASP is activated, this could cause a non-compliance with the boundary conditions set out in Article 55.

If the ASP component needs to be removed from the imbalance price, an alternative approach could be developed, with this potentially taking different forms. For instance it could be a separate standalone charge targeted at non-performing capacity market units, which doesn't use the imbalance price but applies some equivalent treatment as the ASP would have applied, helping to keep equivalent incentives on capacity market units.

The RAs would welcome stakeholder views and opinions on the topic of interaction of ASP component with boundary conditions.

5. Market Backup Price

Description of issue(s)

This issue relates to the requirement in the Imbalance Settlement Harmonisation proposal to determine a value of avoided activation (VoAA). This VoAA is derived from the bids available to the TSO from mFRR, RR or local Integrated Scheduling Process bids. This is considered in section 2.1.2 of EirGrid and SONI paper analysing EBGL compliance.

Currently the SEM has the same backup price for all situations, which is based on ex-ante market prices. However, in the event of no activation of balancing energy in either direction the EBGL requires the price to be within the boundaries (depending on if system is long or short) of the VoAA.

This raises the issue of needing to develop a new backup price for the situation where no activation has occurred. There is also a question of should this price apply in other backup price situations, instead of the approach based on ex-ante market prices.

The RAs would welcome stakeholder views and opinions regarding the above issue.

6. Issue of prohibiting actions due to internal congestion setting the price

Description of issue(s)

This issue relates to the SEM's compliance with EBGL in relation to allowing actions due to internal congestion setting the price. This is considered in section 2.2.3 of EirGrid and SONI paper analysing EBGL compliance.

The primary approach in SEM to determining energy or non-energy actions is a combination of flagging and tagging. Some actions can be both flagged and tagged, and are determined to be non-energy; some initially flagged actions could be unflagged and determined to be energy; some initially unflagged actions could be tagged and determined to be non-energy; and some actions could be unflagged and untagged and determined to be energy. This represents a balanced approach to finding what is the primary driver of an action being taken when they are contributing to both the energy and non-energy requirements.

A congestion action can also be tagged out in the NIV tagging if it is expensive in the merit order or if is in the opposite direction to the NIV, to be considered driven primarily by non-energy requirements, and therefore not set the energy price.

The RAs would welcome stakeholder views and opinions in relation to allowing actions due to internal congestion setting the price.

7. Sign convention for imbalances

Description of issue(s)

This issue relates to different terminology used in the SEM versus in the EBGL in relation to the sign conventions of imbalances (positive or negative). This is considered in section 2.2.5 of EirGrid and SONI paper analysing EBGL compliance.

While this could be negated through a code change or system change, a change to the TSC could also be implemented by introducing a clarifying paragraph explaining how the NIV relates to the Total System Imbalances (from ISH proposal), the sign convention differences, and how they relate to the fundamentals of the system being long or short. By introducing a term similar to that in ISHP, "Total System Imbalances", and stating in the interpretation section of the TSC that the Total System Imbalance referred to in European regulation is equal to the NIV but with the opposite sign, this could clarify what sign NIV and Total System Imbalance have when the system is in shortage or in surplus. A change directly to the systems would likely be far more onerous.

The RAs would welcome stakeholder views and opinions in relation to the issue of sign conventions of imbalances described above.

8. Are Integrated Scheduling Process Bids their own product type or should they be defined as a Specific Product?

Description of issue(s)

This issue relates to whether the local SEM Integrated Scheduling Process Bids can be seen as their own product type or if they should be defined as a Specific Product. This is considered in section 2.4.7 of EirGrid and SONI paper analysing EBGL compliance. If the Integrated Scheduling Process Bids can be seen as their own product type then they may not have to follow the same rules on activation of local bids, balancing energy pricing, and settlement, as if they would if defined as a Specific Product.

Specific products need to be justified on the basis that standard products are not sufficient to ensure operational security, necessitating the use of specific products. However, Integrated Scheduling Process Bids already seem to be recognised within EBGL as being allowed in order to ensure operational security (in Article 27(2) of EBGL). EBGL allows for a TSO operating a Central Dispatching Model following approval from the relevant RAs under Article 14, with Integrated Scheduling Process Bids being an integral part of this approach.

