Administered Scarcity Pricing Review

SEM-23-047

Consultation Paper

26th July 2023

EXECUTIVE SUMMARY

Administered Scarcity Pricing (ASP) was introduced to the SEM alongside the Capacity Remuneration Mechanism (CRM) as part of the new market arrangements, which went live in 2018. ASP consists of the Reserve Scarcity Price (RSP) Curve and the Full Administered Scarcity Price (FASP). The trigger for RSP is based on the quantity of Short-Term Reserves in the system. Further detail on this trigger is set out in the paper but it is important to note that once conditions for the trigger are met, prices artificially rise to the Reliability Option (RO) Strike Price, which then serves as a price floor in the Balancing Market. If reserves fall further, the price floor rises up to a maximum of 25% of VoLL, the point at which reserves are equal to zero. The price at the end point of the RSP curve (25% of VoLL) is the same as the price for FASP.

Scarcity pricing can serve a number of objectives, which are explored in this paper. However, the SEM Committee considers that the principal function of ASP in the context of the SEM is to incentivise reliability. In this regard, the interaction between the RO and ASP is significant. The RO is a one-way contract for difference, with a Strike Price and a Market Reference Price. When the Market Reference Price exceeds the Strike Price, the RO holder is liable to pay the difference between the two prices. This creates an incentive for the RO holder to be available so that it can earn revenue to cover this Difference Charge. As the starting point of the RSP Curve equates to the RO Strike Price, the triggering of RSP makes an RO event likely and therefore should incentivise unit reliability.

Since the introduction of ASP with the new market arrangements in 2018, the SEM has experienced periods of tight margin and security of supply concerns, emphasising the need for units to be reliable. Despite this, however, ASP has never been triggered, meaning it has not contributed to system security as originally envisioned by the SEM Committee. Ultimately, this has a negative impact on consumers given that unit unreliability decreases the surplus/increases the deficit in the adequacy assessment conducted by the Transmission System Operators (TSOs), which may increase the volume of capacity to be procured through the CRM and paid for by consumers. An appropriate RSP trigger, which promotes reliability, can therefore help to reduce costs in the long-term for consumers.

It is also important to note that consumers are protected from prices rising above the RO strike price in the current market design. Therefore, the impact of scarcity prices on

consumers is limited to the starting point of the RSP curve and consumers would not be affected by prices rising above this point. Furthermore, ASP is confined to the Balancing Market and does not affect energy bought in the ex-ante markets.

The analysis set out in this paper considers the focus of the current RSP trigger and finds that even during recent periods of system alert, relatively high quantities of Short-Term Reserves meant that RSP did not come close to being activated. The paper notes that the inclusion of reserves in the trigger which can only provide energy in a short timeframe may mask periods of adequacy scarcity.

Based on this analysis, one option proposed in the paper is to alter the trigger for RSP to better reflect adequacy scarcity. The proposal suggests the removal of Tertiary Operating Reserves Band 2 (TOR2) from the calculation of the Short-Term Reserve Quantity (qSTR) so that only Replacement Reserve, which is capable of a longer run-time than TOR2, would be considered when determining whether RSP should be triggered.

The SEM Committee has also considered the impact that system constraints may have. One constraint of particular significance relates to the North-South tie-line. Due to this constraint, reserves on one side of the tie-line may be unable to replenish depleted reserves on the other. The second proposal set out in Section 3 proposes to address this issue by creating a trigger which accounts for the North-South tie-line constraint specifically and would mean that if qSTR fell below the quantity of Operating Reserve Requirement (qORR) in either constrained area, RSP would be triggered.

However, there are additional constraints across the system which may lead to reserves in one location being unavailable, in reality, in another location where they are needed, despite being included in the calculation of available reserve from the point of view of RSP. A third proposal is therefore described in Section 3, which aims to allow for the impact of constraints across the system on the accessibility of reserves. This proposal would apply a multiplier to the qORR to account for the likely inaccessibility of a proportion of the reserves included in qSTR.

The SEM Committee has assessed data between March-June 2023, as well as during recent system alerts to model the impact of each proposal during these time periods. The analysis, which is included in the annexes to this paper, shows that under all three options, RSP would have come closer to being triggered, and would have triggered in

the case of two of the options. While RSP would not have been triggered during these periods if Option 2b was in place, under Option 1, RSP would have triggered – relatively briefly – during one third of the system alerts reviewed, and under Option 2a, RSP would have been triggered – relatively briefly – during just over half of the system alerts reviewed.

Section 4 of this paper outlines a number of questions to which stakeholders are invited to respond. Responses should be submitted by Friday, 22nd September 2023 and should be sent by email to egerrard@cru.ie and lisa.tate@uregni.gov.uk. All responses received may be published unless the respondent clearly indicates that their response is confidential.

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Glossary of Terms and Abbreviations

Abbreviation or Term	Definition or Meaning
ASP	Administered Scarcity Pricing
IAIP	Initial Auction Information Pack
LSI	Largest Single In-Feed
ORR	Operating Reserve Requirement
RA	Regulatory Authority
RO	Reliability Option
RSC	Reserve Scarcity Curve
RSP	Reserve Scarcity Price
SEM	Single Electricity Market
SEMO	Single Electricity Market Operator
STR	Short-Term Reserve
TOR2	Tertiary Operating Reserve Band 2
TSC	Trading and Settlement Code
VoLL	Value of Lost Load

1. Introduction

1.1 Context

The existing triggers for ASP[1] are set out in the Trading and Settlement Code (TSC). The Reserve Scarcity Price (RSP) is set for each Imbalance Pricing Period[2] and, provided it is higher than the market price, replaces the market price if the Short-Term Reserve quantity (qSTR) is less than the Operating Reserve Requirement quantity (qORR) and less than or equal to the starting point quantity on the reserve scarcity curve (qRSC). These quantities are measured on an all-island basis. Pursuant to the TSC, the qSTR comprises Tertiary Operating Reserve Band 2 (TOR2) + Replacement Reserve, and the qORR equates to the TOR2 requirement only. The TOR2 requirement corresponds to 100% of the Largest Single In-feed (LSI). Full ASP will be triggered in situations where there is both a system-wide scarcity event, as set out above, alongside a demand control / frequency event in either jurisdiction.

ASP was introduced to the SEM in October 2018 as part of the I-SEM project. The thinking behind this mechanism is set out over a number of the CRM Detailed Design Papers. In SEM-15-103, the SEM Committee outlined its view that without ASP, prices would not rise to reflect scarcity. It was also anticipated that ASP would promote system security, economic efficiency and demand response.

However, since its introduction, ASP has never been triggered, despite adequacy concerns and multiple system alerts, including a small number of all-island alerts. This apparent contradiction led to a previous SEM Committee discussion paper in May 2021, which sought stakeholder feedback on whether the parameters used to trigger ASP were appropriate (SEM-21-042). The RAs considered, inter alia, in that paper whether the trigger for RSP should be amended such that the qSTR would include only TOR2, and not Replacement Reserve.

Overall, respondents were of the view that changes in this area would increase regulatory uncertainty for both existing and future Capacity Market contract holders and undermine market and investor confidence in the capacity market. One respondent

[1] ASP encompasses both the reserve scarcity price (RSP) and the full administered scarcity price (FASP). This consultation focuses on the RSP, although the two are interlinked as the price for FASP is 25% of VoLL, equating to the end point on the RSP curve, reached when reserves are equal to zero. The two are also linked as FASP is triggered when the conditions for RSP are met in addition to any of the Demand Control events listed in Section E.4.3.1(b) of the TSC.

[2] The Imbalance Pricing Period is five minutes. The average of all five-minute prices in a half hour is used as the price which applies in settlement.

noted that the proposed change would mean that RSP would become contingent on short-term reserves only, rather than available generation capacity. No changes were made in this area ahead of Winter 2021/22 but the SEM Committee expressed its view that the topic should be reviewed further going forward (SEM-21-083).

More recently, in its 2022 review of the CRM design, EY expressed its view that:

"The reliability option provides insufficient incentives for providers to be available. This is principally due to the failure of the administrative scarcity pricing mechanism to set high prices at times of stress, as well as most stress events occurring on a localised basis."[3]

As set out in its Forward Work Plan October 2022 – September 2023, the SEM Committee is carrying out a review of ASP and opening this consultation to invite comments on a number of proposed options to change the RSP trigger in order to make it better fulfil its intended objectives.

1.2 Structure of Paper

Section 1 of this paper has provided the context of this review and set out how ASP is currently triggered, as detailed in the TSC.

Section 2 of the paper provides information on how scarcity pricing functions in other jurisdictions and the objectives for its implementation. This section also considers the conditions under which scarcity pricing is needed in the SEM and notes the impact of the North-South constraint.

Section 3 outlines the options proposed by the SEM Committee. Option 1 involves the adjustment of the definition of qSTR to comprise Replacement Reserve only. Options 2a and 2b aim to allow for the impact of system constraints on the accessibility of reserves, with Option 2a specifically accounting for the North-South constraint, and Option 2b aiming to account for constraints across the system.

Section 4 sets out the questions posed by this consultation paper and Section 5 outlines the next steps involved in this review of ASP.

Finally, a series of annexes are included which provide the RAs' analysis of how the proposed options would have impacted the frequency of ASP events if the options had applied between March-June 2023 and during recent system alerts in 2021 and 2022.

[3] SEM-22-054A Performance of the SEM CRM.pdf (semcommittee.com), p. 5

2. Scarcity pricing: Examples, objectives and issues to address

2.1 Scarcity pricing in other jurisdictions

Prior to consulting on this topic, the RAs have reviewed scarcity pricing mechanisms/proposed mechanisms in other jurisdictions, including Belgium, Great Britain (GB) and Texas. These mechanisms vary in their design and intention. For example, in Belgium, the proposed[4] design comprises two adders, a "fast" 7.5-minute adder and a "slow" 15-minute adder, which would be placed on top of the market price at times of scarcity. Based on simulations, this design would see adders frequently being deployed. Scarcity pricing was initially explored in Belgium in 2014 in the context of concerns around the profitability of large-scale generation units (mainly CCGT). Belgium had an energy-only market at that time but has since introduced a capacity mechanism. The motivation for implementing scarcity pricing in Belgium now includes the remuneration of flexible resources, recognising the importance of these resources in a system with increased levels of renewables.

In GB, improving the value of flexibility was one factor that motivated Ofgem to introduce a reserve scarcity price (RSP). RSP was introduced in GB as a price for Short Term Operating Reserve (STOR) actions. STOR is the main reserve product and is procured and priced in advance, impairing the ability for the STOR price to reflect the real time value of scarcity. As the STOR price feeds into the System Price, it may dampen prices at times of scarcity. RSP is intended to counteract this effect.

Unlike in the SEM and the markets mentioned above, Texas does not have a capacity market and so scarcity pricing is focused on incentivising investment in capacity. The mechanism is based on an Operating Reserve Demand Curve (ORDC), which reflects the Loss of Load Probability (LoLP) at varying levels of operating reserves multiplied by the VoLL, as in the case of GB and the proposed mechanism in Belgium. However, following events in February 2021, when Texas experienced a record cold spell leading to high demand, outages and load shedding, the Texan regulator has changed how it calculates the scarcity adder. Following this change, prices are somewhat higher at the beginning of the curve, when the shortage of reserves is less acute, but the maximum price adder has reduced from US$9,000 to US$5,000. The Texan regulator justified the

[4] At the time of writing, this proposed scarcity pricing mechanism has not been implemented in Belgium.

decision by stating that the former, higher, price cap had proven to be a liability on market participants and customers.

2.2 Objectives

As noted in the examples provided above, the intended objective of scarcity pricing can vary depending on market design and shortcomings identified with that design. In markets without a capacity mechanism, the main objective of scarcity pricing tends to be as a long-term investment signal, to help solve the 'missing money' problem.

However, the RAs have observed that most electricity markets where scarcity pricing has been implemented also have some form of capacity mechanism in place to help ensure system adequacy. In such markets, the objectives of scarcity pricing may include the incentivisation of investment in flexible resources, acknowledgement of the market's inability to recognise the quantity of reserves in the system, the use of ASP to increase prices to reflect consumers' willingness to pay for energy, or the incentivisation of reliability.

Reliability has been described as an issue in electricity markets due to the lack of price responsive demand expressing a preference for reliability.[5] In this situation, the preference for reliability can be embedded in scarcity prices. This can function in a way that is complimentary to a capacity market as "it is the scarcity price that motivates capacity to perform when needed".[6]

The RAs consider reliability to be the key objective of ASP in the SEM. The interaction between the starting point on the RSP curve and the strike price means that Reliability Option (RO) holders who are unavailable during a scarcity event are liable to pay Non-Performance Difference Charges. High prices triggered by ASP can also serve as an investment signal for resources who do not hold ROs, or to a limited extent for RO holders insofar as it relates to the portion of their capacity that is not obligated under the RO. Overall, however, the RAs consider that the main objective of ASP in the SEM is to incentivise the reliability of capacity.

As indicated by its name, a key feature of the RO design is that it should create an incentive for reliability by exposing RO holders to Non-Performance Difference Charges

[5] See Cramton, 2017, in Elia, "Final report on Elia's findings regarding the design of a scarcity pricing mechanism for implementation in Belgium", 2020, p. 29
[6] *Ibid.*

when energy prices exceed the Strike Price of the RO.[7] RO holders are required to pay Difference Charges based on the difference between the Market Reference Price and the RO Strike Price, meaning they cannot retain any revenue earned above the Strike Price in respect of their obligated capacity. Therefore, capacity held under an RO will not benefit from prices rising above the Strike Price, with such prices (insofar as they exceed the Strike Price) only presenting the risk of Non-Performance Difference Charges applied on any of a market participant's capacity that is unavailable. Due to this design, there is a disincentive for many market participants to trigger the RO given that many market participants hold an RO for at least part, if not most, of their capacity. This makes it less likely for the Strike Price to be triggered naturally. This is reflected in the fact that between 1st January 2022 and 31st March 2023, there were just five occasions where the Imbalance Settlement Price exceeded the Strike Price, with four of these instances occurring on consecutive Settlement periods on the same day. Having an appropriate trigger for RSP is therefore important to ensure the RO functions as intended and incentivises reliability.[8]

The SEM Committee notes, in this context, the feedback provided by some respondents to SEM-21-042 in regard to ASP being unable to provide further incentives to perform in a scenario where there may be inadequate capacity on the grid. The SEM Committee considers that a well-functioning RO is key to ensuring that the capacity that is already on the system has a strong incentive to be available when required. With a robust reliability signal in place, existing units can take action to improve performance, particularly during periods when the system margins are forecast to be tight.

