

Recommendation on DS3 System Services Protocol – Regulated Arrangements

DS3 System Services Implementation Project

March 29th 2019

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1 Executive Summary

On December 14th 2018 EirGrid and SONI published a consultation¹ on the proposed amendments to the DS3 System Services Protocol Document – Regulated Arrangements, Version 1.0, published 12th December 2017. This consultation was to be read in conjunction with the accompanying redlined Protocol document.

In this document, we consider the responses received to this consultation, provide clarifications where necessary, and make our recommendations.

It should be noted that, based on industry feedback a separate Protocol document will be created for the Fixed Contracts arrangements.

The main recommendations and clarifications can be summarised as follows:

- We recommend, as presented in the consultation (with the exception of the text that has been struck through below), the introduction of Significant Frequency Disturbance and Frequency Event Threshold definitions defined as:
 - **“Significant Frequency Disturbance”** a deviation in Transmission System Frequency in excess of the Frequency Event Threshold, which denotes that a Frequency Event has occurred.
 - **“Frequency Event Threshold”** a deviation in Transmission System Frequency of 0.3 Hz ~~or as determined by the TSOs~~. The deviation is referenced from Nominal Frequency (50 Hz) and if exceeded denotes that a Frequency Event has occurred;
- We recommend that the RM1 assessment methodology will only be applied to service providers who provide TOR2 and RRS through the issue of a dispatch instruction. Providers of TOR2 and RR services will also continue to be assessed on frequency event performance using the TOR1 methodology applied over the TOR2 and RR periods. This recommendation is based on feedback from the consultation and has been amended from the original consultation proposal.

¹ ‘Consultation on DS3 System Services Protocol’

http://www.eirgridgroup.com/site-files/library/EirGrid/Consultation-paper-Protocol-Doc_final.pdf

- We recommend that the Protocol document, section 5.7.1.1, is amended in line with the proposal in the consultation paper:

‘The **Time Zero (T)** for a **Frequency Event** is the time at which the **Frequency** first passes through the **Reserve Trigger** of the **Providing Unit**. All **Frequency** reserve services will be assessed relative to this **Time Zero**.

For all **Providing Units** that have a **Reserve Trigger** higher than 49.8Hz the **Time Zero** shall be determined as being the time when the **Transmission System Frequency** first passes through 49.8Hz. A **Frequency Event** is solely described by this **Time Zero** and it has no specific duration.’

- We recommend the removal of references to the end of a Frequency Event, in line with the proposal in the consultation paper.
- We recommend that the Protocol document, section 5.7.1.2, is amended in line with the proposal in the consultation paper as follows with additional text detailing that the secondary metric will only be used when the outcome is favourable to the Providing Unit in terms of performance assessment:

‘The **Pre-Event Frequency** is defined as the mean of the **Transmission System Frequency** between T-1.5 seconds and T-0.5 seconds from **Time Zero**. A secondary metric for determining **Pre-Event Frequency** will also be calculated as the mean of the **Transmission System Frequency** between T-60 seconds and T-30 seconds from **Time Zero**.

The TSO will use the defined methodology for performance assessment in the first instance and will revert to the secondary metric only in instances where issues arise with the primary metric and which are favourable to the **Providing Unit** in terms of performance assessment.

The **Providing Unit’s Pre-Event Output** will be determined as per the **Pre Event Frequency** methodology and assessed over the same **Pre-Event Frequency** period’

- The TSOs recommend, in line with the proposal in the consultation paper, removing from the Protocol document the concept of Multiple Frequency Events.
- The consultation paper included a modification to the tolerance applied to the expected FFR/POR/SOR/TOR1 response for determining if a pass should be

awarded without applying the detailed Q calculation (namely, only providing a tolerance of 10% of the expected response and not of 1 MW if 1 MW is greater than 10%). After discussion with industry, the TSOs recommend the following; if 10% of the expected response is less than 1 MW, the tolerance will be limited to a maximum of 50% of the expected response. This recommendation is to balance awarding passes for poor provision against unduly penalising Providing Units with smaller expected responses.

- The FFR performance assessment process proposed for this consultation was a significant update on the process in the existing Protocol document. The TSOs recommend that this updated process be retained, in line with the proposal in the consultation paper. Furthermore, based on comments from industry and to ensure clarity around this updated process, the TSOs also recommend some additional modifications, which are a precise definition of the FFR Energy Provided and FFR Loss of Energy (also including Glossary terms), updating the tolerance applied to FFR to harmonise it with POR, SOR and TOR1 and a clarification that the tolerance will only be subtracted from the expected response.

As result of industry's comments on areas that were not part of the consultation, we have additional recommendations that have resulted in minor modifications to the Protocol document. These recommendations have been presented in Section 5.7 of this paper.

With regards to the Protocol Document for the Fixed Contracts Arrangements, we are making the following recommendations:

- A separate Protocol document will be created for the Fixed Contracts arrangements.
- A flat monthly weighting will be used when calculating the Availability Performance Scalar i.e. we will weight all of the previous 12 months equally.
- The contract clause which allows the TSOs to terminate contracts when the Availability Performance Scalar is zero for three consecutive months will remain.
- We can confirm that the Availability Performance Scalar will not apply to units contracted under the Regulated Arrangements.

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3 Introduction

3.1 Background

EirGrid and SONI are the Transmission System Operators (TSOs) in Ireland and Northern Ireland. It is our job to manage the electricity supply and the flow of power from providers to consumers.

We have a responsibility to enable increased levels of renewable sources to generate on the power system while continuing to ensure that the system operates securely and efficiently. Our Delivering a Secure Sustainable Electricity System (DS3) programme seeks to address the challenges of increasing the allowable System Non-Synchronous Penetration (SNSP) up to 75% by 2020.

The results of the programme are now beginning to deliver benefits to the consumer. In recent months the maximum SNSP level allowable has increased to 65%. It is expected that similar trials will be conducted in the coming years with a view to achieving the DS3 programme's overall goal of a maximum 75% SNSP limit.

A key component of the DS3 programme is the System Services work stream. Its aim is to put in place the correct structure, level and type of services in order to ensure that the system can operate securely with these higher levels of non-synchronous generation.

3.2 Overview of System Services

EirGrid and SONI have licencing and statutory obligations to procure sufficient System Services to enable efficient, reliable and secure power system operation. The contractual arrangements and payment rates in Ireland and Northern Ireland were harmonised following the introduction of the SEM, with 7 services (POR, SOR, TOR1, TOR2, SSRP, RRS, and RRD) procured under these Harmonised Ancillary Services (HAS) arrangements.