There are elements of Integrated Scheduling Process Bids which are different to standard products. This suggests they could be seen as specific products with those different aspects outlined in the specific product proposal, including locational information, the settlement approach (better of pay-as-bid or pay-as-clear) and potentially other aspects for system operations reasons, such as reserve and other system service capability information.

If Integrated Scheduling Process Bids need to be interpreted as Specific Products, then there would need to be a proposal submitted to the RAs for them to approve their use. Article 26 of EBGL sets out a number of requirements for using specific products, including a definition of the specific product, demonstration that standard products are not sufficient to ensure operational security and continual reporting requirements (justifying their existence, volumes procured and used, and measuring indicators of efficiency losses, inefficiencies and distortions due to these products).

The RAs would welcome stakeholder views and opinions on whether local SEM Integrated Scheduling Process Bids can be seen as their own product type or if they should be defined as a Specific Product.

Settlement issues

9. Is it appropriate\compliant to settle units at the better of the imbalance price and bid offer price?

Description of issue(s)

This issue is in relation to whether it is compliant to settle units at the better of the imbalance price and bid offer price. The extent to which the harmonised rules on pricing and settlement apply to these bids might depend on the interpreted definition of what is energy and non-energy. This topic is considered in section 2.6.1 of EirGrid and SONI paper analysing EBGL compliance.

Does the settlement approach sufficiently meet the general principles of settling energy actions as cleared, and are there any requirements for non-energy action settlement? If Integrated Scheduling Process Bids are to be seen as a specific product then there are explicit rules to be followed, if they are their own product type there are not specific rules for how these need to be settled. However it would make sense for settlement of these bids to meet the general principles of settlement as set out in EBGL. In general the principle is for "pay as clear" for energy actions, without any specific rules on how to settle non-energy (redispatch).

Since there is no specific requirement on how to settle non-energy actions, other than the Clean Energy Package (CEP) different requirements for market based methods or non-market based methods, then it is possible that the current approach which allows non-energy actions to be settled at the better of pay-as-bid or pay-as-clear may be compliant with EBGL.

There may be a number of approaches to determining which actions are energy or non-energy which are compliant with the EBGL requirements. From the analysis carried out, the following seems to be the interpretation of how this is done for the current approach: All actions in the ranked set which are taken according to a normal market-based common merit order approach, which are in the direction of the NIV, which are not NIV Tagged, and which are in-merit against the marginal energy action price, are considered energy. All other actions are considered non-energy. If the interpretation of energy actions is taken as per section 1, then the current SEM settlement approach may be seen as compliant. For instance, if a unit was not in merit, even though it was included in the NIV it would be seen as a non-energy action and therefore can be paid-as-bid while being compliant. In general, those actions in merit would have prices in settlement such that the approach of settling on the better of bid offer price and imbalance price would result in them being settled at the imbalance price, i.e. pay-as-clear, meeting the principle in the EBGL.

The RAs would welcome stakeholder views and opinions on the above issue.

10. Is the settlement of Pumped Storage Units in Pump / Transition Mode compliant?

Description of issue(s)

This issue relates to how pumped storage is treated slightly differently in terms of settlement to other units when it is pumping or transitioning out of or into pump mode, and whether this is compliant with EBGL. This is considered in section 2.5.1 of EirGrid and SONI paper analysing EBGL compliance.

Pumped storage units Imbalance settlement is the same as other units, except in periods where the unit is pumping, or transitioning out of or into pump mode. When this is the case, only balancing market activated volumes are settled, not any other imbalances. This is due to that fact pumped storage units in the SEM do not have governor control regarding the level to which they consume power when dispatched to pump.

In the current SEM arrangements if there is a difference between the trade position of the unit, and the metered position of the unit, which is not due to a balancing activation, there is no settlement of that difference in volume in the periods in question. There is a question to whether this is compliant with the settlement approach in EBGL and ISHP.

The RAs would welcome stakeholder views and opinions on settlement of Pumped Storage Units as described above.

11. Is the current settlement of DSUs in SEM compliant with EBGL?

Description of issue(s)

This issue relates to the compliance with EBGL with how settlement of DSUs is currently carried out in the SEM. This is considered in section 2.5.2 of EirGrid and SONI paper analysing EBGL compliance.

DSUs currently cannot have their metered position determined, and arrangements are not in place to be able to have them take title to the energy change experienced by the demand sites, which shows up through that demand site's Supplier Unit metered quantity.