2.3 Investor and consumer protections in the design

In outlining the main features of the RO design, it should be noted that there are protections in place for both consumers and RO holders. The current market design protects suppliers and consumers by limiting their exposure to the level of the RO strike price (typically around €500/MWh). Therefore, the impact of scarcity prices on consumers is limited to the starting point of the RSP curve and consumers would not be affected by prices rising above this point. A socialisation fund is in place to ensure

[7] The RO Strike Price is a floating price and is updated monthly in accordance with the formula contained in Section F.16 of the TSC. It is published by SEMO ahead of each month and can be found on the SEMO website, https://www.sem-o.com/market-messages/?keyword=strike&date-from=&date-to=&category=&runtype=

[8] To clarify, the triggering of ASP does not automatically lead to the triggering of the RO as ASP is calculated and set on a five-minute Imbalance Pricing Period basis, while the RO is calculated on a thirty-minute Settlement Period basis, which is formed by the average of the six Imbalance Pricing Periods.

suppliers are fully hedged against prices above the strike price where there is not enough contracted capacity to make difference payments to cover the pricing event. The SEM Committee notes that the balance in the socialisation fund is currently high and has been set to zero for the current tariff year.[9] The SEM Committee monitors this fund in light of changes to policy.

In terms of RO holders, the current market design includes 'Stop-Loss Limits', which limit the cost of Non-Performance Difference Charges an RO holder can accrue. The annual limit is currently set at 1.5, meaning that the maximum Non-Performance Difference Charge a Capacity Market Unit could incur in a year is 1.5 times its Capacity Payment revenue. There is also a Billing Period Stop-Loss Limit to ensure that the reliability incentive is not removed for the whole year in one single event. These limits provide protection to a unit in the case of it being unavailable during a period of sustained high prices above the Strike Price.

2.4 Reserve scarcity; adequacy scarcity

Following on from paragraph 2.2, in reassessing the trigger for RSP, it is important to consider under what conditions reliability is most needed.

The current ASP trigger is set on an all-island basis and considers whether qSTR, the quantity of available reserves between the 5-minute – 4-hour timeframe (TOR2 and Replacement Reserve), is above qORR (the operating requirement quantity for TOR2). The RAs have analysed data since 2018 and noted that, based on the current trigger, qSTR has consistently remained well above the qORR.

In particular, the RAs assessed the data comparing the qSTR and the qORR during the periods of system alert in 2022 (which were notified for Ireland only). The short-term reserves were at least three times the requirement in these instances. Regarding the data during the most recent all-island system alerts, which took place in 2021, the RAs note that qSTR remained at least twice the value of qORR. These observations suggest that there is not currently a reserve scarcity issue in the SEM.

At the same time, there is a well-documented adequacy issue in the SEM, as set out in the most recently published Generation Capacity Statement published by EirGrid and

[9] https://www.semcommittee.com/sites/semc/files/media-files/SEM-22-052%20ISEM%20Parameters%202022-23%20Decision%20Paper.pdf

SONI.[10] The RAs consider that there is a difference between reserve scarcity and adequacy scarcity and that a measurement of one may not be a suitable proxy for the other. Inclusion of reserves in qSTR that are only available and sustainable in the very short-term following an event may mean that qSTR does not reflect the actual adequacy position of the system and may result in a failure to diagnose an adequacy problem. Therefore, a trigger for RSP which focuses on very short-term reserves may not promote reliability when most needed. Option 1 in Section 3 below proposes one potential solution to this issue.

2.5 Impact of system constraints

As outlined above, the current trigger considers the qSTR and qORR on an all-island basis. This approach therefore does not take into account constraints on the system which mean that reserves in one area are unable to respond to a frequency event or other issue in another area.

The TSOs publish a weekly update on operational constraints. One such constraint, which is particularly significant, is the North – South tie-line export/import constraint, with a limit of 400MW from Ireland to NI and 450MW from NI to Ireland (with a margin of 20MW on this limit for system safety), "which takes into account the rescue/reserve flows that could occur immediately post fault inclusive of operating reserve requirements".[11]

Given that the RSP trigger is unaware of this constraint, scarcity on one side of the tie-line may be concealed by the presence of reserves on the other side of the tie-line, although those reserves are, in reality, unable to help address that scarcity. Option 2a in Section 3 below proposes one potential solution to this issue.

The SEM Committee recognises that this is not the only constraint in the system; for example, included in the TSOs' weekly operational constraints update are generation restrictions in Cork. Therefore, the SEM Committee proposes Option 2b to account for constraints across the system.

[10] https://www.eirgridgroup.com/site-files/library/EirGrid/EirGrid_SONI_Ireland_Capacity_Outlook_2022-2031.pdf
[11] https://www.sem-o.com/documents/general-publications/Wk22_2023_Weekly_Operational_Constraints_Update.pdf

3. Proposed options to adjust the RSP trigger

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

As set out in Section 2.4, the SEM Committee views there to be a difference between reserve scarcity and adequacy scarcity, in that an electricity system suffering from a shortage of reserves may not necessarily also be suffering from adequacy scarcity, and vice versa.

This option would only consider Replacement Reserve in the qSTR. The rationale for this approach would be to place the focus of ASP on adequacy scarcity rather than reserve scarcity, considering that POR and SOR are Frequency Containment Reserves and TOR1 and TOR2 are Frequency Restoration Reserves, with these reserves cumulatively covering the timeframes between 5 seconds and 20 minutes following an event.

In contrast, Replacement Reserve covers the period from 20 minutes to 4 hours following a frequency event.[12] Therefore, the resources available in this category may provide a better measure of adequacy.

From engagement with SEMO and the TSOs, the SEM Committee understands that Interruptible Load, which is composed primarily of batteries, is currently added to both TOR2 and Replacement Reserve in the calculation of qSTR. Following discussion with the TSOs, the SEM Committee considers that Interruptible Load should only be added to TOR2 and not to Replacement Reserve for the purposes of calculating the ASP trigger given that these units may be unable to provide energy over the longer timeframe.[13] Therefore, Interruptible Load is not included in qSTR in this option. The exclusion of Interruptible Load is in keeping with the rationale of focusing on reserves that may provide a better measure of adequacy.

The SEM Committee understands that there is also potential for other units, aside from Interruptible Load, to simultaneously provide the same available capacity for both TOR2 and Replacement Reserve. To ensure this is fully understood, the SEM Committee is requesting that the TSOs provide information on this topic in response to this paper, which can be published for the visibility of all market participants. Nevertheless, the SEM

[12] As per the Grid Code. As a System Service product, the timeframe for Replacement Reserve is between 20 minutes and 1 hour.
[13] To note, this does not impact the calculation of DS3 payments.

Committee notes that under Option 1, available capacity would not be considered more than once given that only Replacement Reserve would be included in qSTR.

The RAs note that qORR is currently defined as the operating reserve requirement for TOR2, which equates to 100% of the Largest Single In-Feed (LSI). If this option were selected and TOR2 were no longer considered in qSTR, the SEM Committee would consider retaining qORR at the level of 100% of LSI (notwithstanding the proposal contained under Option 2b).

The RAs have assessed data over three months between 4th March-8th June 2023, as well as during system alerts which took place in 2021 and 2022. The analysis illustrates that if only Replacement Reserve had been included in the calculation, ASP would not have triggered between the 4th March – 8th June 2023. However, ASP would have been triggered at certain points during some of the recent system alerts if qSTR had only consisted of Replacement Reserve. The graphs containing data covering March-June 2023 are contained in Annex 1, while the graphs containing data covering recent system alerts are contained in Annex 2.

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

As set out in Section 2.5, system constraints mean that surplus reserves in one part of the island may be unable to replenish depleted reserves in another. Therefore, there may simultaneously be scarcity in one location without there being all-island scarcity.

One particularly impactful constraint on the island is the North-South constraint. To account for this constraint, Option 2a proposes that RSP would be triggered if qSTR[14] fell below qORR on either side of this constraint. Both values would be assessed on the basis of the reserves in each constrained area, meaning the LSI in the given constrained area would be considered in determining the qORR for that constrained area. In this proposal, reserve scarcity in one constrained area would trigger scarcity pricing in the market as a whole.

The second part of the trigger requires that the qSTR is less than or equal to the starting point on the Reserve Scarcity Price Curve, which was set to an anticipated value of

[14] To note, as mentioned in Section 3.1, it is considered appropriate to add Interruptible Load to TOR2, and therefore Interruptible Load has been added to the qSTR data analysed in options 2a and 2b.

500MW in the latest auction parameters decision.[15] The SEM Committee does not consider that this value would necessarily need to change under this option as assessing qORR on the basis of each constrained area would adequately ensure that once the LSI was satisfied in each area, RSP would not be triggered.

More broadly, the SEM Committee notes feedback provided by some respondents to SEM-21-042 in regard to implementing changes to auction parameters following an auction. As set out in the Section D.3.1.4 of the Capacity Market Code, where a curve, value or item included in the Initial Auction Information Pack (IAIP) is referred to as "anticipated", it is included "for information only, and may change or vary from time to time".[16] The SEM Committee notes that the values for FASP and the RSP Curve are anticipated values.

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

To note, units which are available, and in-merit, but not dispatched would not be exposed to Non-Performance Difference Charges, following the recent SEM Committee decision on this topic (SEM-23-029).

The SEM Committee has assessed data for both Ireland and Northern Ireland from March-June 2023, as well as the data for Ireland and Northern Ireland during system alerts which took place in 2021 and 2022. The analysis illustrates that if a trigger based on each constrained area, as set out above, had been in place during these periods, ASP would not have been activated between the 4th March-8th June 2023. The graphs containing this data are included in Annex 3. However, ASP would have been triggered at certain points during some of the recent system alerts if qORR and qSTR had been assessed on the basis of each constrained area. The graphs containing this data are included in Annex 4.

[15] https://www.semcommittee.com/sites/semc/files/media-files/T-4_2027_28%20Capacity%20Auction%20CRM%20Parameters%20Decision%20Paper.pdf

[16] https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.sem-o.com%2Frules-and-modifications%2Fcapacity-market-modifications%2Fmarket-rules%2FCapacity-Market-Code.docx&wdOrigin=BROWSELINK

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

As previously noted, there are additional constraints across the island which may make it unfeasible for some reserves, which appear to the market to be available, to respond to a shortage of reserves in another location. While Option 2a aims to address one of these constraints in a targeted way, it is not possible to account in this same way for all individual constraints across the system.

Therefore, Option 2b proposes to account for the impact of constraints across the system by applying a multiplier to the Operating Reserve Requirement quantity (qORR). If some of the reserves considered in qSTR are, in fact, unable to replenish depleted reserves in another location, it may be appropriate to inflate qORR to allow for this, in order to help ensure that qSTR can actually meet 100% of LSI across the system.

The SEM Committee has conducted analysis to determine the appropriate multiplier to apply to qORR and proposes a value of 2 (i.e. adding 100% to the qORR). Based on the data assessed, this value is considered to strike the correct balance between being capable of promoting reliability without being likely to lead to prolonged, or excessively frequent, scarcity pricing events. As this value would track the LSI, it would be a dynamic value which would vary depending on the size of the LSI.

The SEM Committee considers that, under this option, the multiplier could be made a parameter under the Capacity Market Code or Trading and Settlement Code. This would provide the flexibility to revise this value if appropriate.

Under Option 2b, the MW starting point of the RSP Curve may require alteration given that if qORR were inflated, this value would also need to be inflated to prevent it from serving as a barrier to ASP triggering if qSTR fell below qORR. This value is an “anticipated value” in the IAIPs.

The SEM Committee has assessed the all-island data from March-June 2023, as well as the all-island data during system alerts which took place in 2021 and 2022. The analysis illustrates that if Option 2b had been in place during these periods, ASP would not have been activated between the 4th March-8th June 2023. The graphs containing this data are included in Annex 5. ASP also would not have triggered during the recent system alerts analysed, although the values would have come closer together. The graphs containing this data are included in Annex 6.

Considering that the three options proposed above aim to address different issues identified with the existing RSP trigger, the SEM Committee is aware that it may be appropriate to introduce a combination of these options – in particular, a combination of Option 1 and either Option 2a or 2b – and welcomes stakeholders' views in this regard.

4. Consultation Questions

Stakeholders are invited to respond to all aspects of this consultation paper and, in particular, to address the following questions:

1. The SEM Committee has proposed three options for altering the existing trigger for RSP. Please state if you have a preference between these three options, providing reasons for your preference.
2. Respondents are invited to provide any other views they hold regarding the contents of this consultation paper, including any alternative proposal for the modification of the ASP mechanism that has not been set out in this paper. If proposing an alternative approach, please clearly set out the rationale and explain why it would be preferable to either of the proposed options.

5. Next Steps

The SEM Committee requests the views of industry and stakeholders to the proposals set out in this paper. Responses should be sent in electronic format to Emer Gerrard (egerrard@cru.ie) and Lisa Tate (lisa.tate@uregni.gov.uk) by close of business on Friday, 22nd September 2023.

All responses received may be published unless the respondent clearly indicates that their response is confidential.