New services are required to support a move to higher levels of non-synchronous generation. Four services (SIR, RM1, RM3, and RM8) were introduced from 1 October 2016 following the commencement of the new DS3 System Services arrangements. The FFR service was introduced from 1 October 2018 and a further two services (DRR and FPFAPR), are in the process of being introduced as they are required only at SNSP levels above 70%. All services are required to maintain the resilience of the power system as the SNSP levels increase. Table 1 provides a high-level summary of the DS3 System Services.

Table 1 Summary of DS3 System Services²

Service Name	Abbreviation	Unit of Payment	Short Description
Synchronous Inertial Response	SIR	MWs ² h	(Stored kinetic energy)*(SIR Factor – 15)
Fast Frequency Response	FFR	MWh	MW delivered between 0.15 and 10 seconds
Primary Operating Reserve	POR	MWh	MW delivered between 5 and 15 seconds
Secondary Operating Reserve	SOR	MWh	MW delivered between 15 to 90 seconds
Tertiary Operating Reserve 1	TOR1	MWh	MW delivered between 90 seconds to 5 minutes
Tertiary Operating Reserve 2	TOR2	MWh	MW delivered between 5 minutes to 20 minutes
Replacement Reserve – Synchronised	RRS	MWh	MW delivered between 20 minutes to 1 hour
Replacement Reserve – Desynchronised	RRD	MWh	MW delivered between 20 minutes to 1 hour
Ramping Margin 1	RM1	MWh	The increased MW output that can be delivered with a good degree of certainty for the given time horizon.
Ramping Margin 3	RM3	MWh	
Ramping Margin 8	RM8	MWh	
Fast Post Fault Active Power Recovery	FPFAPR	MWh	Active power (MW) >90% within 250ms of voltage >90%
Steady State Reactive Power	SSRP	MVArh	(Mvar capability)*(% of capacity that Mvar capability is achievable)
Dynamic Reactive Response	DRR	MWh	Mvar capability during large (>30%) voltage dips

² Further detail on the DS3 System Services can be found at: <http://www.eirgridgroup.com/how-the-grid-works/ds3-programme/>

3.3 Purpose of this consultation process

The purpose of this consultation paper is to set out the proposed amendments to the Protocol document as contained in the marked up version associated with this consultation. The Protocol document specifies the compliance requirements which a service provider must satisfy before being paid for DS3 System Services. In addition, it specifies the Performance Monitoring procedures to be applied. It also contains operational requirements, specifying minimum standards that Providing Units must meet.

Following feedback from industry, proposals were made to modify the Performance Monitoring section (section 5). It should be noted that the Performance Monitoring process detailed in the Protocol document relates to the assessment of Providing Units' delivery of contracted DS3 System Services only.

Proposed modifications to the Protocol document were also presented in the DS3 System Services Fixed Contracts consultation³, published on 25 October 2018. Due to the overlap of these two consultations, the proposed changes presented in the Fixed Contracts consultation were also included as part of this consultation.

Lastly, minor modifications were proposed to the Protocol document to correct any housekeeping errors, to ease the understanding of, and further develop the requirements and procedures being presented.

³ <http://www.eirgridgroup.com/site-files/library/EirGrid/DS3-System-Services-Fixed-Contracts-consultation.pdf>

4 Responses to the Consultation

The consultation closed on 30th January 2019. To facilitate industry engagement on the DS3 Programme, and in light of industry requests for a forum on the DS3 System Services Protocol Consultation, an Industry Forum was held in Dundalk on 22nd February 2019.

In total, 21 responses were received. Parties who submitted non-confidential responses are listed below:

AES Kilroot Power Ltd and AES Ballylumford Ltd

Aughinish Alumina Ltd

Bord Gáis Energy

Bord na Móna

DRAI

EirGrid Interconnector DAC

Electricity Association of Ireland

Energia

ESB Customer Solutions

ESB Generation and Trading

Irish Energy Storage Association

Irish Wind Energy Association

Moyle Interconnector Ltd

Power Procurement Business

Renewable Energy Systems Ltd

SSE

Tynagh Energy Ltd

All non-confidential responses have been published alongside this recommendations paper, and all responses have been shared with the Regulatory Authorities.

5 Questions from Consultation paper

All 21 respondents gave feedback to varying degrees relating to the questions posed. This totalled a large volume of comments. Each question will be dealt with specifically in this document and we will address the key themes that were raised under each question.

Additional comments not related to the consultation questionnaire have been included at the end of this section.

5.1 TOR2, RRD and RRS being assessed using the RM1 assessment methodology

Question 1: Do you have any comments on the assessment methodology for these services being amended to align with Ramping Margin assessment methodology?

5.1.1 Industry Responses

There was a large volume of comments relating to the use of RM1 assessment methodology being used to assess TOR2, RRD and RRS. The following provides a high-level summary of the comments received:

- Twelve respondents stated that TOR2 should be assessed on transient performance using TOR1 methodology.
- Five respondents expressed the view that the Fail Sync process for ramping assessment was temporary and should be replaced.
- Four respondents commented that the revised proposal only works for synchronous machines receiving dispatch instructions
- One respondent believed the proposal needed to be adapted for storage units.
- Six respondents stated that volume capped units will not be providing RM1.

5.1.2 TSOs' Response

We acknowledge the responses from industry regarding the appropriateness of the methodology proposed in the consultation paper. The primary issue with the existing methodology was that the TOR2 and RRS services were not previously independently

assessed and the Performance Incident Response Factors for both services were set as equal to the Providing Unit's TOR1 Response Factor. The assessment methodology was therefore not appropriate for a service provider providing TOR2 or RRS but not TOR1, while also failing to assess service providers providing these services based upon dispatch instruction.

For simplicity, the TSOs had initially proposed to amend the assessment of TOR2 and RRS services to a methodology aligned with that carried out for ramping margin services as specified under ramping margin methodology (RM1 Section 5.14 in current Protocol). However, following industry feedback, we have adapted the initial proposal in the consultation paper to allow for both. The appropriate assessment methodology to be used to assess Providing Units will depend on whether the service was required in response to a Frequency Event or whether it was required in response to a dispatch instruction.