Rather than double-count the activation of energy on the DSU, and the change in demand on the demand sites on the Supplier, the energy activation on the DSU is removed in settlement. Depending on the DSUs' trading approach on the ex-ante markets, if they trade as expected (i.e. none, or equal and opposite trades to cancel net position between the DSU and Trading Site Supplier Unit to zero), this treatment would have the net effect of removing the settlement of the imbalances – only net settlement of the premium or discount for some activated balancing actions would remain.

Also, because metered quantity cannot be determined, actual imbalances cannot really be determined even if the energy activation were to stay settled on the DSU. – The current approach assumes that the meter is equal to the dispatch position, in other words the DSU delivered all of what was instructed by the TSOs.

There is an interim approach which assigns the energy revenue to the DSU participant in periods where the capacity market difference charges apply to them. In order to not double count, this cost is then socialised throughout all the suppliers in the market.

An enduring solution will be developed going forward, however this is a complex issue and will require time. The RAs would welcome stakeholder views and opinions on settlement of DSUs as described above.

12. Uninstructed Imbalance Charges, Fixed Cost Payments and Charges, Non-Firm Quantities, “Undo” actions, RES curtailment.

Description of issue(s)

This issue relates to the implementation of certain settlement elements (Uninstructed Imbalance Charges, Fixed Cost Payments and Charges, Non-Firm Quantities, “Undo” actions, RES curtailment), and their compliance with EBGL. This is considered in section 2.6.2 of EirGrid and SONI paper analysing EBGL compliance.

EBGL Article 44(3) allows for “additional settlement mechanisms” to be developed to settle “other costs related to balancing”, so long as they are approved by the RAs in the proposal. Since these mechanisms were included in the SEMC decisions on I-SEM energy market detailed design and approval of the Trading and Settlement Code, it could be argued that this proposal for additional settlement mechanisms could be seen as already approved.

Also, as the TSO proposal for Terms and Conditions under EBGL Article 18 explicitly maps aspects of TSC to the EBGL requirements, will also have to be approved, this proposal for additional settlement mechanisms could be interpreted as approved. Based on either of the above interpretations, “undo” actions, non-firm, and Fixed Cost Payments and charges, and Uninstructed Imbalance Charges may be thought of as approved additional settlement mechanisms for these other costs related to balancing under Article 44(3).

RES curtailment is considered separately to the above elements. This area is being considered in work on the CEP Articles 12 and 13, and so nothing is considered directly here.

The RAs would welcome stakeholder views and opinions on the use of certain settlement elements as described above.

13. Can values of 0MW be used when no data is available to calculate a value

Description of issue(s)

This issue relates to how calculations are undertaken when no data is available. In the SEM zero values are used when no data is available to calculate a value, for instance, when calculating net ex-ante market trades (QEX) when a unit has no trades. This is considered in section 2.6.3 of EirGrid and SONI paper analysing EBGL compliance.

In the SEM the current TSC uses a zero default value, stating:

> *“F.2.1.2 The Market Operator shall set the value of a variable at zero where this Code states that a provision does not apply to a Unit, and where the variable which is the result of that provision is to be used in a later process for that Unit.”*

There is nothing explicitly mentioned in EBGL in relation to this. However, the rules for Emergency and Restoration process are referred to in Article 18(2) of EBGL. Given that a lot of data would not be available in the Administered Imbalance Settlement, there may be a need to have a more explicit reference for using values of zero when no data is available, either in administered settlement or if not trading.

One option could take the form of a possible code change clarifying the default value of zero (or otherwise) for various variables in scenario such as when data is missing. The RAs would welcome stakeholder views and opinions on the use of a zero default value.

General issues

14. Requirement that the Integrated Scheduling Process Gate Closure Time must be less than 8 hours before real time

Description of issue(s)

As the SEM currently applies a Central Dispatch Model, the EBGL requires that no later than two years after its entry into force, the SEM TSOs will define at least one Integrated Scheduling Process gate closure time, no longer than eight hours before real-time. This is considered in section 2.3.3 of EirGrid and SONI paper analysing EBGL compliance.

Although 'Integrated Scheduling Process' bids are not explicitly and definitively defined within the EBGL, the RA's interpretation is that they comprise both Commercial Offer Data (COD) and Technical Offer Data (TOD). Therefore, both COD and TOD should be compliant with this requirement with neither having a gate closure longer than eight hours before real-time. However, under current market arrangements, there are two different gate closure times for COD and TOD.