Annex 1 – Option 1 modelled between 04/03/2023 – 08/06/2023

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

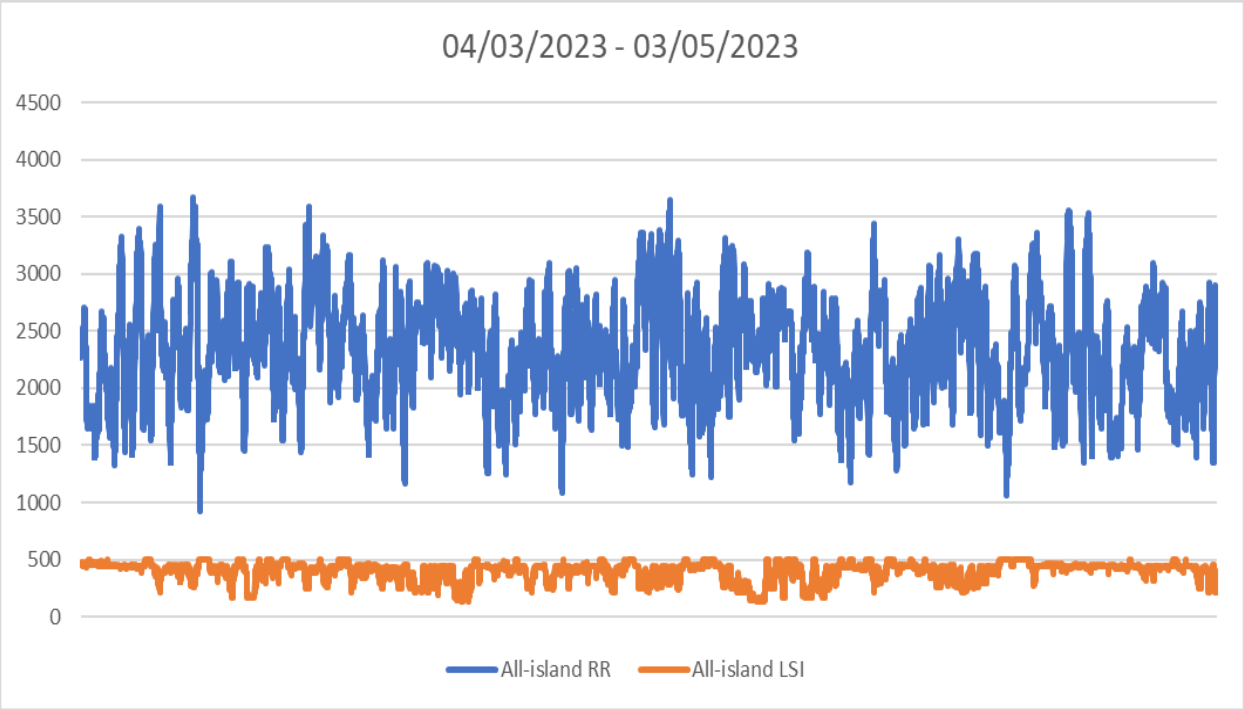

Figure 1 – All-island Replacement Reserve and All-island LSI between 04/03/2023 – 03/05/2023.

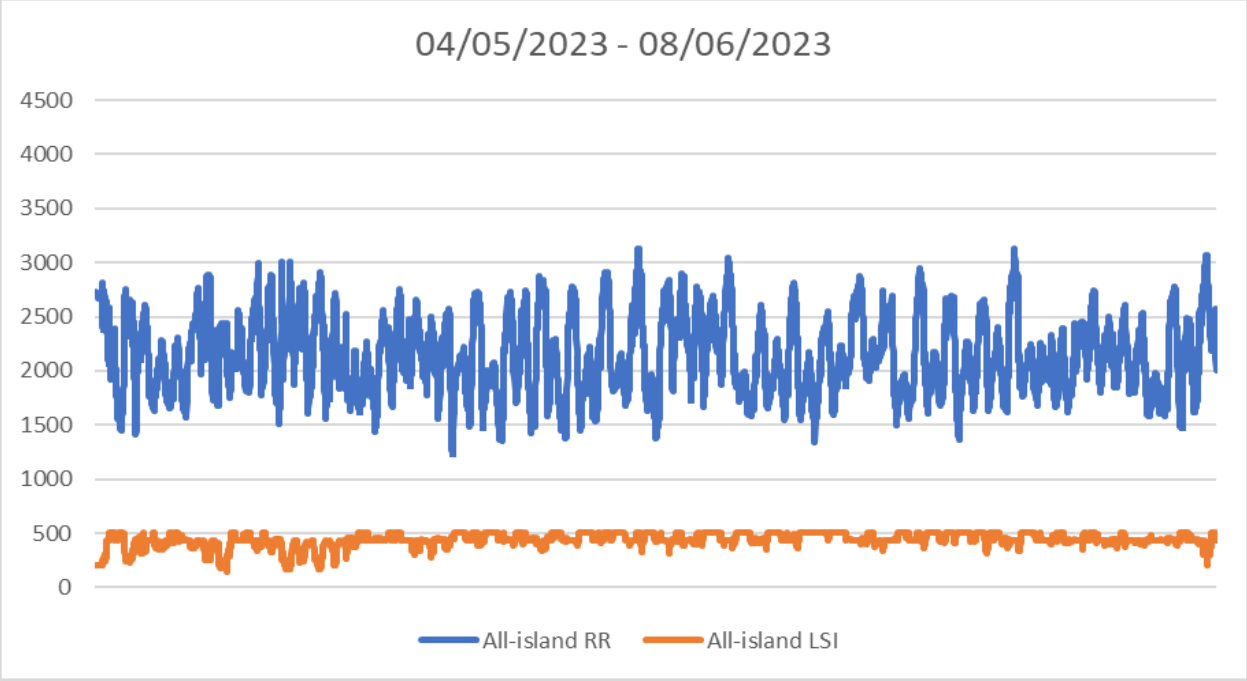

Figure 2 – All-island Replacement Reserve and All-island LSI between 04/05/2023 – 08/06/2023.

Annex 2 – Option 1 modelled during periods of system alert in 2021-22

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

To note, in conducting this analysis, nine periods during which system alerts took place were reviewed. Five of these periods have been included in this paper, in annexes 2, 4 and 6.

Under the conditions set out in Option 1, in three of the nine time periods, RSP would have triggered at some point. We have therefore included all three periods in this paper, considering that the periods in which RSP triggered may be of greater interest to stakeholders.

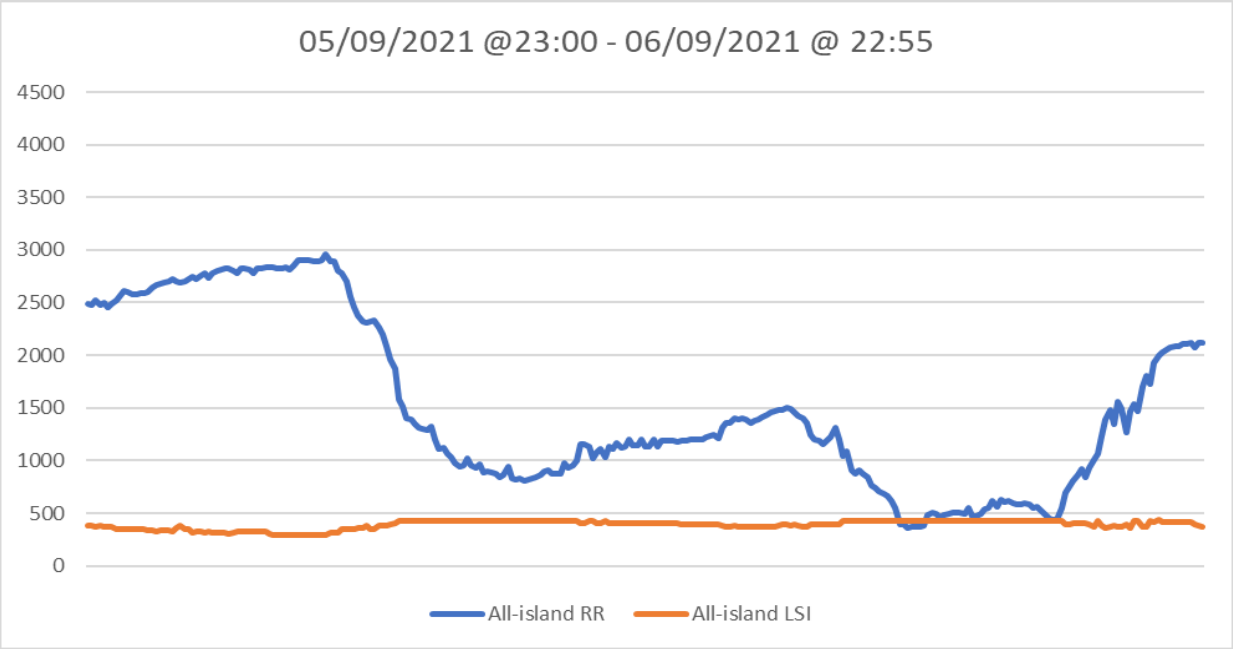

Figure 3- All-island RR and All-island LSI. An all-island system alert was in place on 06/09/2021 between 09:10 and 22:00 (in NI between 16:30 and 21:30 only).

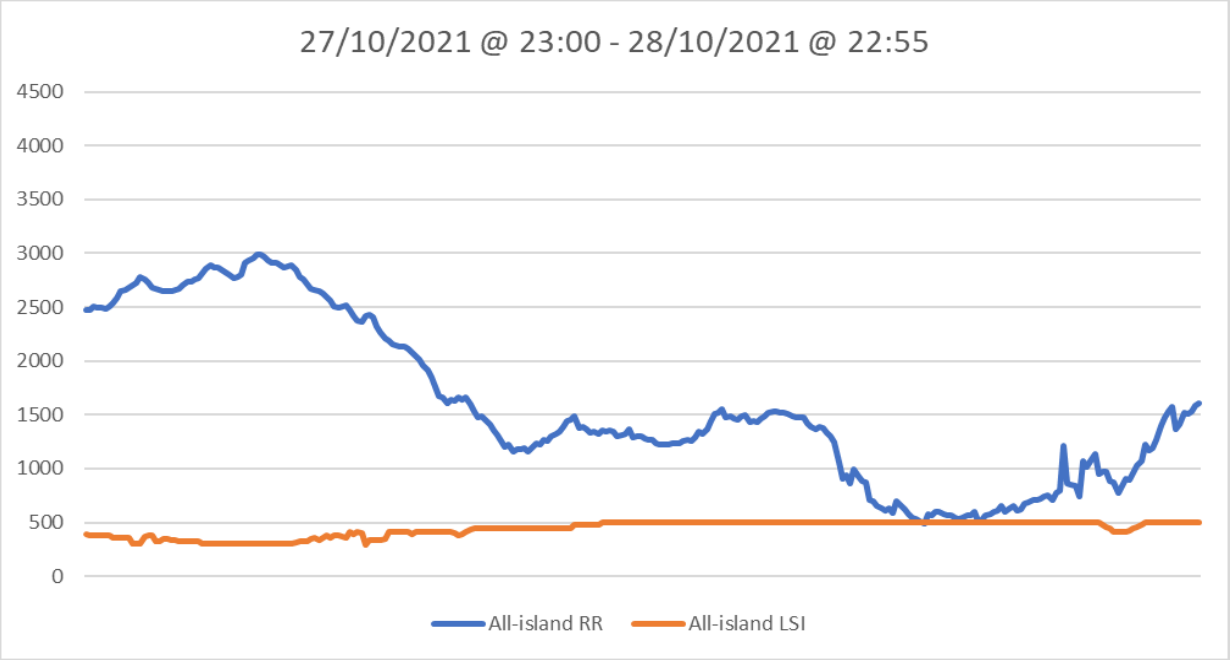

Figure 4 - All-island RR and All-island LSI. An all-island system alert was in place on 28/10/2021 between 15:55 and 21:00 (in NI between 16:35 and 21:00 only).

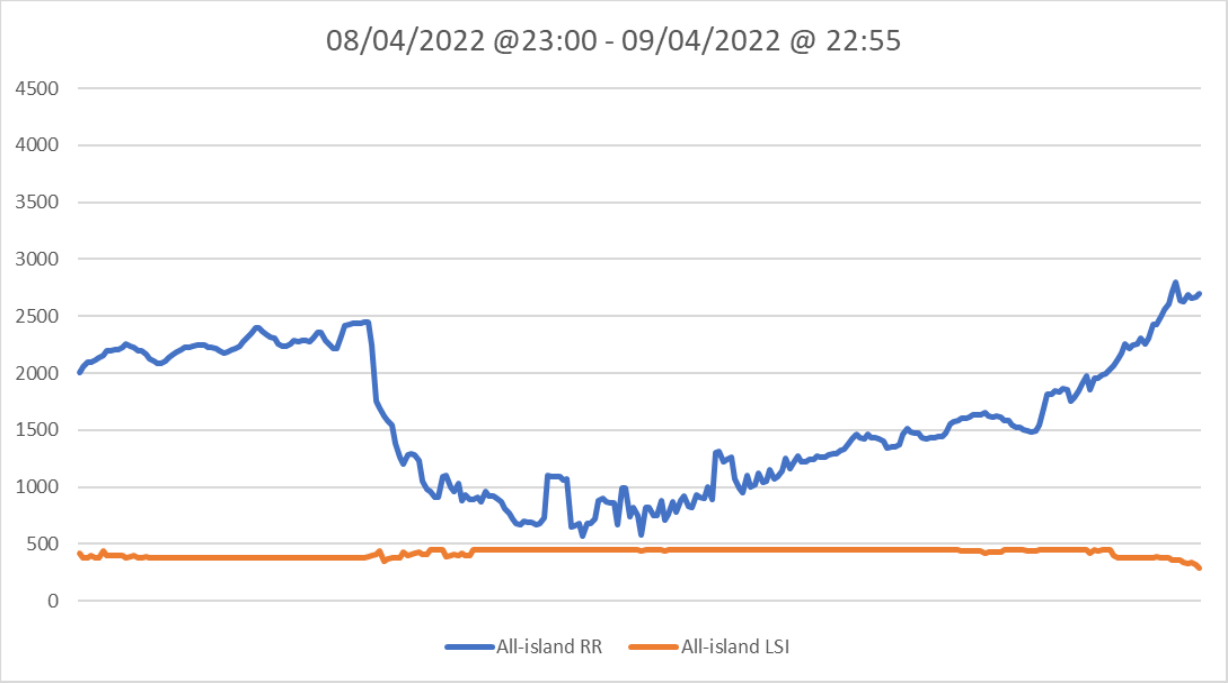

Figure 5 - All-island RR and All-island LSI. A system alert (Ireland only) was in place on 09/04/2022 between 08:00 and 18:30.