The current assessment methodologies do not account for the methods by which some service providers could provide TOR2, RRD and RRS. The use of individual methodologies for each service has resulted in services not being adequately assessed in certain scenarios. The proposed simplified revision in the Protocol consultation paper also failed to address all of these gaps.

For example:

- The current assessment methodology for TOR2 would not appropriately assess the performance of a fast starting conventional unit from a desynchronised position, nor the response of a storage unit to a dispatch instruction.
- Similarly, the current assessment methodology for RRD would not appropriately assess the performance of a fast starting conventional unit, nor the response of a storage unit to a Frequency Event.
- Additionally conventional generators with start-up times greater than 15 mins are only contracted for RRS and not for RRD. An assessment methodology based only on the response to a Frequency Event fails to assess the response of such units to a dispatch instruction, under the current RRS assessment methodology.

The existing assessment methodologies should therefore be amended to account for such scenarios. This will result in all service providers being assessed using the appropriate methodology.

5.1.3 TSOs' Recommendation

We recommend the implementation of dual assessment criteria for the TOR2, RRD and RRS services.

We recommend that the performance assessment of TOR2, RRD and RRS following a dispatch instruction be done through the use of ramping methodology aligned with the RM1 service. This should be applied only to units who receive dispatch instructions, and assessment using this methodology should only be performed following the issue of a dispatch instruction.

We recommend that the assessment of TOR2, RRD and RRS through use of TOR1 methodology be applied only to those units who provide services in response to a Frequency Event. Thus, assessment using this methodology should only be conducted following a Significant Frequency Disturbance.

Acknowledging industry feedback we recommend that providers of the TOR2 and RRS services will continue to be assessed on Frequency Event performance using the TOR1 methodology applied over the TOR2 and RR Periods and that the assessment methodology is applied to any RRD providers providing an automatic response to a Frequency Event.

We recommend that the wording in sections 5.13.1, 5.14.1 and 5.15.1 of the current Protocol document be amended to "Response Factor assessment methodology will be aligned to" instead of the existing wording "the Response Factor for the Providing Unit will be set equal to". This will ensure that the Response factor will be calculated using the same, methodology of another service as opposed to being set equal to the Response Factor of another services.

While we acknowledge the responses from industry on the appropriateness and limitations of using the Fail Sync process for assessing dispatch based services, we however, do not recommend any revision to the assessment methodology at this time. The TSOs will continue to work on a revised methodology and assessment tools for Ramping services, which can in turn be utilised for assessing fast acting providers for TOR2, RRS and RRD. The TSOs will introduce these at a future date through further consultation with industry.

Finally, we recommend that the proposal is implemented from the date of approval only and is not applied retrospectively.

5.2 Frequency Event definition amended to make reference to a Significant Frequency Disturbance at 0.30Hz from Nominal

Question 2: Do you have any comments on the Frequency Event definition being amended to make reference to a Significant Frequency Disturbance, which is now defined as a deviation of 0.30Hz from Nominal Frequency?

5.2.1 Industry Responses

The following provides a high-level summary of the comments received:

- Eleven respondents agreed with our proposal to amend the Frequency Event definition to make reference to a Significant Frequency Disturbance at 0.3Hz from Nominal Frequency.
- Seven respondents requested data to support the move to 49.7Hz as opposed to another value.
- Four comments were received regarding the wording 'as determined by the TSO' used in the definition of a 'Frequency Event Threshold'.
- Four respondents commented that the reason the changes were being brought forward was to address the data poor issue and that the data poor period should be extended to two years.
- Two respondents expressed the view that separate definitions should be established for high and low frequency events.
- Two respondents stated that the proposal does not align with Grid Code definitions.
- Two respondents believe that the proposal results in additional financial risk for providers.
- Two respondents expressed the view that the TSOs are moving the goal posts.
- Two respondents commented that high frequency event performance should not be applied to conventional units.

5.2.2 TSOs' Response

There was significant support for the TSOs' proposal to amend the Frequency Event definition to make reference to a Significant Frequency Disturbance of 0.30Hz. There has been a reduction in the number of Significant Frequency Disturbances experienced by the power system in recent years, particularly disturbances resulting in transients with a nadir of less than 49.50Hz. A number of the consultation responses had however, requested that evidence be

provided to support both the need for the proposed change and also to support the TSO proposal to set the Significant Frequency Disturbance at a value of 0.30Hz as opposed to another value. The TSO presented this data at the industry forum on 22nd February.

Two responses noted the misalignment this change would make between the term Frequency Event as defined in the current Protocol document, and the corresponding term in the EirGrid Grid Code. No responses were received in relation to the introduction of the two new defined terms in the Protocol document, Significant Frequency Disturbance and Frequency Event Threshold. Both terms were introduced to address this misalignment and differentiate between a service provider's DS3 System Services contractual and Grid Code obligations.

The TSOs are therefore recommending to introduce both terms as per the proposals in the redline version of the Protocol document. However the TSOs recommend the removal of the phrase "as determined by the TSO" from the Frequency Event threshold definition, noting the feedback received in relation to the inclusion of this text.

Finally, the TSOs acknowledge the four comments received in relation to the period of time before which a service provider becomes data poor. We believe that the proposed amendments to the Frequency Event Threshold will alleviate this issue to a large degree, thus do not believe that an amendment is required in terms of the data poor methodology at this time. The TSOs will however continue to monitor the trends regarding units becoming data poor and may in future look to amend the methodology or time frame accordingly.

5.2.3 TSOs' Recommendation

As per the consultation paper, we recommend the introduction of Significant Frequency Disturbance and Frequency Event Threshold definitions defined as follows:

- "Significant Frequency Disturbance" a deviation in Transmission System Frequency in excess of the Frequency Event Threshold, which denotes that a Frequency Event has occurred.
- "Frequency Event Threshold" a deviation in Transmission System Frequency of 0.3 Hz. The deviation is referenced from Nominal Frequency (50 Hz) and if exceeded denotes that a Frequency Event has occurred;"

Acknowledging industry feedback we recommend that the amendment to Frequency Event Threshold definition does not include the wording "or as determined by TSOs" which was included in the redline version published in parallel to the consultation paper.

We recommend that no changes be made to the definitions of Frequency Event or Frequency Transient in the EirGrid and SONI Grid Codes respectively.

We recommend that no changes be made in relation to changes to the data poor calculation methodology; however, the TSOs will continue to monitor data poor trends and may in future look to amend the methodology or assessment periods accordingly.