For COD (and the submission of Physical Notifications (PNs)), the gate closure time is one hour before the Imbalance Settlement Period commences while for TOD, the gate closure time is at 13:30 day-ahead (i.e., 13:30 D-1). This means that presently, the TOD gate closure is likely to be non-compliant with the EBGL requirement.

While gate closure times can be changed, any modification would not be without its difficulties as there would be numerous technical challenges that would need to be addressed. Once balancing energy is exchanged via the MARI and TERRE platforms in the future, this requirement and its compliance will have greater consequences.

Finally, although the EBGL provides an option for a derogation away from this gate closure requirement, any derogation would only be for a finite period of time. The RAs would welcome stakeholder views and opinions on Gate Closure Time issue discussed above.

15. Consider if the Grid Code and TSC mods process constitutes a "public consultation" as required under EBGL for adjustments to terms and conditions

Description of issue(s)

This issue primarily relates to the EBGL requirement that the provision of terms and conditions and any subsequent amendment of these, should be publicly consulted on by TSOs for a minimum period of one month. This particularly concerns the terms and conditions relating to balancing (Article 18) which map the requirements of the EBGL to the local codes used in SEM. This is considered in section 2.3.1 of EirGrid and SONI paper analysing EBGL compliance.

It is possible that this obligation for a public consultation could be met in a number of different ways depending, to an extent, on where the final approved mapping under the proposed terms and conditions will be sited. For example, if the document is standalone or an integral part of some other code (such as Grid Code or the Trading and Settlement Code).

Consideration has been given to the use of the current public consultation methods utilised as part of the Trading and Settlement Code modification process. However, it is unclear whether these are suitable for amending the local terms and conditions or whether a separate process needs to be defined.

If, for example, the Trading and Settlement Code's modification process was to be followed, modification timelines would have to be examined in detail to ensure that consultation for a month is viable. Furthermore, consideration would also have to be given to whether the TSOs undertook a consultation before or after the modification process itself as this could have implications on timeframes.

If the current public consultation timelines utilised as part of the Trading and Settlement Code modification process are not seen as sufficient, an additional step could be included of an explicit one-month public consultation on a version of the proposed amendments to the relevant terms and conditions.

The RAs would welcome stakeholder views and opinions on how modification to the local terms and conditions may be carried out in order to ensure full public consultation.

It should be noted that this issue also relates to the additional topic of the local terms and condition's governance, which is addressed at a later stage in this document.

16. Is there sufficient evidence and rights under Article 12(4) to not publish offered prices and quantities

Description of issue(s)

The EBGL provides a mechanism by which the TSO can, if justified, prevent the publishing of market related offered prices and quantities as soon as the information becomes available and no later than 30 minutes after the relevant market time unit. This is on the provision that there may be market abuse concerns or if it may be detrimental to the functioning of the SEM. This is considered in section 2.4.2 of EirGrid and SONI paper analysing EBGL compliance.

With transparency a key objective of the SEM, reports are already published which contain individual unit-based price and quantity Commercial Offer Data (COD), Technical Offer Data (TOD) and Physical Notifications (PNs), all of which allow for available quantities to be calculated. In addition, a report with anonymised data of the composite all-market incremental and decremental curves is also published. The main difference is that some of this information is published one day after the event at D+1.

Should this data be published at a much earlier time (no later than 30 minutes after the relevant market time unit) then consideration would need to be given to any potential issues, such as market power matters, that may arise. As it is unlikely that the TSOs, RAs or others would proactively monitor market power within such a short time period, concern remains that in a small energy market such as the SEM, this may provide an advantage for larger market participants who may be better placed to undertake real-time analysis and bidding to the disadvantage of small market participants. There is a need for a balance to be struck between transparency and market power concerns.

The RAs would welcome stakeholder views and opinions on this topic.

17. Publication of data as required under Article 12(3)(e) of EBGL

Description of issue(s)

This issue relates to what information is published in relation to balancing energy volumes as required in EBGL. This is considered in section 2.4.3 of EirGrid and SONI paper analysing EBGL compliance.

If data under Article 12(3)(e) is needed, it must be determined if the current anonymised inc / dec curves report based on the current design (creating a composite curve of all inc and dec quantities) meets the requirements under Article 12(3)(e).