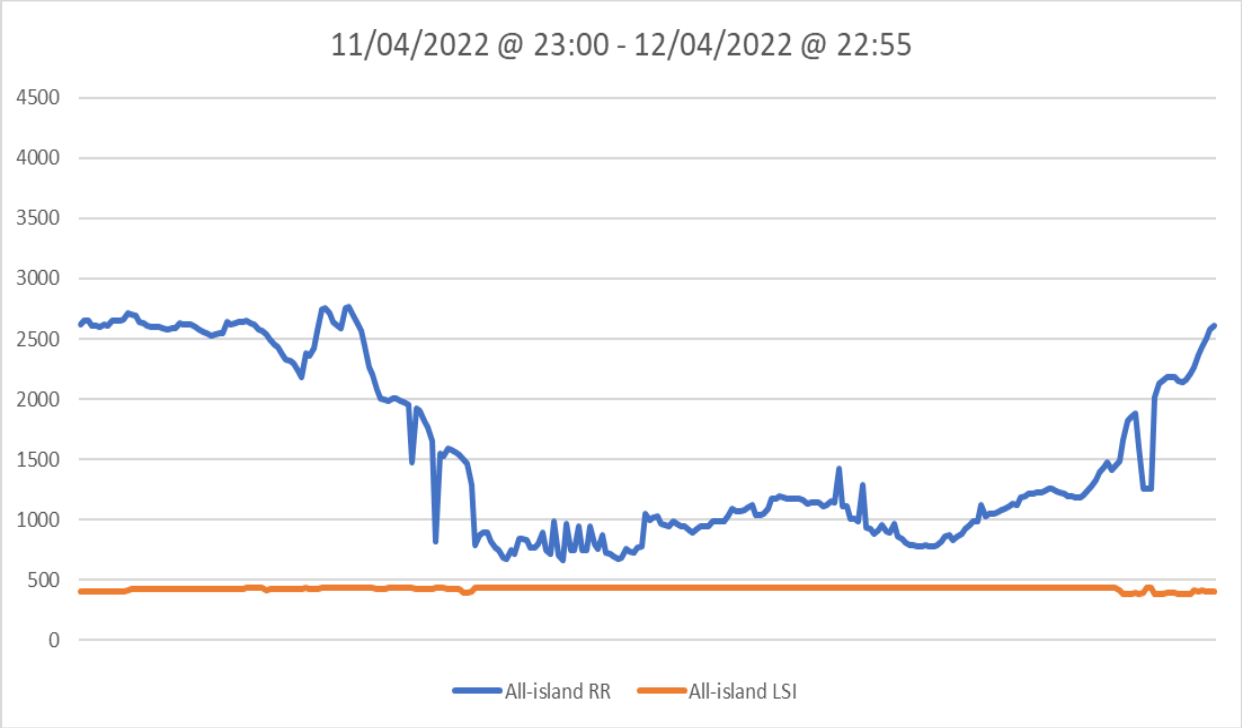

Figure 6 - All-island RR and All-island LSI. A system alert (Ireland only) was in place on 12/04/2022 between 08:00 and 15:05.

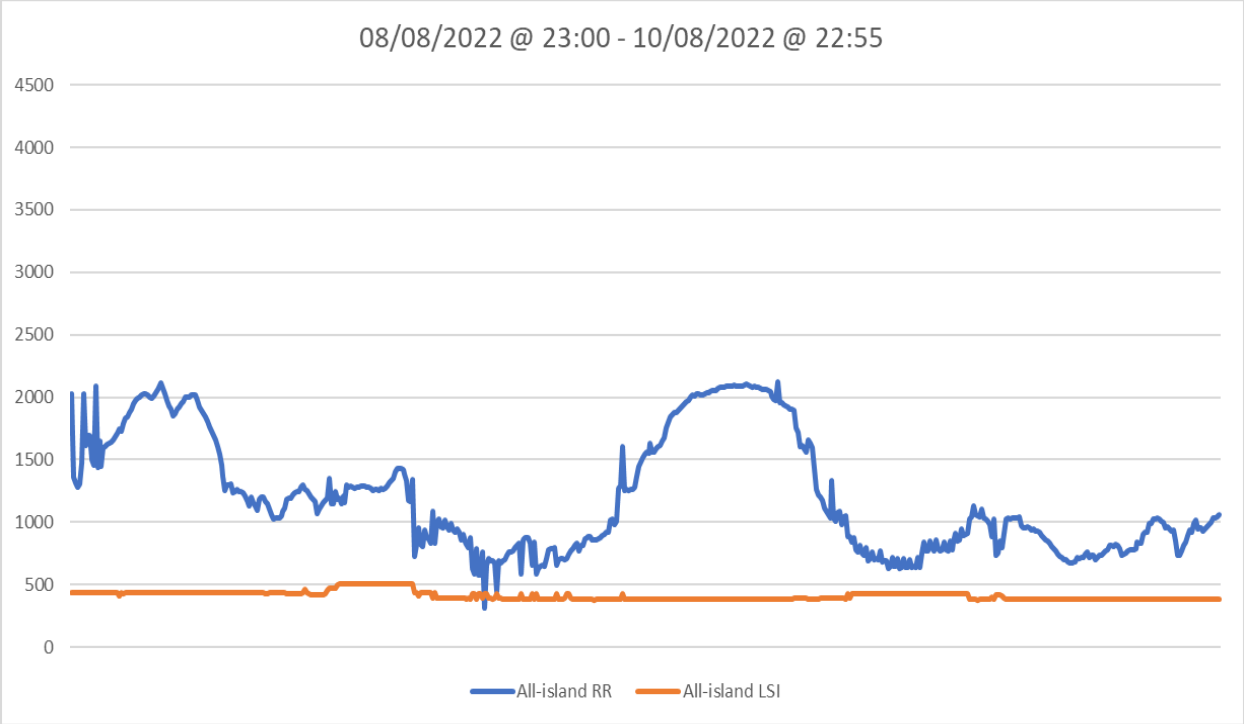

Figure 7 - All-island RR and All-island LSI. A system alert (Ireland only) was in place on 09/08/2022 between 13:42 and 22:30 and on 10/08/2022 between 07:30 and 20:30.

Annex 3 - Option 2a modelled between 04/03/2023 – 08/06/2023

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

Ireland only

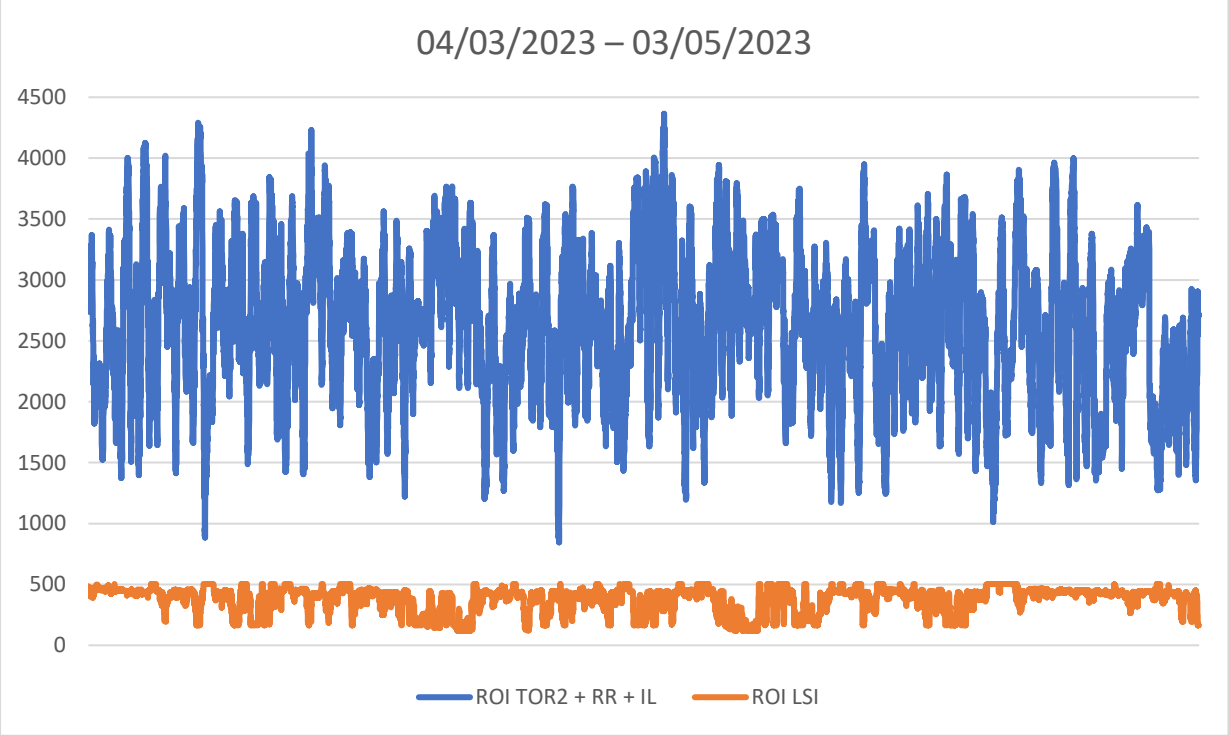

Figure 8 – Ireland only TOR2 + RR + IL and Ireland only LSI. Interruptible Load equates to approximately 200MW in Ireland.

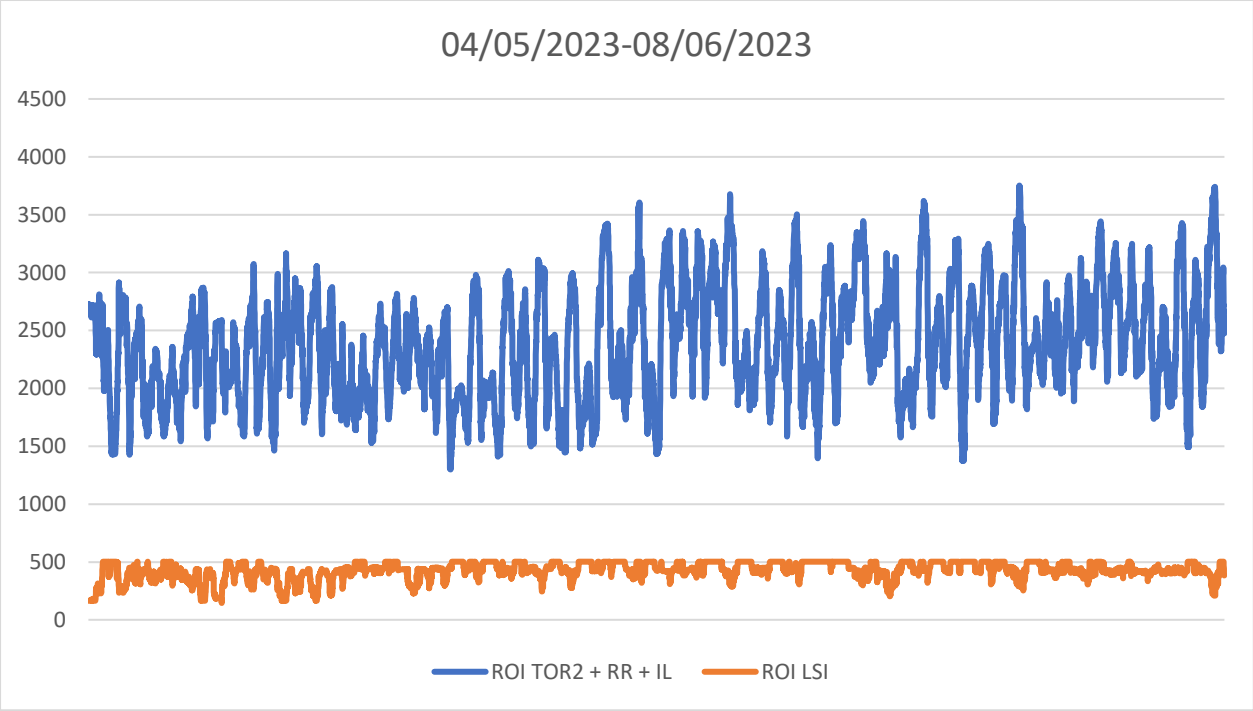

Figure 9 – Ireland only TOR2 + RR + IL and Ireland only LSI. Interruptible Load equates to approximately 200MW in Ireland.

Northern Ireland only

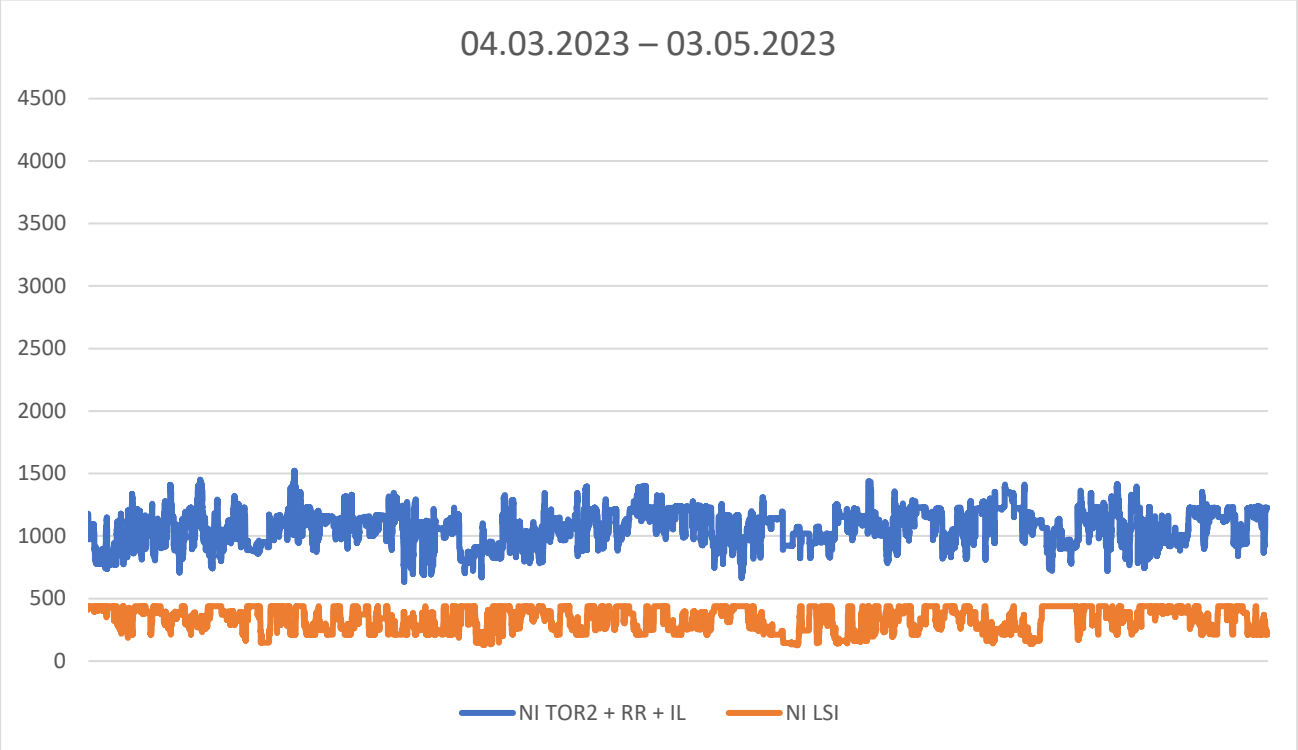

Figure 10 – Northern Ireland only TOR2 + RR + IL and Northern Ireland only LSI. Interruptible Load equates to approximately 100MW in NI.