Finally, we recommend that the proposal is implemented from date of the approval only and is not applied retrospectively.

The wording of the Protocol document has been updated to reflect our recommendations.

5.3 Time Zero definition amended and the removal of the reference to the end of a Frequency Event

Question 3: Do you have any comments on the application of the Time Zero definition being amended and the removal of the reference to the end of a Frequency Event?

5.3.1 Industry Responses

There was a large volume of comments relating to the proposal to amend the Time Zero definition and remove references to the end of a Frequency Event. The following provides a high-level summary of the comments received:

- Eleven respondents agreed with the proposal to amend the Time Zero definition.
- One respondent believed the existing definition to be clearer.
- Four respondents commented that the 30 second settlement period is not sufficient and that the 5 minute time frame should be retained.
- One respondent stated that reserve services should be assessed for their full duration.
- Two respondents expressed the view that if the TSO issued a dispatch instruction during the assessment period that service assessment should cease.
- Three respondents stated that frequency transients should be free from interruptions before assessing any further events.
- One respondent suggested a trial period.
- One respondent suggested that a working group and an impact study is required.

- Two respondents stated that the end of a Frequency Event needs to be defined to allow for assessment of the start of a post event period in the case of Volume Capped contracts.

5.3.2 TSOs' Response

The term Frequency Event in the current DS3 System Services Protocol document, makes reference to a Frequency Event end time, stating that a Frequency Event ends when the Transmission System Frequency recovers to above 49.80Hz. This reference introduced ambiguity with regards to the end of an event, with some providers querying whether reserve provision assessment would continue beyond this point. For clarification, service providers are required to provide services across the individual reserve service periods, to a magnitude calculated based upon the service definition and corresponding service provider contracted parameters. The TSO, therefore, proposed to remove all references to a Frequency Event end time. A Frequency Event would therefore have no specific duration or end time, and instead each of the reserve services would simply be assessed based upon the service providers expected provision across the individual reserve service time frames.

In addition, the proposal made in the consultation, included an amendment to the methodology used for defining the Time Zero (T) of a Frequency Event. The proposed changes would delay the Time Zero determination until System Frequency had fallen below 49.80Hz or above 50.20Hz during an event. This would mean that the assessment of providing units with tight dead bands or with Reserve Trigger settings higher than 49.80Hz or lower than 50.20Hz would incur a small delay when compared to the existing methodology. However, the benefits of the proposal would enable the Time Zero assessment methodology of the FFR service to be aligned to that used in the other reserve services, while also making the assessment, in terms of defining Time Zero more robust for a wide range of units.

Overall industry feedback was positive towards the proposal, with the majority agreeing with the proposed changes in relation to the methodology used for defining Time Zero. There were a small number of comments received in relation to the proposal to remove reference to the end of an event, primarily relating to how this impacted upon the approach taken to assess multiple events; however, the TSOs believe that the additional proposed recommendations made in section 5.5.3 of this paper address these concerns.

5.3.3 TSOs' Recommendation

We recommend that section 5.7.1.1 of the Protocol document be amended in line with the proposal in the consultation paper:

'The **Time Zero** (T) for a **Frequency Event** is the time at which the **Frequency** first passes through the **Reserve Trigger** of the **Providing Unit**. All **Frequency** reserve services will be assessed relative to this **Time Zero**.

For all **Providing Units** that have a **Reserve Trigger** higher than 49.8Hz the **Time Zero** shall be determined as being the time when the **Transmission System Frequency** first passes through 49.8Hz. A **Frequency Event** is solely described by this **Time Zero** and it has no specific duration.'

We also recommend the removal of references to the end of a Frequency Event, from the Protocol document.

Finally, we recommend that the proposal is implemented from date of the approval only and is not applied retrospectively.

The wording of the Protocol document has been updated to reflect our recommendations.

5.4 Amendment to the methodology for calculating Pre-Event Frequency and Pre-Event Output

Question 4: Do you have any comments on the amendment to the methodology for calculating Pre-Event Frequency and Pre-Event Output?

5.4.1 Industry Responses

The following provides a high-level summary of the comments received:

- Five respondents welcomed the proposed amendments.
- Six respondents commented that the methodology for changing to the secondary metric is subjective.
- Seven respondents stated data sampling issues exist with the proposal.
- Ten respondents favour the current methodology or suggest a longer time frame to calculate Pre-Event Frequency and Pre-Event Output.
- Six respondents proposed Pre-Event assessment time frames of various lengths.
- One respondent suggested a trial period.

- One respondent stated that the service assessment requires an amendment to account for units ramping post transient.
- Four respondents requested clarification on how house load or battery charging would impact on Pre-Event Output.

5.4.2 TSOs' Response

The Pre-Event Output of a service provider and the Pre-Event Frequency of the system were previously measured as a mean value between the times of T-30 and T-60 seconds from the event start time (Time Zero). In some circumstances however this definition did not always result in accurate pre-event conditions being determined, (e.g. if providing units were ramping or if the system was experiencing oscillations pre-event). The changes proposed were to amend both the Pre-Event Output and Pre-Event Frequency assessment periods to a time closer to the start of an event. Both assessments would occur in the time frame between T-1.5 to T-0.5 seconds.

In addition, the TSOs had acknowledged that in certain conditions, issues may arise when determining both parameters. Thus, the proposal had included a secondary assessment metric, which would result in the assessment reverting to the original time frame (T-30 to T-60 seconds) for analysing both parameters in such circumstances.

Feedback on this proposal was mixed with five responses supporting the shorter time frames proposed; however, the majority of respondents (ten) expressed a preference for longer assessment durations or indeed a preference to retain the existing methodology.

Six responses stated that the proposed methodology being introduced for reverting to the secondary assessment methodology was subjective, while seven believed that data sampling issues may arise with the shorter assessment period proposed.

The TSOs acknowledge industry's concerns on this matter and would like to clarify that the proposed amendments were made to address concerns that the current methodology did not always result in accurate pre event conditions being determined. The proposal was intended to address these issues, particularly for fast ramping units and units with variable output.

However, the TSOs accept that the wording used in the consultation regarding the methodology used to move to the secondary metric was subjective and therefore would like to clarify that the secondary metric will only be used in instances where issues arise when using the primary metric, and instances that are favourable to the Providing Unit in terms of performance assessment. The TSOs believe that the use of the secondary metric in this

manner will also address industry's concerns in relation to comments on data sampling issues relating to the shorter assessment period of the primary metric.