A lot of the information described in Article 12(3)(e) is likely not required for now until the TERRE and MARI platforms are implemented in the SEM. The Anonymised Inc / Dec Curves Report (REPT_081) is already published in the SEM, it is available to all the Market Participants and

the public. The content of the report is a composite, anonymised Incremental curve and decremental curve. This may represent the only practically possible set of values to publish for integrated scheduling process bids until the conversion process to connect with TERRE and MARI is developed at which point information including volumes up or down from PN, and limited by TOD, may be available.

The RAs would welcome stakeholder views and opinions on these data publication requirements.

18. General governance: How should the document which maps the European requirements to the local terms and conditions be governed, updated, etc. after the initial drafting?

Description of issue(s)

This issue is related to the earlier topic examining how public consultations should be undertaken whenever the local terms and condition are updated and amended. This is considered in section 2.3.2 of EirGrid and SONI paper analysing EBGL compliance.

Article 18 of the EBGL requires that TSOs develop local terms and conditions for balancing service providers and balance responsible parties and, in the case of the SEM, the proposal for these terms and conditions maps the requirements of the EBGL to the local codes.

While the TSOs have already developed and consulted on the terms and conditions, a decision is now required to determine where the document is located and its subsequent governance. Presently, there are two schools of thought.

One option is that the document should be held within an existing framework such as the Trading and Settlement Code, possibly as an Appendix. This would not only allow the local terms and conditions to avail of and benefit from the Trading and Settlement Code's processes for governance and modification but, as many electricity licenses require licensees to be party to the Trading and Settlement Code, would also include licensees being party to the new requirements.

Another option is that the local terms and conditions could be a standalone document that does not sit within any existing framework. Some market-related documents already use a similar structure – for example, the Balancing Market Principles Statement. If this is to be the case, then new bespoke governance arrangements may need to be developed and implemented. In addition, other existing documents may need to be updated to provide a reference to the new terms and conditions. This arrangement may provide some benefits by allowing a more flexible and responsive governance regime to be established.

Although these are the two principle schools of thought that appear to arise, there may well be additional arrangements that should be considered. The RAs are keen to receive views from stakeholders on this issue.

19. Should the EBGL objectives be referred to, or explicitly included, in the local terms and conditions?

Description of issue(s)

This issue is whether the EBGL objectives should be referred to, or explicitly included in, in the local terms and conditions. This is considered in section 2.4.5 of EirGrid and SONI paper analysing EBGL compliance.

Article 5 of EBGL refers to the proposal for terms and conditions including expected impacts on the objectives of the EBGL, which could be taken to apply to any amendment/modification to the terms and conditions also. This may be seen as similar to the application of the TSC objectives in the modifications process.

Considering the above, the question arises should the local SEM documents, primarily the TSC, take account of the EBGL objectives? This could be in the form of either incorporating them into the document or referencing EBGL from within the document.

Alternatively, it could be argued that the fact that EBGL has priority over the TSC in the legal priority order is sufficient, and so the EBGL objectives should always be implicitly applying to local code modifications. This position implicitly assumes that since laws have priority over the codes, their objectives implicitly apply, and therefore it is for consideration during each individual modification if it furthers the TSC's objectives and EBGL's objectives.

The TSOs may include explicit consideration of how the EBGL objectives are met in the terms and conditions proposal (mapping), which will require approval from the RAs.

The RAs would welcome stakeholder views and opinions on this issue.

20. Should there be an explicit definition of balance responsibility?

Description of issue(s)

This issue relates to whether there should there be an explicit definition of balance responsibility. This is considered in section 2.4.6 of EirGrid and SONI paper analysing EBGL compliance.

In Article 18(6)(a) of EBGL it states:

> *"6.The terms and conditions for balance responsible parties shall contain:(a) the definition of balance responsibility for each connection in a way that avoids any*

gaps or overlaps in the balance responsibility of different market participants providing services to that connection;"

The TSC does not have a specific "balance responsibility" definition glossary term. There are definitions of the calculations in the TSC (F.5.1, F.5.2, F.5.3, F.6.8 of TSC) which could be seen as an implicit definition since these are the calculations which practically implement the settlement aspects of balance responsibility. Imbalance payments and charges are calculated for each unit, and each unit is mapped to a participant, in a way which avoids gaps or overlaps and in a way which is to ensure balance responsibility, since each participant must settle these payments and charges they are implicitly balance responsible.

