EirGrid plc and SONI Ltd Response to SEM-23-047 Consultation Paper

Administered Scarcity Pricing Review

22 September 2023

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1. Executive Summary

EirGrid plc ("EirGrid") is the licenced electricity Transmission System Operator ("TSO") in Ireland, and SONI Ltd ("SONI") is the licensed TSO in Northern Ireland. Both companies also hold Market Operator ("MO") licences in Ireland and Northern Ireland respectively and collectively act as the Single Electricity Market Operator ("SEMO"), which operates the Single Electricity Market ("SEM") on the island of Ireland. Thus, this response is submitted by EirGrid and SONI in their capacities as TSOs and MOs for Ireland and Northern Ireland respectively.

EirGrid and SONI welcomes the opportunity to respond to the Single Energy Market Committee's ("SEM Committee") consultation on Administered Scarcity Pricing (ref: SEM-23-047) dated 26 July 2023. EirGrid and SONI recognise that Administered Scarcity Pricing ("ASP") has an important function to play within the market. This response intends to illustrate why ASP has not been triggered to date, despite periods of constrained generation capacity.

Our analysis indicates that there are two primary contributing factors that give rise to the appearance of adequate reserves within the market systems, even during periods of tight generation capacity. The first contributing factor is with regards to the inclusion of Tertiary 2 Operating Reserve ("TOR2") in the Short-Term Reserve Quantity ("qSTR"); the second is with regards to how Interruptible Load, a demand reduction form of system reserve, is being used and applied to qSTR. Our findings indicate that TOR2 and Interruptible Load have historically inflated the availability of reserves, and will continue to impact on the future application of ASP. ASP cannot be triggered under its current implementation; as such, it is important that these areas of concern are addressed if ASP is to fulfil the role intended under the ISEM design.

In consideration of the options set out in the consultation paper, we support Option 1. It is our view that Option 1 doesn't represent a change per se in the ASP design, but is a more accurate representation of the original design. This option seeks to better resolve the concerns raised with respect to TOR2 and Interruptible Load, triggering ASP when there are insufficient reserves available to the TSOs.

A primary concern of the TSOs over the past number of years has been the availability of capacity, when it is most in need. The proposed changes to ASP will provide a more accurate signal of scarcity to the market, however we would note that this may not be sufficient and that further measures may be needed. We are happy to engage further with the SEM Committee on this matter as required.

2. Response

2.1. General Views

It is recognised that ASP is an integral component of the Capacity Market and Balancing Market design and is intended to incentivise and encourage the provision of capacity, and similarly, the reliability of capacity at times of scarcity. We are five years into the new market arrangements, with EirGrid and SONI supporting the SEM Committee's review of the function and adequacy of the ASP calculation in its existing form.

EirGrid and SONI believe there is cause for a review of ASP, being mindful that there have been a number of periods of both jurisdictional and island-wide tight capacity margins. Despite these periods of system tightness, it is notable that none of these events have resulted in ASP being triggered. We intend to illustrate why ASP has not been triggered; in our analysis we have found two areas of concern that we will explore further in this response.

For context, there have been a number of high prices in the Balancing Market to date (i.e. greater than the Strike Price), but all of these were the result of submitted Commercial Offer Data ("COD"). Predominantly, these prices have been driven by high System Operator ("SO") Trade prices. It should be noted that several modifications (Mod_16_21, Mod_02_21) have been approved, that will dampen the impact of high interconnector trade prices, on the Imbalance Settlement Price. A further modification (Mod_17_22) has also been recommended for approval to further mitigate the impact of high interconnector prices and other high priced non-energy actions. This modification, if approved by the SEM Committee, would eventually cap the Price Marginal Energy Action ("PMEA") at the maximum of the Market Back Up Price or the Strike Price, rather than the Market Price Cap. These modifications mean that only a high priced energy action, or a genuine scarcity price event would trigger an Imbalance Price, greater than the Strike Price. Given these modifications, it is further unlikely that prices will rise naturally in the event of scarcity, and further highlights the importance of a functioning ASP design.

As outlined in the consultation paper, the qSTR component of the ASP calculation, as set out in the Trading and Settlement Code ("TSC"), comprises both TOR2 and Replacement Reserve. The qSTR calculation takes place within the Real-Time Dispatch ("RTD") component of the market systems, and is subsequently applied within Imbalance Pricing, as an input to ASP. It is important to note, that the same MW of reserve can be provided for either TOR2 and Replacement Reserve; although the capacity is available in different timeframes. As set out in the EirGrid Grid Code, TOR2 and Replacement Reserve have the following definitions:

- **Tertiary Operating Reserve band 2 ("TOR2")** is the additional MW output (and/or reduction in Demand) required compared to the pre-incident output (or Demand) which is fully available and sustainable over the period from 5 minutes to 20 minutes following an Event.
- **Replacement Reserve** is the additional MW output (and/or reduction in Demand) required compared to the pre-incident output (or Demand) which is fully available and sustainable over the period from 20 minutes to 4 hours following an Event.