5.4.3 TSOs' Recommendation

We recommend that section 5.7.1.2 of the Protocol document is amended in line with the proposal in the consultation paper. However, to address the ambiguity surrounding the use of the secondary metric, we have also recommended the addition of wording to state that the secondary metric will only be used in instances where issues arise with the primary metric and instances which are favourable to the Providing Unit in terms of performance assessment.

'5.7.1.2 Pre-Event Frequency and Output

- The **Pre-Event Frequency** is defined as the mean of the **Transmission System Frequency** between T-1.5 seconds and T-0.5 seconds from **Time Zero**. A secondary metric for determining **Pre-Event Frequency** will also be calculated as the mean of the **Transmission System Frequency** between T-60 seconds and T-30 seconds from **Time Zero**.
- The TSO will use the defined methodology for performance assessment in the first instance and will revert to the secondary metric only in instances where issues arise with the primary metric and which are favourable to the **Providing Unit** in terms of performance assessment.
- The **Providing Unit's Pre-Event Output** will be determined as per the **Pre Event Frequency** methodology and assessed over the same **Pre-Event Frequency** period.'

Finally, we recommend that the proposal is implemented from date of the approval only and is not applied retrospectively.

The wording of the Protocol document has been updated to reflect our recommendations.

5.5 Amendment to process for analysing multiple Frequency Events

Question 5: Do you have any comments on the proposal to amend the process for analysing multiple Frequency Events?

5.5.1 Industry Responses

The following provides a high-level summary of the comments received:

- Two respondents agreed with the proposal.
- Two respondents stated their preference was for retaining the existing methodology.
- Four respondents stated that the assessment of whether a secondary event occurred cannot be open to discretion.
- Twelve respondents believe the 30s recovery time is not sufficient and their preference is to retain the 5 minutes.
- One respondent commented that the proposal is overly complicated and is imprecise.
- Three respondents stated that more evidence is required.
- Four respondents stated that the proposal is not suitable for Demand Side Units (DSUs)
- One respondent stated that the end of an event should be retained.
- Six respondents queried why 15 minutes was being applied to static provision only and the applicability of this to storage units.

5.5.2 TSOs' Response

The DS3 System Services Protocol consultation paper sought to amend the methodology used for assessing multiple events. The current methodology states that if one or more subsequent Performance Incidents occur within 5 minutes after the end of the Frequency Event the Providing Unit's response to the subsequent Performance Incident(s) will not be taken into account for Performance Assessment purposes. The TSOs proposed to move away from this approach, in favour of an approach where individual Significant Frequency Disturbances are analysed independently regardless of whether a second or multiple Frequency Event occurs.

The majority of consultation responses did not support the proposed changes, with a number stating that a recovery time was required for some providing units to respond adequately to meet their contracted POR and /or FFR requirements for the secondary transient.

The TSO acknowledges this feedback and industry's concerns in meeting their FFR and POR requirements for a second time in quick succession in such circumstances and instead propose to simply remove the concept of multiple events both for simplicity and also to remove all ambiguity with regards to both the definition and assessment of a multiple event.

The TSOs are therefore recommending a modification to the Protocol, such that no subsequent event would be assessed in the period between Time Zero and T+5 minutes, as per industry feedback. The recommendation would however require that all Reserve service performance assessment in the period between T=0 and T+5 minutes would be assessed but only on the unit's performance referencing the original Frequency Event. As such, if a secondary transient were to occur in the SOR or TOR1 time frame the secondary transient would not be assessed independently, as a separate event. However the unit's SOR and TOR1 provision would follow the existing average provision methodology, thus significantly reducing industry's concerns regarding performance in relation to a secondary transient in the five minutes following the initial Frequency Event.

Under the recommendation, subsequent Frequency Events would only be treated as new Frequency Events if they occur in the period beyond T+5 minutes from the original Frequency Event.

5.5.3 TSOs' Recommendation

The TSOs recommend removing the concept of multiple events in the Protocol document. As such, no subsequent Frequency Event would be assessed in the period between Time Zero and T+5 minutes. All Reserve service performance assessment in the period between T=0 and T+5 minutes would be assessed but only on the unit's performance referencing the original Frequency Event. As such if a secondary transient were to occur in the SOR or TOR1 time frame, the secondary transient would not be assessed independently as a separate Frequency Event.

Finally, we recommend that the proposal is implemented from date of the approval only and is not applied retrospectively.

The wording of the Protocol document has been updated to reflect our recommendation.

5.6 Inclusion of Availability Performance Monitoring for providers under Fixed Contracts arrangements

Question 6: Do you have any comments on the proposed inclusion relating to Availability Performance Monitoring for providers under the Fixed Contracts arrangements?

5.6.1 Industry Responses

The following provides a high-level summary of the comments received:

- Six respondents stated that a separate Protocol document is required for the Fixed Contracts arrangements.
- Two respondents commented that the weighting factors should be in the contract and not in the Protocol document.
- Four respondents believed the weighting factors were too penal.
- Two respondents suggested the three month termination clause needed to be extended to six months.
- Four respondents requested confirmation that the Availability Performance Monitoring is not applied to conventional units.
- One respondent questioned if the temporal scarcity scalars apply to Regulated Arrangements only and if they will change.
- Two respondents stated that Availability Performance Monitoring unfairly limits the Fixed Contracts arrangements to storage units only.

5.6.2 TSOs' Response

Some respondents recommended keeping separate Protocol documents for the Fixed Contracts and Regulated Arrangements, given their divergent requirements. We think this proposal makes sense, and have developed a separate Protocol document for the Fixed Contracts arrangements, which will mirror the relevant sections of the Regulated Arrangement Protocol document where appropriate, as well as detailing the additional requirements for the Fixed Contracts. This will allow us to reflect differing design requirements compared to Regulated Arrangements, with more clarity and less ambiguity. The governance process will be the same for both documents, with changes undergoing consultation and requiring Regulatory approval.

There were some objections to including details relating to the Fixed Contracts, such as the monthly weighting factors for the Availability Performance Scalar, in the Protocol document, as the potential for changes to be made to this document puts a risk on the service provider. As such, while we would like to provide certainty to prospective tenderers where possible, it is necessary that some elements of the service provision be subject to modification to allow for corrections and improvements. This is not just for the TSOs' benefit but also for the benefit of service providers, who are given opportunity to input into the content of the Protocol through the consultation process.