Based on the above it could be interpreted that no changes are required to the local code. The definition of balance responsibility may be seen as implicit within the settlement approach which requires that any differences between traded and metered levels need to be settled at the imbalance price, unless due to a TSO action where it can be settled at the Bid Offer Price if out of merit.

The RAs would welcome stakeholder views and opinions as to whether there should be an explicit definition of balance responsibility in the local market rules.

21. Consider if there should be a formal channel for complaints about the TSO under EBGL for aspects which are not currently covered under the TSC queries and disputes (Article 5(8)).

Description of issue(s)

This issue relates to whether should there be a formal channel for complaints about the TSO under EBGL for aspects which are not currently covered under the TSC. This is considered in section 2.4.1 of EirGrid and SONI paper analysing EBGL compliance.

This complaints process is in relation to the TSOs' responsibilities under the EBGL.

There are arrangements in place in the local SEM terms and conditions for complaints escalation on a subset of matters relevant to the operation of the market, including settlement queries, settlement disputes, pricing disputes, and general queries and disputes.

There is a formal complaints process for most aspects of the local market arrangements, which overlap with the obligations in EBGL, in particular on pricing and settlement.

There may be some aspects of the EBGL obligations which are not currently captured under a formal complaints process in the local terms and conditions. One possible option could be to develop a new formal approach (or some new wording to clarify on the general dispute process) to capture these.

It is possible the above may change if it is decided that the Terms and Conditions mapping exercise is incorporated into the Trading and Settlement code, allowing a participant to map through the local arrangements onto the EBGL arrangements and have a general dispute stating that obligations in the EBGL arrangements are not being met through local arrangements Terms and Conditions or operationally. For other complaints, participants can contact the RAs directly in an ad hoc manner, possibly removing the need for any more formal approaches.

The RAs would welcome stakeholder views and opinions on a complaints mechanism as described above.

22. Is the implicit approach to some of the calculations required as part of EBGL sufficient?

Description of issue(s)

This issue relates to whether the implicit approach used in the SEM to some of the calculations required in EBGL is sufficient. This is considered in section 2.4.4 of EirGrid and SONI paper analysing EBGL compliance. For instance, it can be considered if it is required to calculate the "imbalance adjustment" as considered in the EBGL. In the SEM, it is possible for participants to calculate this metric based on the Accepted Offer and Bid quantities, and the end result of settlement is as it would have been intended by using "imbalance adjustment" quantities even though it was actually achieved through using the individual elements of Accepted Offer and Bid Quantities instead.

In other markets for settlement, balancing actions are settled separately at a different balancing energy price (depending on the market or product for which it cleared), and imbalances are settled afterwards at the Imbalance Settlement Price. The sum of all balancing volumes needs to be removed from the difference between the position and the allocated volume to give the imbalance volume which is settled at the Imbalance Settlement Price. However, in the SEM the balancing price is the better of Imbalance Settlement Price or Bid Offer Price. Generally, energy would be settled at the Imbalance Settlement Price "in-merit", while balancing actions which were "out of merit" versus this price would be settled at their Bid Offer Price. This has led to a settlement calculation approach which does not explicitly calculate an "imbalance quantity", as considered in the EBGL.

Both the current SEM approach, and the explicit approach considered in the EBGL, produce the same settlement outcomes for the underlying design, just with the difference that in the SEM an explicit volume is not calculated for Imbalance or Imbalance Adjustment. This raises the question of should these amounts be explicitly calculated in the SEM or is it sufficient to keep the current approach and interpret compliance through an implicit definition.

The RAs would welcome stakeholder views and opinions on the implicit approach to some of the calculations required as part of EBGL.

23. Pricing parameters (DMAT & PAR) compliance with EBGL

Description of issue(s)

This issue relates to the use of the pricing elements/parameters De Minimis Acceptance Threshold (DMAT) and Price Average Reference Quantity (QPAR), and their compliance with EBGL. This is considered in section 2.2.4 of EirGrid and SONI paper analysing EBGL compliance.

In relation to DMAT, in general, all actions taken by TSO for energy reasons are to be included in setting the balancing energy price. Currently in the SEM all actions with volumes smaller than the De Minimis Acceptance Threshold (DMAT) are excluded from the ranked set and are not included in the process any further. It needs to be considered if this is appropriate. There are technical requirements for the TERRE and MARI platforms where a minimum bid granularity of 1MW is required, different to the approach in the SEM where even minute differences between PN and dispatch are included in calculation. The use of DMAT could be seen as a similar principle removing those actions below 1MW from the pricing stack, having been removed based on not being considered explicitly intentional “balancing energy”.