Typically, a generator that can provide TOR2, can also provide Replacement Reserve; however, through our analysis we have identified that the TOR2 contribution to qSTR is already accounted for within Replacement Reserve. The figure below shows the provision of the different types of reserve, over their respective timeframes.

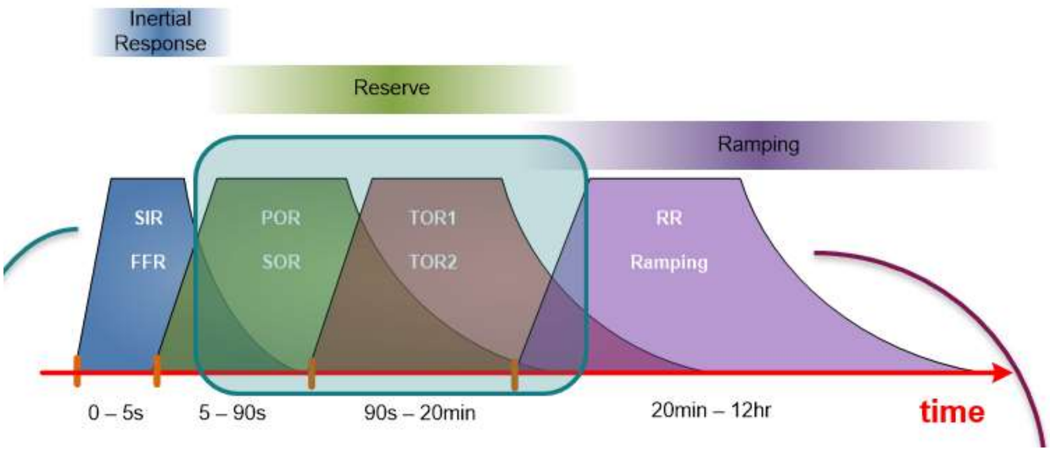

Figure 1: System Reserves

To illustrate the impact of adding TOR2 to qSTR; the below examples consider how TOR2 is currently being applied in the calculation of qSTR:

- Generator A is scheduled on in RTD, scheduled to 80MW. The unit has maximum availability of 100MW, meaning the unit can provide a maximum of 20MW of reserve. 20MW of reserve is being provided under TOR2 timeframes, and 20MW reserve is also being provided under Replacement Reserve timeframes. The unit's overall contribution to qSTR is 40MW (TOR2 plus Replacement Reserve), indicating that 20MW of additional reserve is available that cannot be delivered. As such, qSTR is overstated by 20MW.

- Generator B is not scheduled on in RTD, scheduled to 0MW. The unit has a maximum availability of 80MW; based on the submitted declarations, the Unit can provide 30MW of TOR2 and a full 80MW of Replacement Reserve. 30MW of reserve is being provided under TOR2 timeframes, and 80MW reserve is also being provided under Replacement Reserve timeframes. The unit's overall contribution to qSTR is 110MW (TOR2 plus Replacement Reserve), indicating that 30MW of additional reserve is available that cannot be delivered. As such, qSTR is overstated by 30MW.

Value Type	Generator A (MW)	Generator B (MW)
TOR2	50	30
TOR2 Adjusted[1]	*20*	-
Replacement Reserve	100	80
Replacement Reserve Adjusted	*20*	-
RTD Generation Schedule	80	0
Maximum Availability	100	80
Contribution to qSTR	40	110

Table 1: Example Unit Level qSTR Contribution

[1] TOR2 Adjusted and Replacement Reserve Adjusted values reflected the remaining reserve available after the unit has been scheduled on in RTD to a non-zero MW output.

In both examples, Generator A and Generator B contribute to qSTR beyond their unit's maximum availability. While the reserve can be provided by the unit in both TOR2 and Replacement Reserve timeframes, it is incorrect for both values to be aggregated into the qSTR total. In each case, the qSTR is inflated by the declared value of TOR2; making it seem like more reserve is available than can be delivered, when needed.

It is evident that where a generator provides both TOR2 and Replacement Reserve, TOR2 is mainly accounted for within Replacement Reserve. Whilst we have not completed analysis to determine the historical impact of this, the inclusion of TOR2, independently of Replacement Reserve, makes it unlikely that ASP would be invoked. EirGrid and SONI view this as a significant contributing factor in the appearance of adequate reserves, in 'real world' periods of tight generation capacity; and we believe that this needs to be addressed.