There were several responses relating to the monthly weighting profile of the Total Availability Factor. Some respondents felt that this profile introduced additional complexity, which was unnecessary, and felt that weighting each of the 12 months equally (flat weighting) would be more appropriate. Another respondent suggested a more 'tapered' approach to the monthly weightings, with M-1 receiving a significantly higher weighting than the previous months.

Our intention with using a weighted profile was to avoid smoothing out of sizable outages so that they have no impact on the Availability Performance Scalar. However, on balance, we feel this may not justify the added complexity, and will weight all of the previous 12 months equally when calculating the Availability Performance Scalar. However, as with all components of the Protocol document, this may be changed through future consultation should it lead to issues in practice.

Some respondents were unhappy with the clause which allows the TSOs to terminate contracts when the Availability Performance Scalar is zero for three consecutive months. They felt this may not give enough time to remedy the cause of service unavailability, and that 6 months would be a more appropriate duration. We would like to point out that 3 months with an Availability Performance Scalar of 0 implies 7 months of non-provision of service. This is due to the relationship between the Availability Performance Scalar, the Total Availability Factor, and the monthly weightings. We feel this would give enough time to remedy most issues. We would also point out that the clause allows termination at the TSOs' discretion.

Some respondents requested confirmation as to whether the Availability Performance Scalar would apply to units under the Regulated Arrangements. We can confirm that they will not – this scalar only applies to units contracted under the Volume Capped arrangements.

A question was also asked about the Temporal Scarcity Scalar (TSS) and how it would apply in Volume Capped. The determination of the TSS will be different for the Volume Capped arrangements compared to the Regulated Arrangements. A single value will apply to all hours

of service provision, regardless of the SNSP during that period. This value will be made clear to participants in advance of final tender submission and will not be subject to change.

Finally, some respondents felt that the availability performance monitoring process for Volume Capped unfairly limits these contracts to storage units only. We disagree with this point. These arrangements are looking to secure a high availability of specific system services. We are agnostic as to how these services are provided as long as they meet the tender requirements. The performance monitoring process is a key aspect to ensuring that the procured services are being provided.

5.6.3 TSOs' Recommendation

The TSOs recommend the following in relation to the responses to Q6:

- A separate Protocol document has been created for the Fixed Contracts arrangements. This has been published in draft form alongside this document, with the first version to be finalised in time for the Volume Capped tendering process.
- A flat monthly weighting will be used when calculating the Availability Performance Scalar i.e. we will weight all of the previous 12 months equally.
- The contract clause which allows the TSOs to terminate contracts when the Availability Performance Scalar is zero for three consecutive months will remain.
- We can confirm that the Availability Performance Scalar will not apply to units contracted under the Regulated Arrangements.

5.7 Additional comments from industry & TSOs' responses

In this section, we consider issues raised by respondents which are not directly connected to the questions asked in the consultation document.

- One respondent queried the addition of text in Section 3.1 (6th bullet point) 'Where Providing Unit sites are unmanned, the Providing Unit shall have the capability to remotely enable/disable each contracted service individually'
 - The proposal was added by the TSO to future proof the Operational Requirements in the instance of over provision of reserve services. The proposal will not be recommended to be implemented; however, this requirement may be reviewed at a later date.

- One respondent highlighted a potential error in Section 3.4.1 'The Providing Unit shall be able to operate with a minimum FFR Trajectory Capability of 2Hz in response to a Reserve Trigger'. They believed it should be maximum not minimum.
 - The TSO would like to clarify that the minimum FFR Trajectory Capability of 2Hz means the largest magnitude of the change in frequency for a Providing Unit to be considered dynamic is 2 Hz. There will be no amendment to the Protocol Document.
- Two respondents queried an error in Table 2. The data record requirement for TOR1 in the Reserve Column 'A Providing Unit's MW response to any Performance Incident from T - 5 to T + [3]60, where T is the Time Zero of the Performance Incident'.
 - The TSO acknowledge the error and the published Protocol Document will state T +300, which accounts for the end of the TOR1 Period.
- One respondent queried how and where the frequency is measured during a Frequency Event.
 - As presented at a POR Working Group industry workshop in 2015 hosted by the TSO Joint Grid Code Review Panel the frequency source data is taken from 4 geographically distributed Phasor Measurement Units (PMUs) to provide a reasonable frequency source spread. If individual site PMUs were not available, industry agreed to use the nearest source (electrically) for the individual unit's inertia calculation. The same data source and methodology continues to be applied for Performance Assessment following a Frequency Event under DS3 System Services.
- One respondent highlighted Section 3.6 'Operational Requirements for SSRP - 'A Providing Unit shall provide SSRP dynamically over its entire dispatchable power range and not in discrete steps'. They commented that this requirement prevents a Provider from offering a combination of dynamic reactive power (e.g. from generators) and static reactive power (e.g. from shunt capacitors and reactors). The respondent questioned if this restriction was beneficial to load customers.
 - The TSOs consider that the dynamic provision of SSRP over a unit's entire dispatchable power range is most beneficial to the power system as a whole.
- One respondent highlighted Section 4 SNSP Forecasting. They commented that while the TSOs do not take any commercial responsibility for the forecasts they should commit to using best endeavours for the benefit of all users and their licence/legal obligations as TSOs. The respondent believes the TSOs should also publish, within an

agreed period after real time, a report describing the accuracy of their forecasts in each settlement period and statistical analysis of their forecasts over relevant periods.

- The provision of an SNSP forecast is currently being tested. Subject to a successful testing outcome, it will go live in the coming weeks. It is not the TSOs' intention at this time to publish an ex post analysis of the forecasts. However, this does not preclude parties from undertaking their own analysis should they wish to do so. The SNSP definition is set out in the System Non-Synchronous Penetration Definition and Formulation document (<http://www.eirgridgroup.com/site-files/library/EirGrid/SNSP-Formula-External-Publication.pdf>).
- Two respondents highlighted the redlined version of the Protocol document contained two definitions of a Frequency Event.
 - The TSOs acknowledge this error and will amend the Protocol Document.
- Three respondents requested clarity regarding the proposed removal of wording making reference to the averaging of any calculated deficit in a sample period over the service window (Sections 5.9.2.4 and 5.10.2.4).
 - The TSOs would like to clarify that the assessment methodology of SOR and TOR1 performance no longer uses the **Average SOR Deficit** and **Average TOR1 Deficit**. Instead, the methodology assesses the average SOR provision against **Average SOR requirement**. The same assessment methodology applies to TOR1.
- Two respondents highlighted a referencing error in the definition for 'Providing Unit Output Delta'.
 - The TSOs acknowledge this error and will amend the Protocol Document.
- Four respondents queried the changes to the definition of the expected response that is required for a POR, SOR and TOR1 assessment to be performed.
 - The TSO response to this comment is given in Section 5.7.1 of this recommendations paper.
- Six respondents highlighted the proposed removal in the redlined Protocol document of MIN (10%, 1MW) in the formula used to calculate the Performance Incident Scaling Factor (Sections 5.8.2.6, 5.9.2.5 & 5.10.2.5) .
 - The TSO response to this comment is given in Section 5.7.2 of this recommendations paper.