In relation to QPAR, some complexity arises in the SEM because of the Imbalance Settlement Price’s use as both the price for imbalances and Balancing Energy Price. From previously quoted ISHP articles, and from Article 55 of EBGL, the imbalance price can use a weighted average approach, using any of the volumes and prices from the accepted Integrated Scheduling Process Bids, and as long as the Imbalance Settlement Price is greater than (for negative imbalances) or less than (for positive imbalances) the average price considering all volumes, then it is compliant.

Considering QPAR is going to include a subset of actions which at most will include all volumes, and can then include a smaller number of volumes which are closer to the marginal action, then this should always be ok from Imbalance Pricing point of view. For balancing energy pricing, in general all energy actions should be settled paid-as-clear, at the marginal price, which is the highest or lowest priced energy action (in our case after determining what is energy after flagging and tagging).

If QPAR results in a price which is based on a weighted average, which does not equal the price of the marginal energy action, then the energy actions with prices that are now considered non-marginal against the new average price would be paid-as-bid rather than paid-as-clear, in order to ensure cost recovery. This may not appear to be compliant with requirements for energy actions to be paid-as-clear.

The RAs would welcome stakeholder views and opinions in relation to the use of the pricing elements/parameters described above.

Simple NIV tagging:

The design of the current SEM balancing market was developed across detailed design consultations and through market rules workshops. Since Go-Live of the new market arrangements in October 2018 these market arrangements have been in operation.

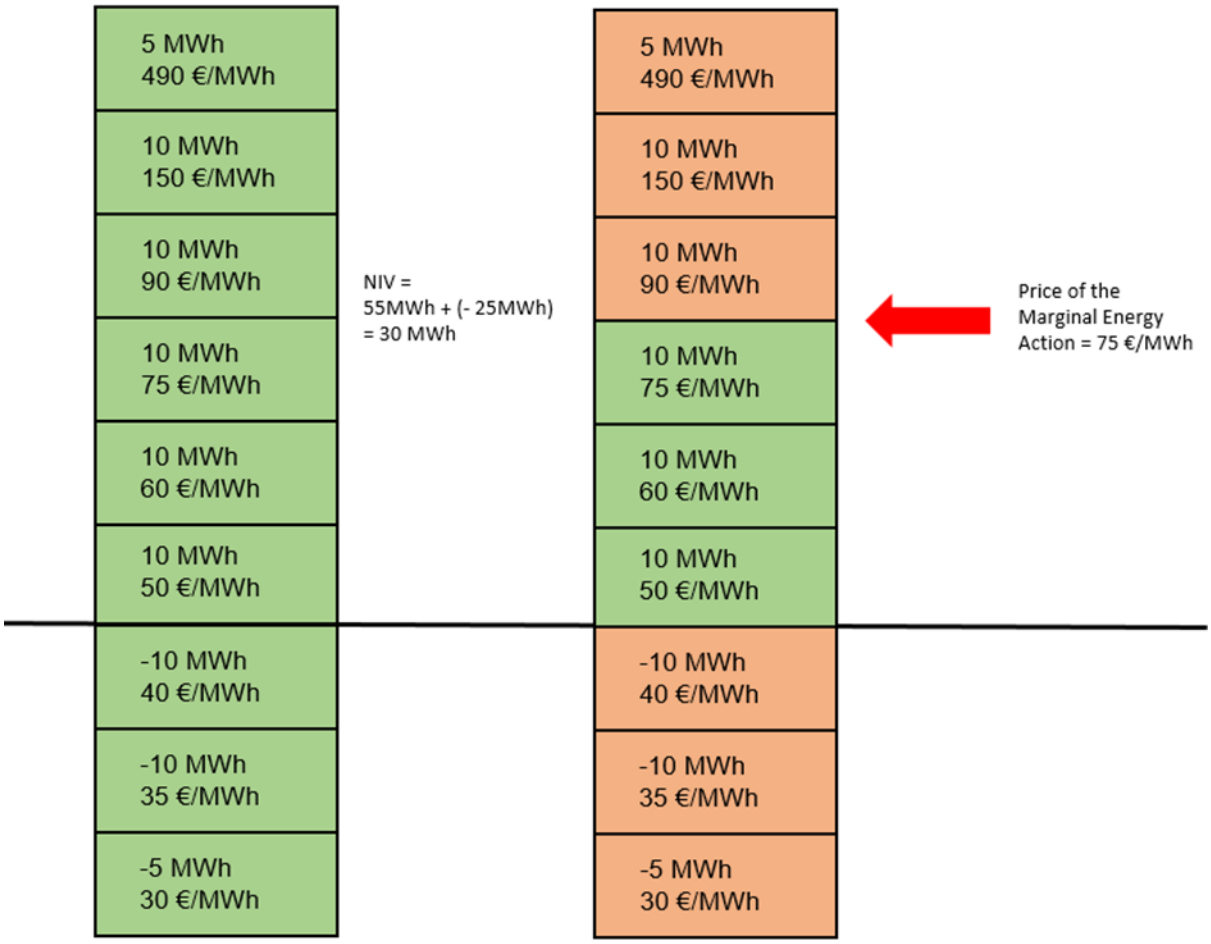
On 30 May 2019 the SEM Committee published a consultation called Balancing Market and Capacity Market Options (SEM-19-024) which considered a potential change to the balancing market. This was due to concerns raised around extremely high prices on 24th January 2019. Also, a modification was implemented on 2nd May 2019 which removed certain constraints including the North-South Tie Line constraint, from the imbalance pricing process to alleviate these same fears.