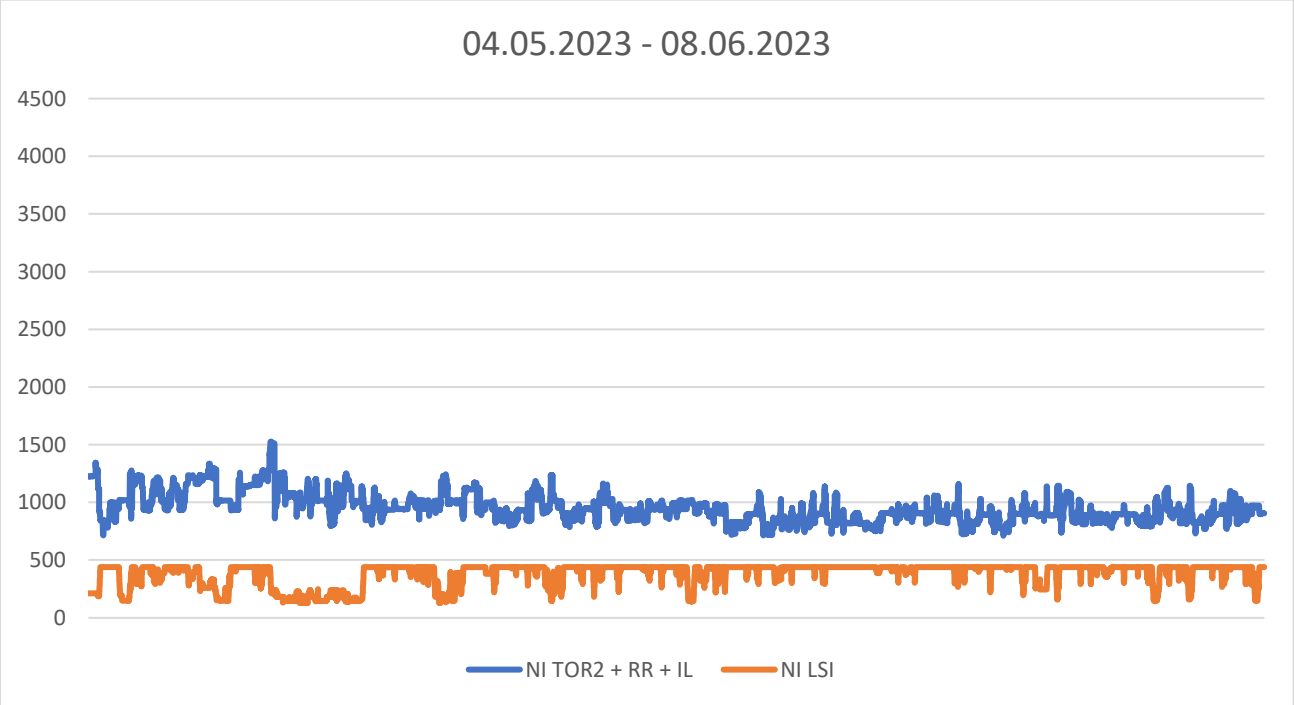

Figure 11 – Northern Ireland only TOR2 + RR + IL and Northern Ireland only LSI. Interruptible Load equates to approximately 100MW in NI.

Annex 4 - Option 2a modelled during periods of system alert in 2021-22

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

Under the conditions set out in Option 2a, in five of the nine time periods, RSP would have triggered at some point. We have therefore included four of these five periods in this paper, considering that the periods in which RSP triggered may be of greater interest to stakeholders.

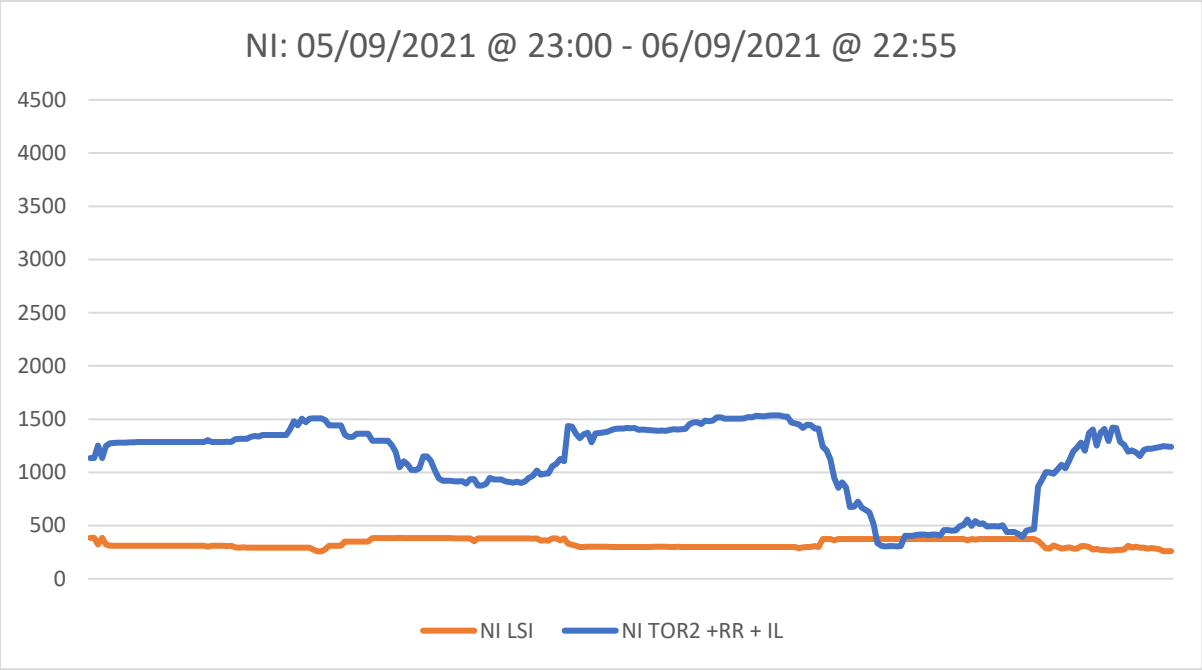

Figure 12 - Northern Ireland only TOR2, RR and IL, and Northern Ireland only LSI. Interruptible Load equates to approximately 100MW in NI. An all-island system alert was in place on 06/09/2021 between 09:10 and 22:00 (in NI between 16:30 and 21:30 only).

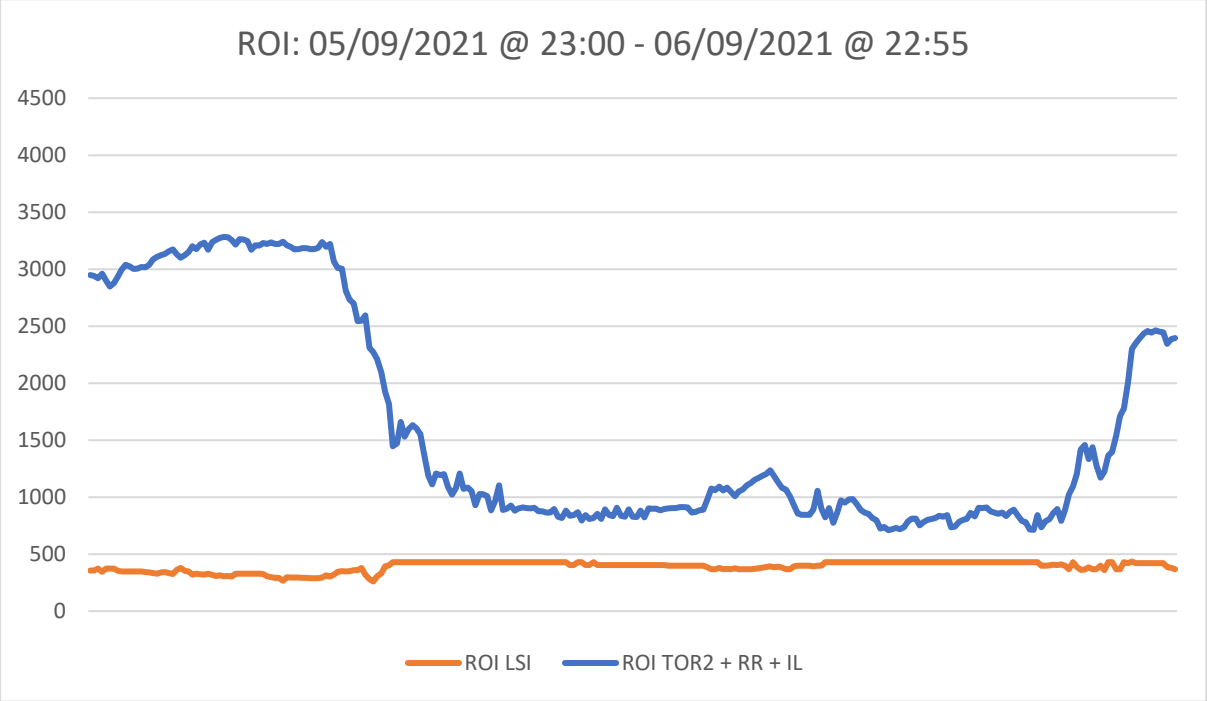

Figure 13 - Ireland only TOR2, RR and IL, and Ireland only LSI. Interruptible Load equates to approximately 200MW in Ireland. An all-island system alert was in place on 06/09/2021 between 09:10 and 22:00 (in NI between 16:30 and 21:30 only).

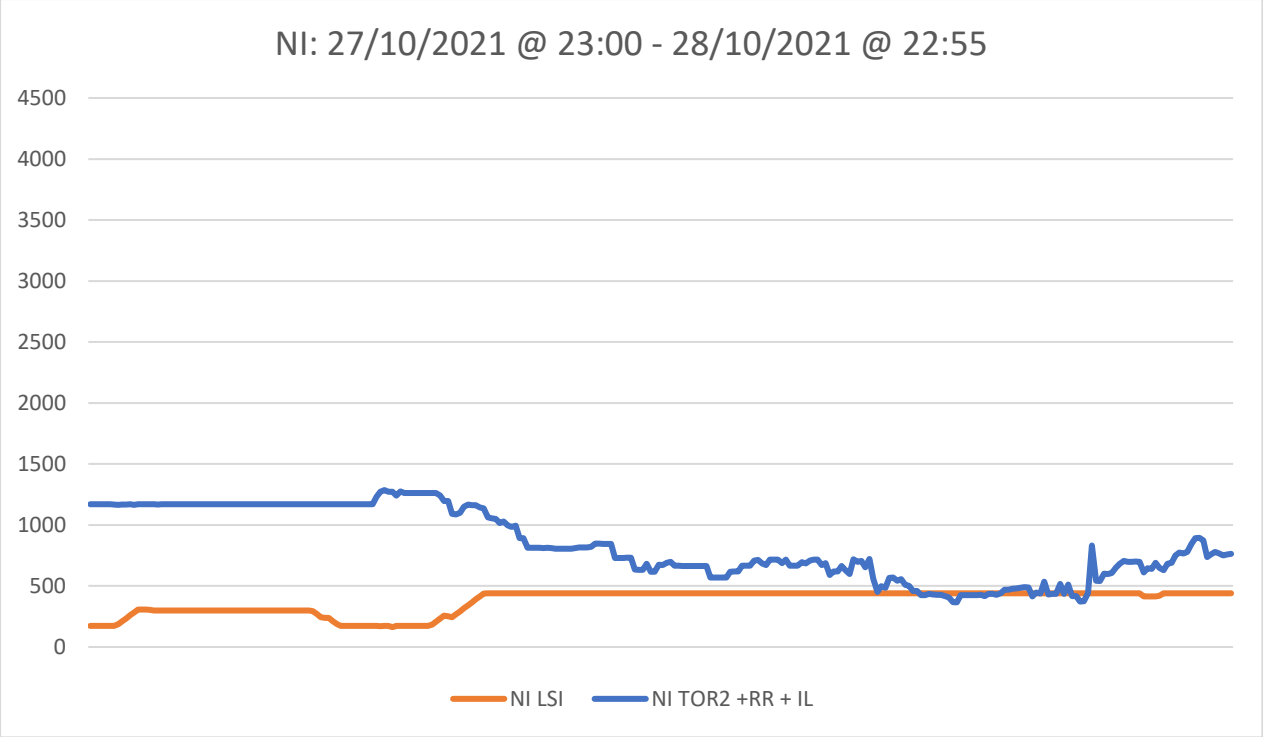

Figure 14 - Northern Ireland only TOR2, RR and IL, and Northern Ireland only LSI. Interruptible Load equates to approximately 100MW in NI. An all-island system alert was in place on 28/10/2021 between 15:55 and 21:00 (in NI between 16:35 and 21:00 only).