- One respondent suggested that the performance assessment approach for SOR and TOR1 (and potentially TOR2) should take account of ramping. Additionally, two respondents expressed the view that performance assessment for each reserve service should cease if a dispatch instruction has been sent by the TSO to vary output.
 - With regards to the two comments received on the impact of Providing Units ramping or responding to dispatch instructions during a Frequency Event, the TSOs acknowledge industry's concerns and will take into consideration the impacts of ramping actions or the response to dispatch instructions for increased MW output during Performance Assessment.
- One respondent commented that in Section 5.9.2.5 of the Protocol document 'If the Expected SOR response is less than 1 MW' it should say "Average Response Requirement" as defined in 5.9.2.3 of the Protocol document.
 - The TSO response to this comment is given in Section 5.7.3
- One respondent queried 'Achieved TOR1 Response' in Equation 6 stating it was not a defined term. They believe it should be averaged over the TOR1 Period.
 - The TSO response to this comment is given in Section 5.7.3
- One respondent queried 'Expected TOR1 Response' in Equation 6. They believe this should be the Average TOR1 Requirements.
 - The TSO response to this comment is given in Section 5.7.3
- One respondent queried Section 5.11 of the Protocol document, Fast Frequency Response (FFR) '*The additional energy (MWs) response provided in this time frame must be greater than any loss of energy in the following ten seconds i.e. in the period between T+10 seconds and T+20 seconds.*' They commented that the "energy provided" and the "loss of energy" are not defined. They should be defined vs the energy that would have been provided had no Performance Incident occurred. They further commented on Section 5.11.1.1 requesting clarification on how Achieved FFR response is defined. They believe it should be defined vs the energy that would have been provided had no Performance incident occurred. Lastly that the energy recovery in this section is not defined. They believe it should be defined vs the energy that would have been provided had no Performance Incident occurred.
 - The TSO response to this comment is given in Section 5.7.4.
- Regarding FFR Performance Assessment (section 5.11.1.2) one respondent requested confirmation that a positive tolerance will work for over frequency response, i.e. it does not need to be a negative tolerance.

- The TSO response to this comment is given in Section 5.7.4.
- One respondent requested clarification on the proposed additional text in Section 5.11.1.1 ‘Notwithstanding the methodology used in the determination of **Time Zero** for the purposes of **Performance Assessment**, the **FFR Response Time** will be assessed for each **Providing Unit** utilising the **Providing Units** individual **Reserve Triggers** and not the response from **Time Zero**.’
 - The TSO response to this comment is given in Section 5.7.4.
- Four respondents commented on reference errors in the Glossary section.
 - The TSOs acknowledge these errors and will amend the Protocol Document.
- Four respondents suggested holding an industry forum to discuss potential DS3 related modifications similar to Joint Grid Code Review Panel meetings prior to consultation documents being issued.
 - The Governance of the Protocol document, as specified in Section 2 of that document, is such that any proposed change will be subject to industry consultation and require the approval of the Regulatory Authorities. This is in accordance with the SEMC DS3 System Services Regulated Arrangements System Services Contractual Arrangements Decision Paper SEM-17-094, which states, “The governance of the Protocol document shall be such that the TSOs may propose changes, to the Protocol document once in any three-month period. All proposed changes to the Protocol document will be subject to SEM Committee approval.”

The TSOs do not intend to apply to the SEM Committee to change the governance of the Protocol document. However, we appreciate industry feedback that industry fora are an important aid to the consultation process to explain proposed changes and will endeavour to convene an industry forum as part of the consultation process for any future proposed changes to the Protocol.

5.7.1 Changes to the definition of the expected response that is required for a POR, SOR and TOR1 assessment to be performed

With regard to the four respondents who queried the changes to Sections 5.8.2.6, 5.9.2.5 & 5.10.2.5 of the Protocol document, the TSOs would like to break the proposed change into two components.

1. A change to the text describing the minimum expected response from a providing unit that is necessary for a performance assessment to be completed.

This change was applied for POR, SOR and TOR 1(5.8.2.6, 5.9.2.5 and 5.10.2.5, respectively) and was motivated by a desire to simplify the text of the Protocol without changing its meaning.

Original text for POR:

“For each Frequency Event, where the following holds true;

- a) the Expected POR Response (inclusive of the POR Inertia Credit) minus the greater of 10% of the Expected POR Response or 1 MW is greater than or equal to 0 MW; and
- b) The Expected POR Response (exclusive of the POR Inertia Credit) is greater than 0 MW.

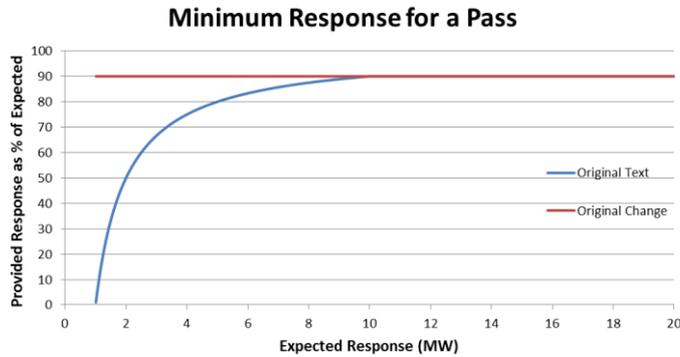
The Performance Incident Scaling Factor (Q_i) is calculated as follows:”

TSOs’ proposed text for POR:

“For each **Performance Incident**, where the **Expected POR** response (inclusive of the **POR Inertia Credit**) is greater than or equal to 1 MW, the **Performance Incident Scaling Factor (Q_i)** is calculated as follows”

2. The tolerance applied to the achieved response was removed (where if the achieved response is within 10% or 1MW of the expected response a providing unit was awarded a pass without assessment).