In Balancing Market and Capacity Market Options Decision Paper (SEM-19-054) the SEM Committee considered but decided not to implement Simple NIV tagging, instead choosing to keep this matter under review in light of recent and ongoing developments. These included concerns around the balancing market (including but not limited to Mod_09_19), ongoing work on compliance with European requirements and an examination by the SEM Committee of the recent significant increase in Imperfections Charges. Also, the Repricing and Price Materiality Threshold consultation (SEM-19-068) process was cited and how it may impact what new information would become available to inform any future decisions on the market arrangements.

The effect of Simple NIV tagging is to use bid offer prices in the ranked set, and the NIV itself as the system to identify energy and non-energy actions. Any actions with a price which is more expensive than the “price of the marginal energy action”, and any actions in the opposite direction to the NIV, are identified as non-energy actions. The effect of removing the System Operator Flags and Non-Marginal Flags from the imbalance pricing algorithm is that the most expensive actions are NIV-tagged from the top (or bottom) of the stack of actions until the stack of actions left for pricing is equal in volume and direction to the NIV.

Figure 1 below outlines an example of imbalance pricing using Simple NIV tagging. In this example there are 55MWh of incremental actions and 25MWh of decremental actions in the stack. This produces a NIV of 30MWh. The most expensive actions are NIV-tagged from the top of the stack of actions until the stack of actions left for pricing is equal to 30MWh. The Price of the Marginal Energy Action is the price of the most expensive untagged action, which in this example is 75 €/MWh.

Figure 2: Example of Simple NIV tagging



If Simple NIV tagging was implemented it would represent a significant change to the current design, changing how energy and non-energy actions are identified. Due to how the Simple NIV tagging approach operates, it would be compliant with the boundary conditions described in Article 55 in EBGL. If the SEM Committee decides to review this area in the future, the compliance of this approach with EBGL would be considered amongst the different factors.

The RAs would welcome stakeholder views and opinions on the option of simple NIV tagging.

CONSULTATION QUESTIONS

The RAs welcome views on the compliance assessment, including:

1. The scope covered in the topics described in this RA cover paper and accompanying EirGrid and SONI paper.

2. Possible changes in different areas that could be made as highlighted in the compliance assessment outlined in this paper and accompanying EirGrid and SONI paper.

3. Assumptions/interpretations made as part of compliance assessment on different topics outlined in this paper and accompanying EirGrid and SONI paper.

4. Any other areas/topics you feel were not captured in the compliance assessment described in this RA cover paper and the TSO paper.

CONSULTATION PERIOD

The RAs request that stakeholders please respond to the above questions by close of business Friday 18th June 2021.

Responses should be returned to Thomas Quinn at tquinn@cru.ie and to Ian McClelland at Ian.McClelland@uregni.gov.uk by close of business June 18th 2021.