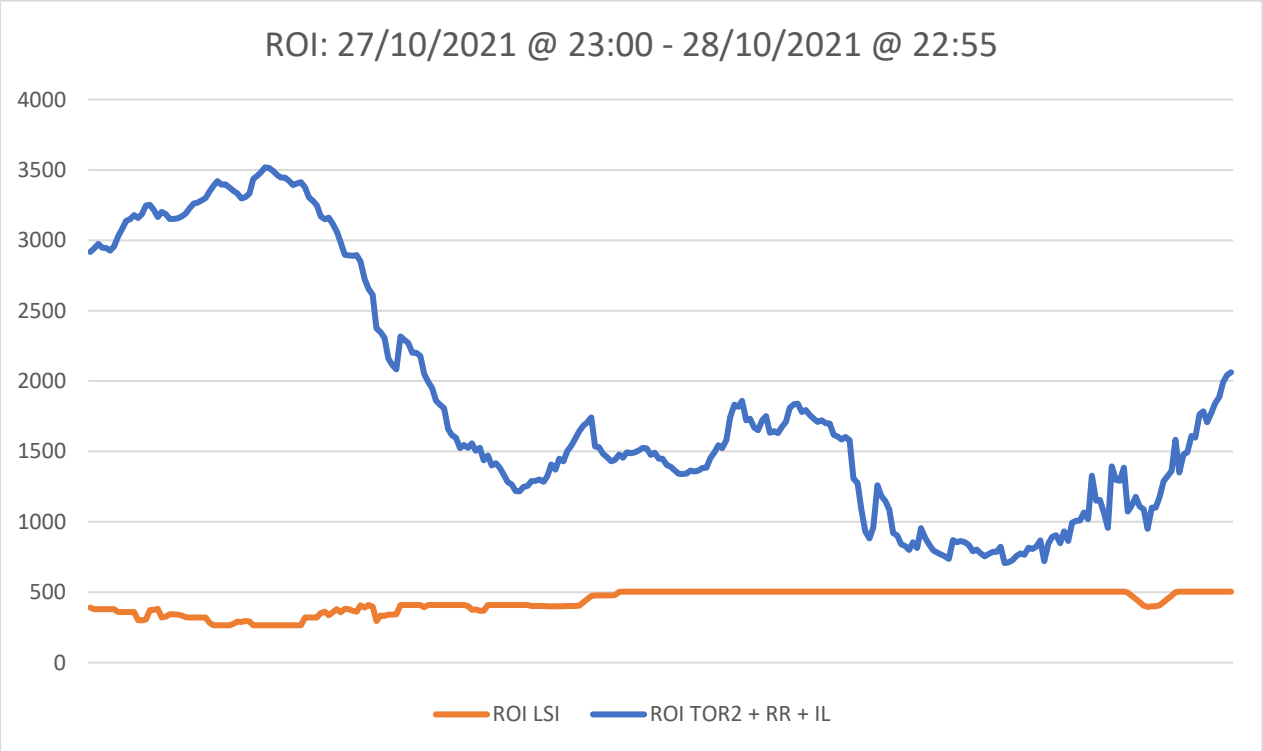

Figure 15 - Ireland only TOR2, RR and IL, and Ireland only LSI. Interruptible Load equates to approximately 200MW in Ireland. An all-island system alert was in place on 28/10/2021 between 15:55 and 21:00 (in NI between 16:35 and 21:00 only).

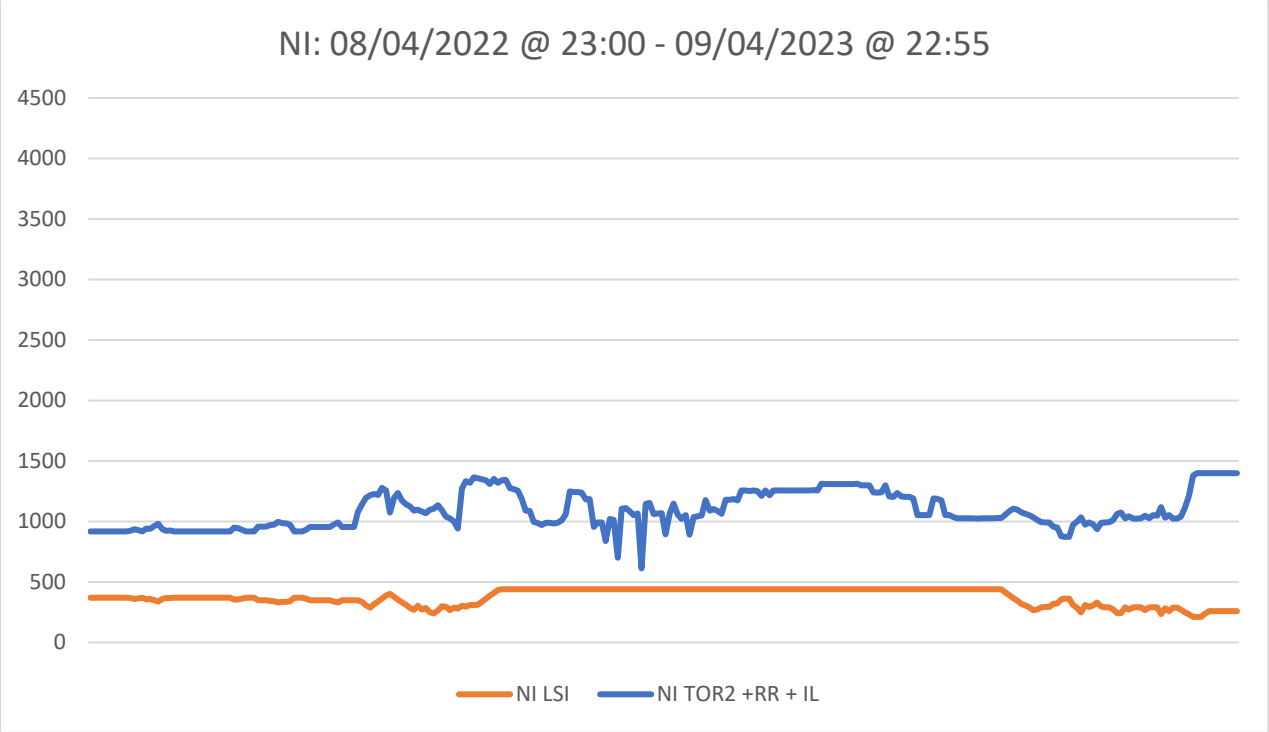

Figure 16 - Northern Ireland only TOR2, RR and IL, and Northern Ireland only LSI. Interruptible Load equates to approximately 100MW in NI. A system alert (Ireland only) was in place on 09/04/2022 between 08:00 and 18:30.

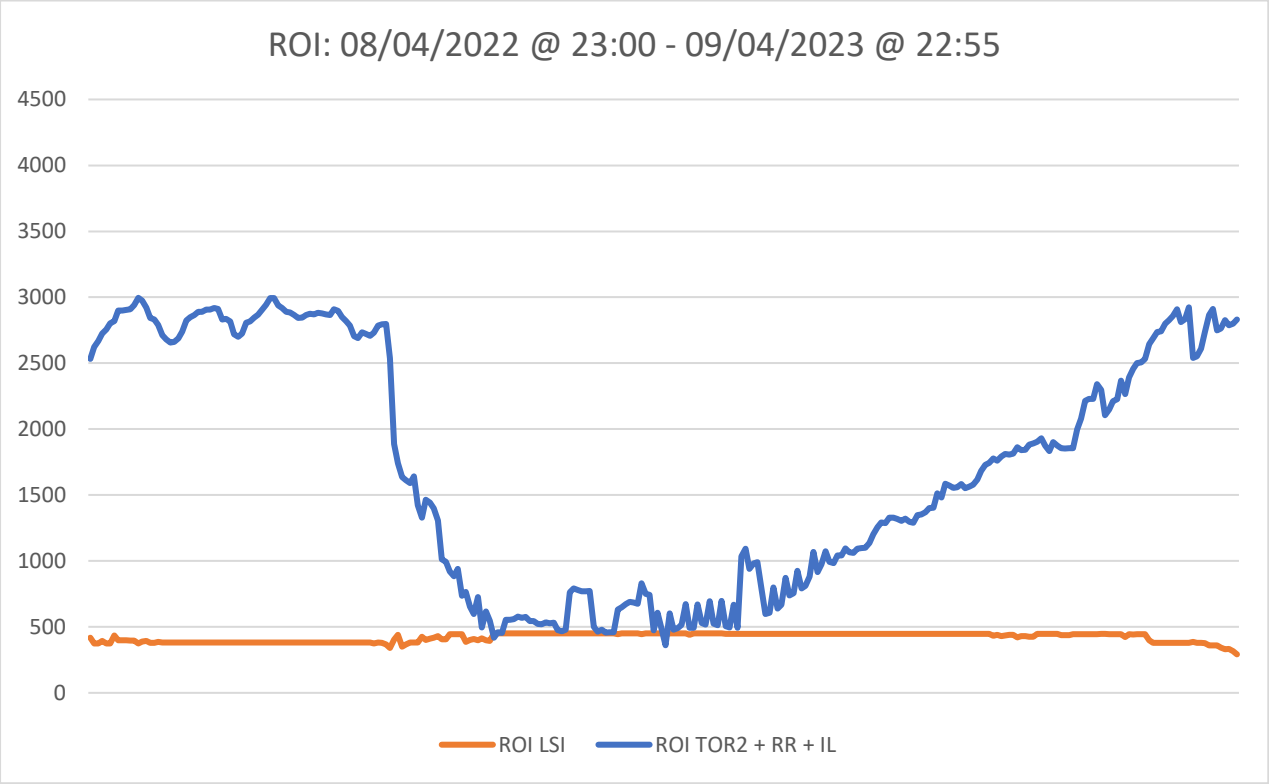

Figure 17 - Ireland only TOR2, RR and IL, and Ireland only LSI. Interruptible Load equates to approximately 200MW in Ireland. A system alert (Ireland only) was in place on 09/04/2022 between 08:00 and 18:30.

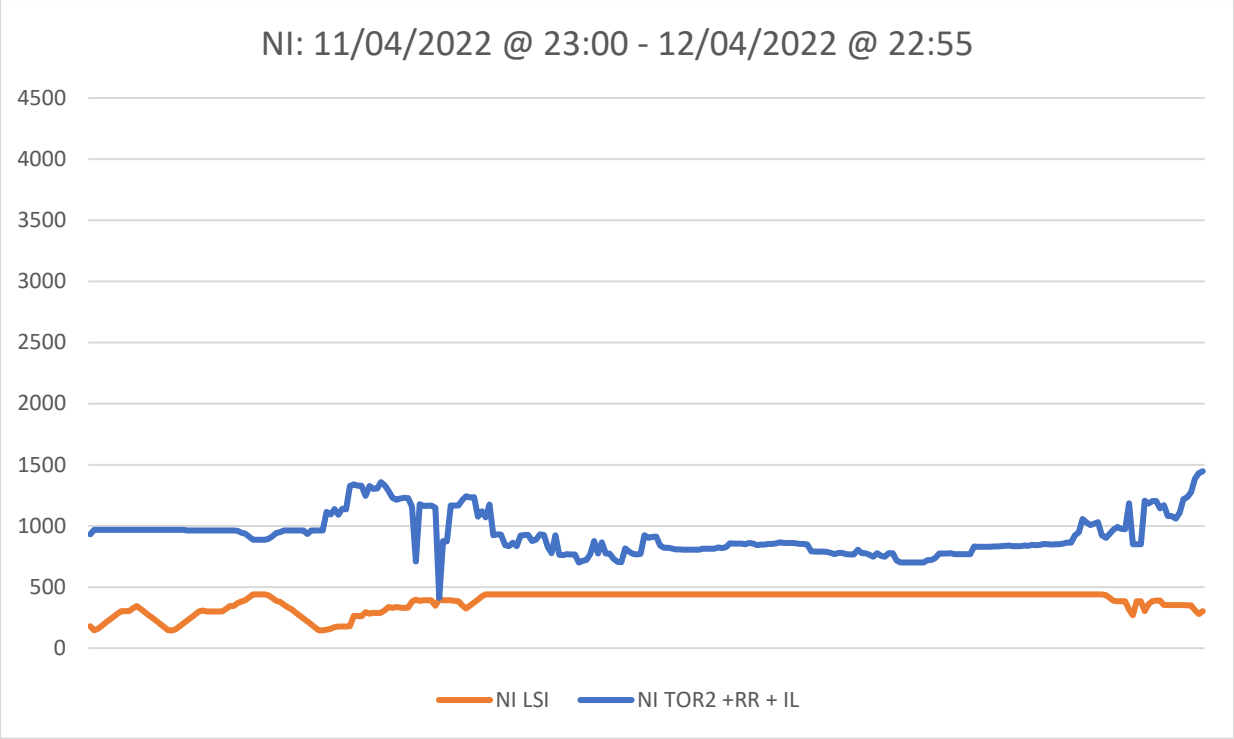

Figure 18 - Northern Ireland only TOR2, RR and IL, and Northern Ireland only LSI. A system alert (Ireland only) was in place on 12/04/2022 between 08:00 and 15:05. Interruptible Load equates to approximately 100MW in NI. Note that at the closest point, NI LSI equates to 397MW and NI TOR2 + RR + IL equates to 410MW, and therefore RSP is not triggered.