As outlined in the consultation paper, a second area of concern has been identified. Interruptible Load is intended to provide reserves to the system in the event of the loss of a generator unit. Originally intended to comprise specific demand sites, the value is now predominantly made up of battery storage technologies. The dual use of the Interruptible Load field within the systems, is having an unintended impact on the calculation of qSTR. The battery storage portion of Interruptible Load is being added to both TOR2 and Replacement Reserve. Due to their inability to provide sustained generation capacity, their availability to provide Replacement Reserve will be limited.

This additional counting of battery storage reserve also has the potential to affect the intended calculation of both Reserve Scarcity Pricing and Full Administered Scarcity Pricing ("FASP"). The potential for impact has grown over time, due to the increased registration of battery storage technologies, in the market. Notably, the overall all-island Interruptible Load reserve provision has increased from 31MW in 2018 (when it comprised solely demand sites) to a value of 361MW as of August 2023.

Using an example from August 2023, the Interruptible Load was 250MW (ROI) and 111MW (NI); totalling 361MW across the island in each Imbalance Settlement Period. With this being added twice, the Scarcity Pricing calculation sees 722MW reserve being available and added to qSTR. The maximum Largest Single Infeed ("LSI") in the Balancing Market is approximately 500MW. The impact is that the qSTR's lower limit corresponds to twice the value of Interruptible Load. Using this example Interruptible Load value, qSTR would never fall below the Operating Reserve Requirement ("qORR"). Neither Reserve Scarcity Pricing or FASP would be triggered in the Balancing Market, as both events require qSTR to be less than qORR.

Further to this, a limitation of the system is that Interruptible Load is a static value. This means that if the battery storage reserves were depleted in a tight generation capacity scenario, this would not be reflected as a reduction in the overall value of qSTR.

Subsequent to the consultation publication, an assessment has been conducted from go-live to present, aiming to determine if Scarcity Pricing would have been triggered had Interruptible Load not been included twice. In all instances, qSTR would still have remained greater than qORR; indicating that Scarcity Pricing would not have been triggered. Although this has not had a material impact on the triggering of ASP, this, as well as the current treatment of TOR2, carries a heightened potential to impact ASP in the future. These issues should be considered in any approach for a more consistent and accurate model of scarcity within the Balancing Market systems.

It should be noted that the treatment of battery storage in Interruptible Load is an interim measure. EirGrid, SONI and SEMO are currently working on the delivery of the Scheduling and Dispatch Project, a key aim of this project being the future proofing of battery storage where, post implementation, their reserve will be treated on a unit-level basis. This will address the primary concerns around the inclusion of Interruptible Load in qSTR.

2.2. Views on SEMC Proposed Options

EirGrid and SONI are in general agreement with the SEM Committee's stated aim to ensure that market signals are effective to incentivise reliability, particularly given security of supply considerations.

EirGrid and SONI have evidenced a number of challenges with the current ASP calculation that need to be addressed. Under the current design and implementation, ASP has not been triggered and will not be triggered in the future; even in situations where Demand Control has been used by the TSOs.

While we broadly support a review of ASP, we are not in favour of a wholesale redesign of ASP at this time. After reviewing the three options proposed by the SEM Committee, we believe that Option 1 is the least removed from the existing calculation. The SEMC Capacity Remuneration Mechanism Decision Paper 2[2] ("CRM2") from May 2016 stated that Target Operating Reserve will be deemed to have been depleted if operating reserve (i.e. POR, SOR, TOR1 and TOR2) cannot be replaced from replacement reserve or ramping marking within one hour. In our view, Option 1 more faithfully implements the original design set out in the CRM2 decision, where the effects described here are taken into account.

Option 1 addresses the immediate concerns that we have outlined with respect to the current ASP calculation. It removes the additional counting of TOR2, already predominantly accounted for in the Replacement Reserve contribution. This option also partly addresses the concerns pertaining to the inclusion of battery storage reserve in Interruptible Load, which will also separately be addressed via the Scheduling and Dispatch Project.

In conclusion, Option 1 models more accurately how ASP should have been reflected in the systems to date; and importantly provides market participants with a more accurate, real-time reflection of system tightness, and appropriate signals to respond to.

[2] https://www.semcommittee.com/sites/semcommittee.com/files/media-files/SEM-16-022%20I%20SEM%20CRM%20Detailed%20Design%20Decision%20Paper%202.pdf