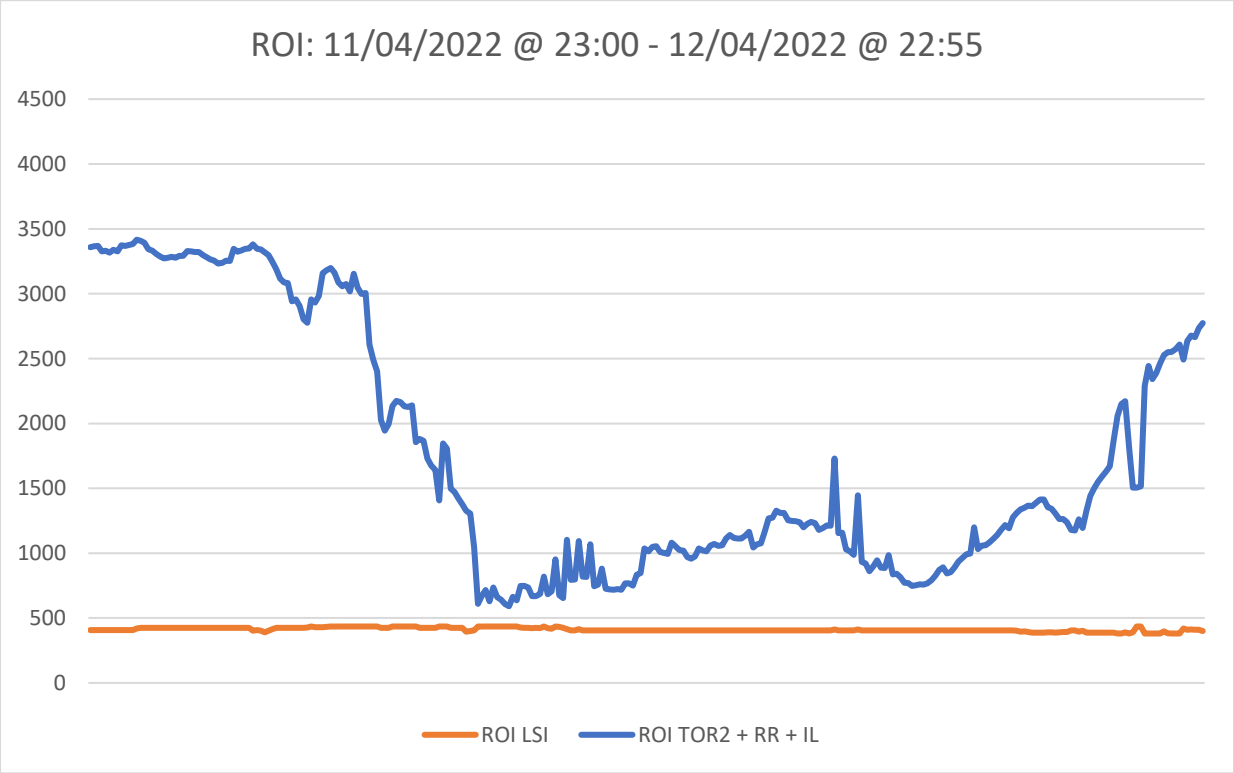

Figure 19 - Ireland only TOR2, RR and IL, and Ireland only LSI. Interruptible Load equates to approximately 200MW in Ireland. A system alert (Ireland only) was in place on 12/04/2022 between 08:00 and 15:05.

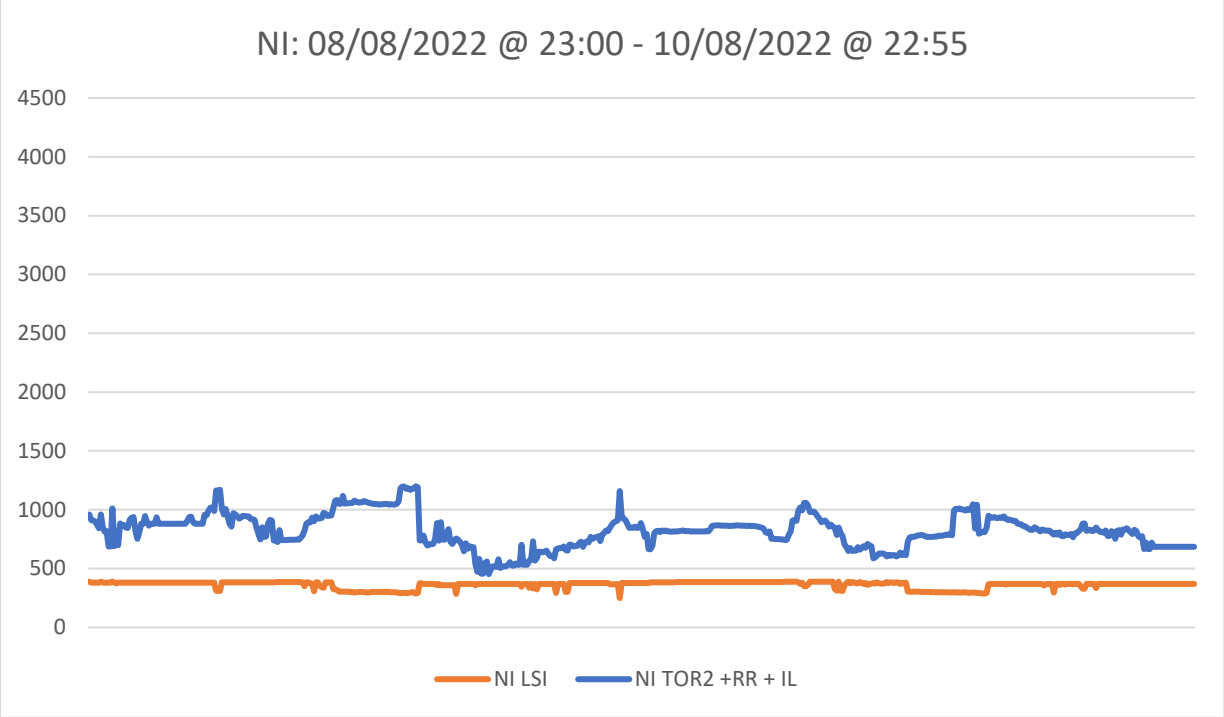

Figure 20 - Northern Ireland only TOR2, RR and IL, and Northern Ireland only LSI. Interruptible Load equates to approximately 100MW in NI. A system alert (Ireland only) was in place on 09/08/2022 between 13:42 and 22:30 and on 10/08/2022 between 07:30 and 20:30.

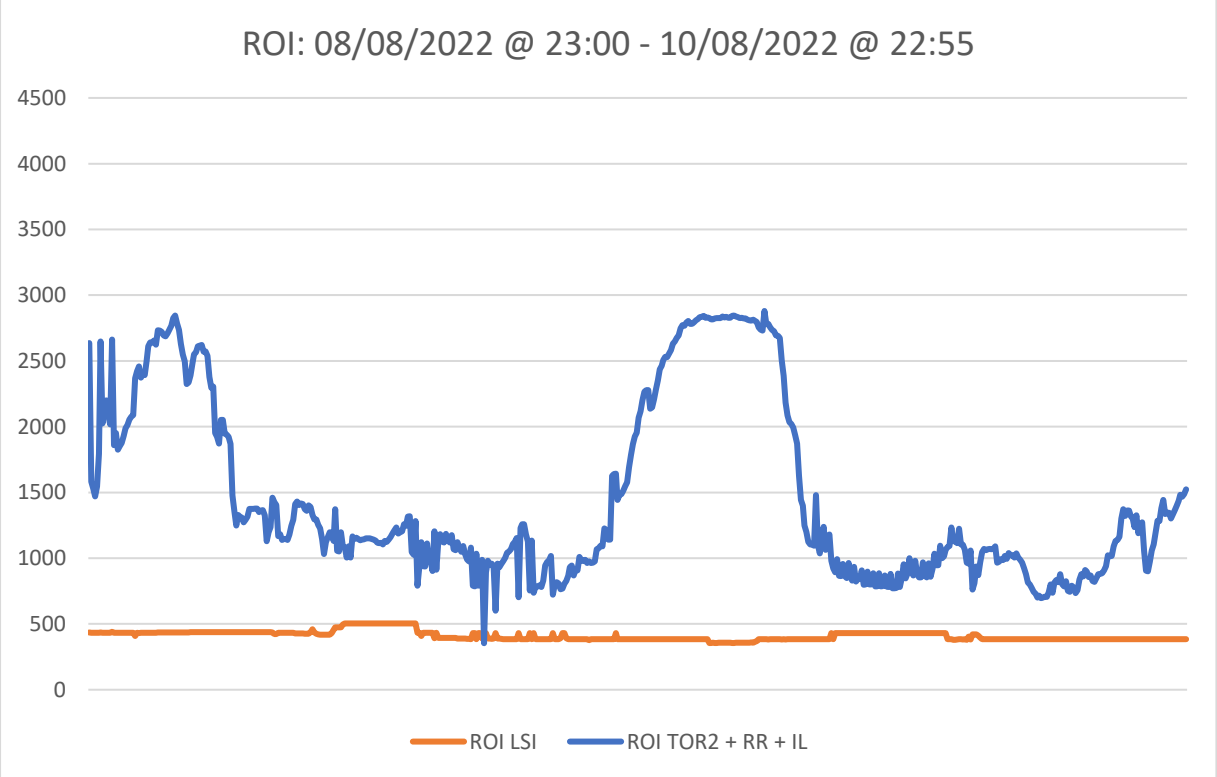

Figure 21 - Ireland only TOR2, RR and IL, and Ireland only LSI. Interruptible Load equates to approximately 200MW in Ireland. A system alert (Ireland only) was in place on 09/08/2022 between 13:42 and 22:30 and on 10/08/2022 between 07:30 and 20:30.

Annex 5 – Option 2b modelled during between 04/03/2023 – 08/06/2023

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

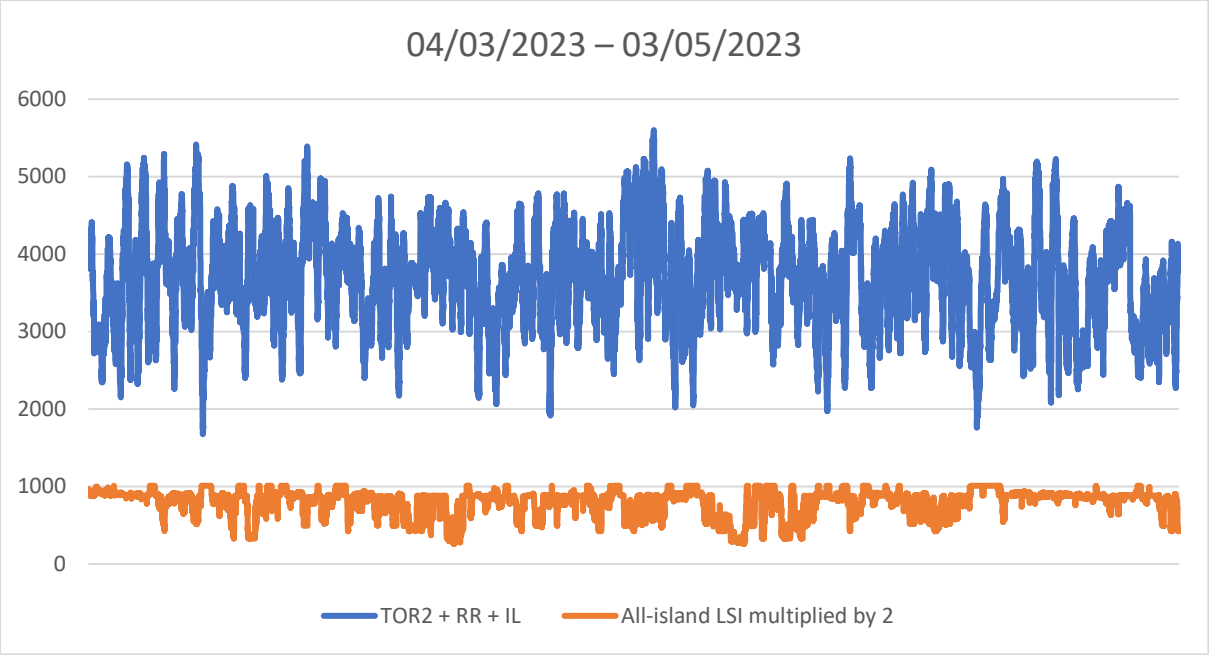

Figure 22 - All-island TOR2, Replacement Reserves and Interruptible Load, and all-island LSI multiplied by 2 between 04/03/2023 – 03/05/2023. Interruptible Load equates to approximately 300MW on an all-island basis.

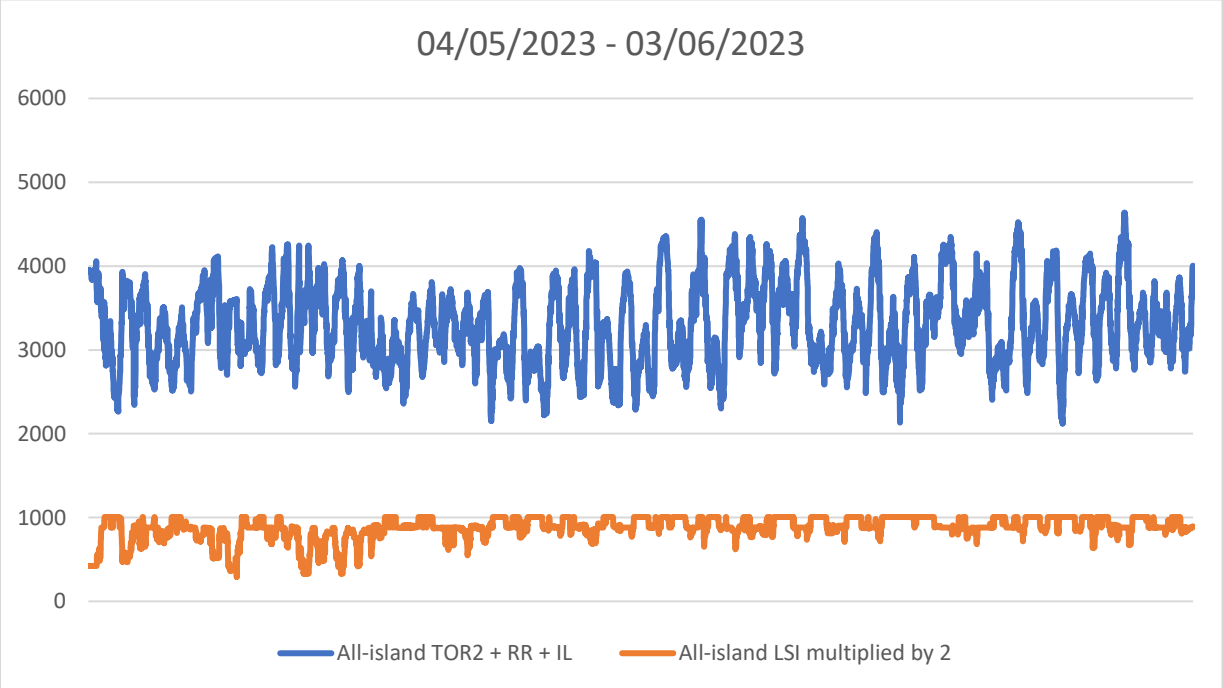

Figure 23 - All-island TOR2, Replacement Reserves and Interruptible Load, and all-island LSI multiplied by 2 between 04/05/2023 – 03/06/2023. Interruptible Load equates to approximately 300MW on an all-island basis.

Annex 6 – Option 2b modelled during periods of system alert in 2021-22

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

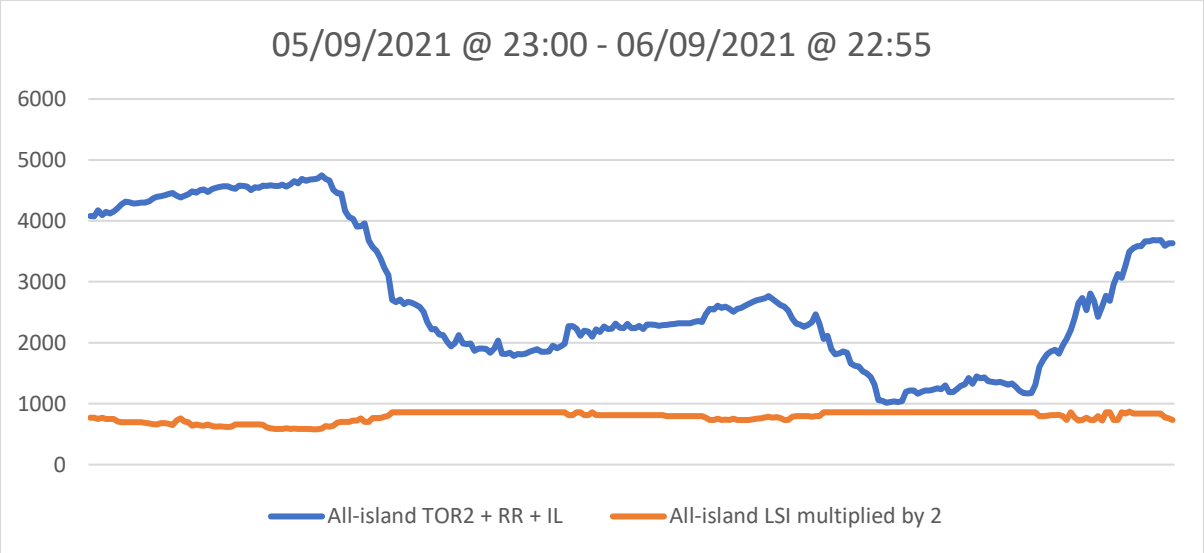

Figure 24 - All-island TOR2, Replacement Reserves and Interruptible Load, and all-island LSI multiplied by 2. Interruptible Load equates to approximately 300MW on an all-island basis. An all-island system alert was in place on 06/09/2021 between 09:10 and 22:00 (in NI between 16:30 and 21:30 only).

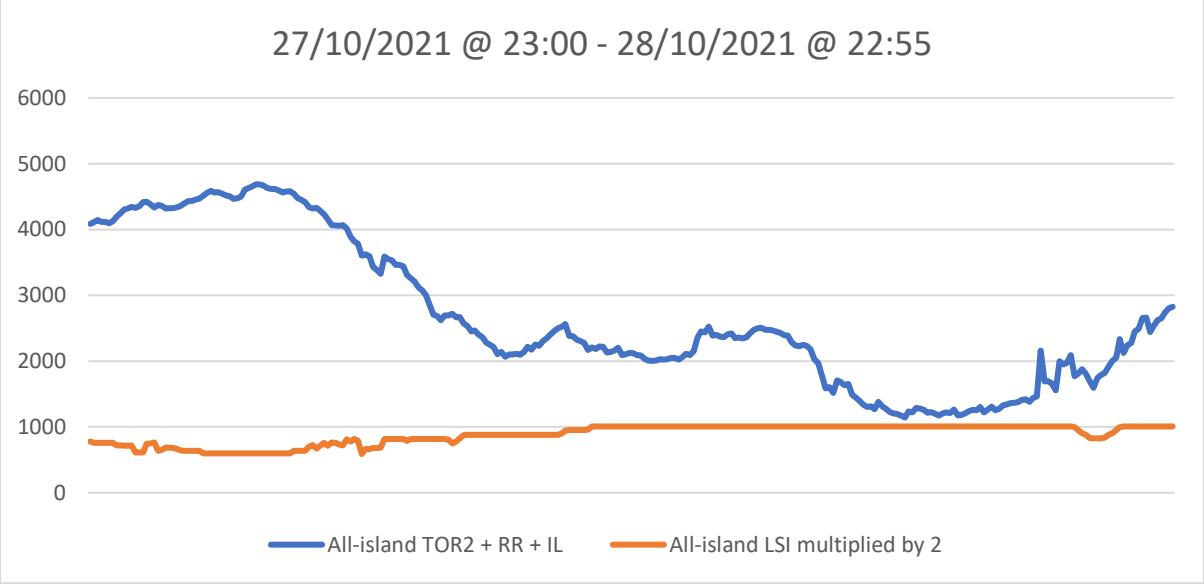

Figure 25 - All-island TOR2, Replacement Reserves and Interruptible Load, and all-island LSI multiplied by 2. Interruptible Load equates to approximately 300MW on an all-island basis. An all-island system alert was in place on 28/10/2021 between 15:55 and 21:00 (in NI between 16:35 and 21:00 only).

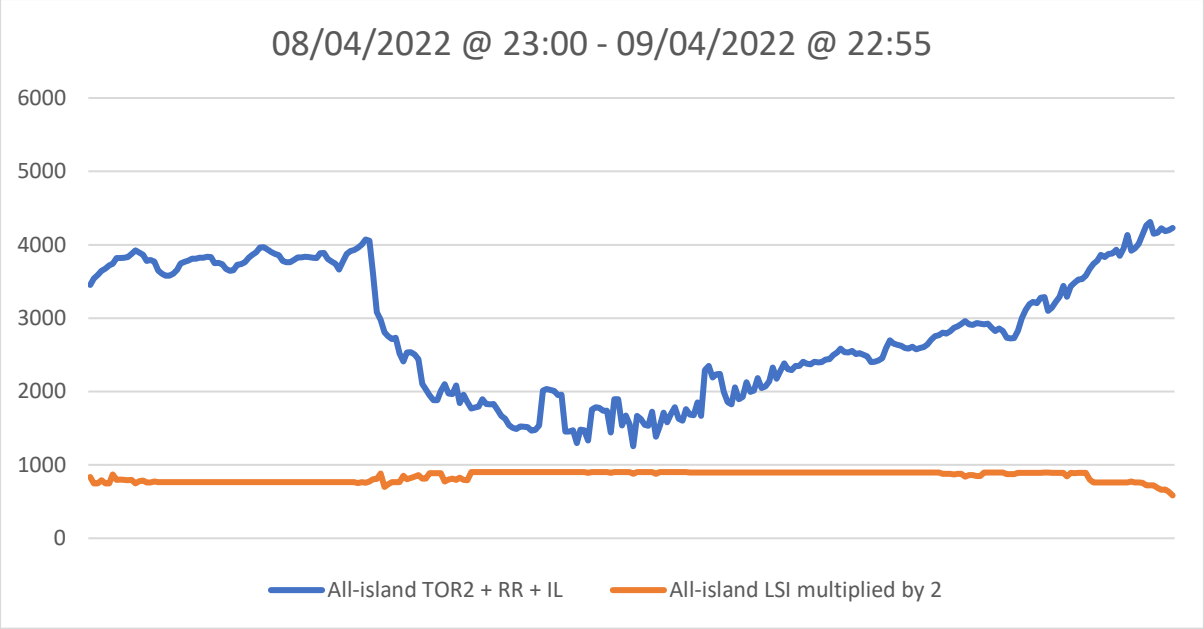

Figure 26 - All-island TOR2, Replacement Reserves and Interruptible Load, and all-island LSI multiplied by 2. Interruptible Load equates to approximately 300MW on an all-island basis. A system alert (Ireland only) was in place on 09/04/2022 between 08:00 and 18:30.

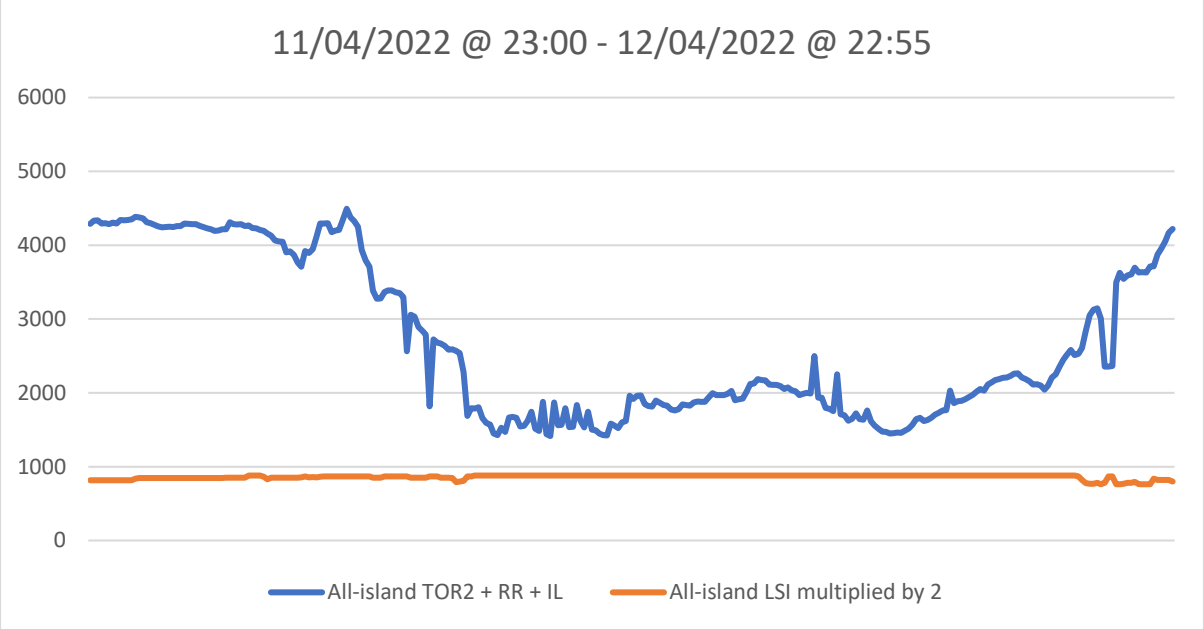

Figure 27 - All-island TOR2, Replacement Reserves and Interruptible Load, and all-island LSI multiplied by 2. Interruptible Load equates to approximately 300MW on an all-island basis. A system alert (Ireland only) was in place on 12/04/2022 between 08:00 and 15:05.

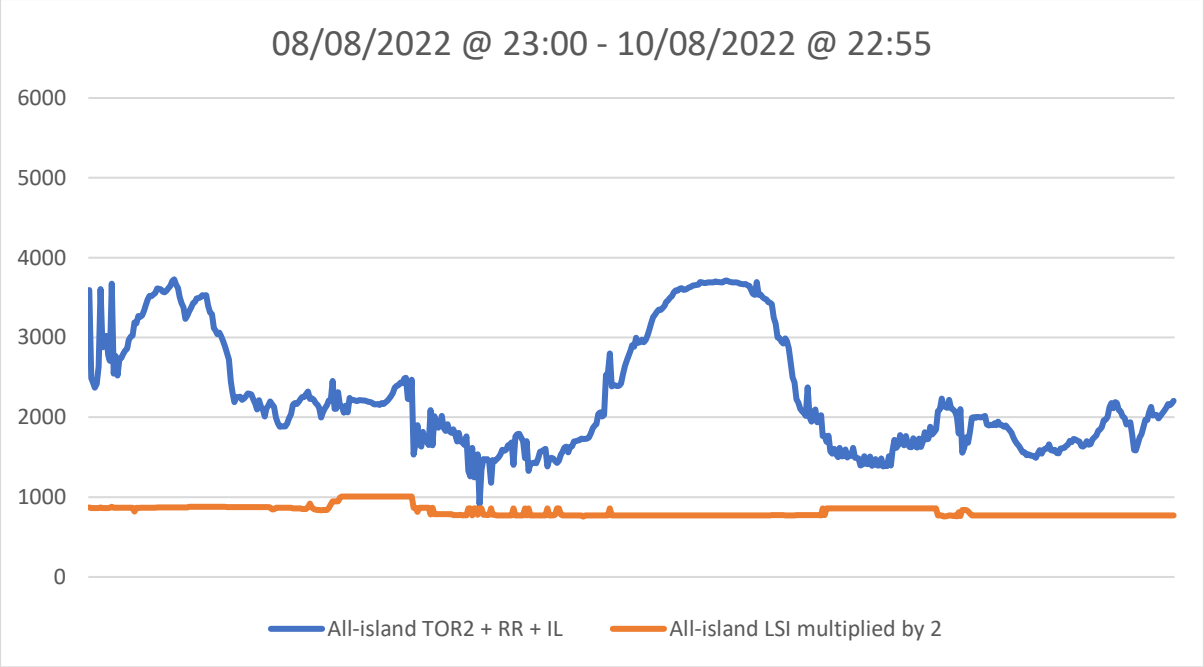

Figure 28 - All-island TOR2, Replacement Reserves and Interruptible Load, and all-island LSI multiplied by 2. Interruptible Load equates to approximately 300MW on an all-island basis. A system alert (Ireland only) was in place on 09/08/2022 between 13:42 and 22:30 and on 10/08/2022 between 07:30 and 20:30. Note that at the closest point between the two values, All-island TOR2 + RR + IL equate to 912MW and All-island LSI multiplied by 2 equates to 860MW, and therefore RSP is not triggered.