This change was applied for POR, SOR and TOR 1(5.8.2.6, 5.9.2.5 and 5.10.2.5, respectively) and was motivated by a desire to avoid awarding passes to units that had achieved minimal actual response but were still awarded passes as they were within 1 MW of their expected response (due to their small expected responses). The figure below shows how units with expected responses below 10MW are held to a lower standard than those with expected response above 10MW. Indeed units with an expected response of below 3.333 MW can provide a level of response that would fail the scalar assessment but still be awarded a pass and a unit with an expected response of 1.2 could provide only 20% of this and still pass.



Original text for SOR:

“...the **Performance Incident Scaling Factor ('Qi')** is then calculated as follows:

- i. If the Expected SOR Response minus the Achieved SOR Response is less than or equal to 1 MW, Then

$$Q_i = 0,$$

- ii. Otherwise;
(a performance scalar based assessment is applied)”

TSOs’ proposal for SOR performance assessment:

The tolerance was removed entirely so only the performance scalar based assessment is applied for all performance incidents for which the expected response of a providing unit is greater than 1MW.

5.7.1.1 TSOs’ Recommendation

For component 1 of this change the TSO’s recommend that, the change is applied as originally proposed. The equivalent nature of the two definitions of the required response was presented at the Protocol forum to the satisfaction of industry.

For component 2 of this change the TSO’s recommend that, a modification of the originally proposed change is applied. This modified change would retain the existing text but include a requirement that, in cases were a pass will be awarded for the achieved response being within 1MW of the expected response, the achieved response is at least half of the expected response.

This modified change is proposed as industry raised some relevant points on the greater impact of measurement errors for providing units with small expected responses, especially if the frequency is only below the unit’s reserve trigger for a short period of time. The modification is described below.

TSOs' modified proposed text for SOR:

“...the **Performance Incident Scaling Factor ('Qi')** is then calculated as follows;

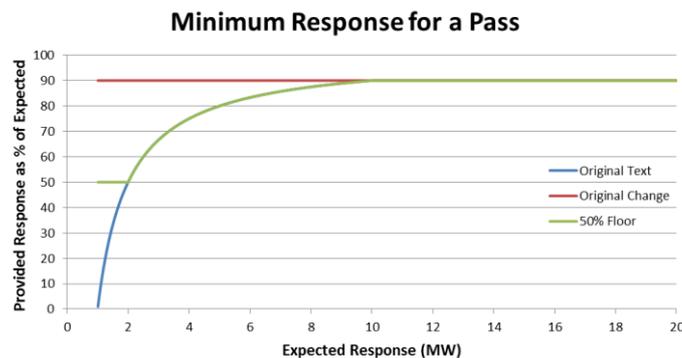
- i. If the Expected SOR Response minus the Achieved SOR Response is less than or equal to 1 MW, and the Achieved SOR Response divided by the Expected SOR Response is greater than or equal to 0.5,

Then

$$Q_i = 0,$$

- ii. Otherwise;
(a performance scalar based assessment is applied)”

The impact of this modification is presented in the figure below.



The TSOs are of the opinion that this is a good balance between their original intent (preventing passes being awarded to units that provide minimal response) and protecting providing units from being punished on the basis of measurement errors. This modification was presented at the Protocol forum to the satisfaction of industry.

5.7.2 Proposed removal in the redlined Protocol document of MIN (10%, 1MW) in the formula used to calculate the Performance Incident Scaling Factor.

No change was actually made to the existing version of the Protocol document (Sections 5.8.2.6, 5.9.2.5 & 5.10.2.5). This change appeared to have been made as the tracked change was within an equation object, so was not automatically accepted at the end of the previous consultation. However, this change was accepted when the final version of the Protocol consultation was converted to pdf and posted on the EirGrid Group website. In contrast, when the word document for this consultation was converted to pdf a different standard was applied

so the tracked change was not accepted, hence it appeared in the redline pdf. See the table below for a comparison of how the change appears in each document.

Redline word document	$\text{Let } S = \frac{\text{Achieved SOR Response}}{\text{Expected SOR Response}} \uparrow$
Redline PDF	$\text{Let } S = \frac{\text{Achieved SOR Response}}{\text{Expected SOR Response} - \text{MIN}(10\%, 1 \text{ MW})}$
Existing Protocol	$\text{Let } S = \frac{\text{Achieved SOR Response}}{\text{Expected SOR Response}}$

This can be confirmed by referring to the current version of the Protocol available on the EirGrid Group website.

5.7.2.1 TSOs' Recommendation

No change was proposed and the source of this issue was presented at the Protocol forum to the satisfaction of industry.

5.7.3 Inconsistency in the terminology used when describing the calculation of the SOR and TOR performance incident scaling factors (Q)

This query captures multiple separate queries raised by industry, all of which related to the same inconsistency.

1. One respondent commented that in Section 5.9.2.5 'If the Expected SOR response is less than 1 MW' it should say "Average Response Requirement" as defined in 5.9.2.3
2. One respondent queried 'Achieved TOR1 Response' in Equation 6 stating it was not a defined term. They believe it should be averaged over the TOR1 Period.
3. One respondent queried 'Expected TOR1 Response' in Equation 6. They believe this should be the Average TOR1 Requirements.

This text was not changed as part of the proposed changes by the TSOs. However, these comments are accurate and highlighted an inconsistency in language within the Protocol and

an opportunity to enhance the clarity of the Protocol. This occurred as the POR terminology had been applied to the SOR and TOR processes, which use average achieved/expected values – this had not been consistently reflected in the Protocol.

5.7.3.1 TSOs' Recommendation

To correct the inconsistencies highlighted by the queries the TSOs' recommend the following changes:

1. Section 5.9.2.4 should be modified as follows (red text is the modification):

The **Achieved SOR** following a **Frequency Event** will be calculated for each sample point during the SOR Period as the **Providing Unit Output** minus the **Providing Unit Pre-Event Output**. Then the **Average Achieved SOR** is calculated as the average of these **Achieved SOR** values.

2. **Average Achieved SOR** is a new defined term that will add clarity to the calculation of the performance incident scaling factor for SOR. It's definition will be:
"Average Achieved SOR" has the meaning given to it in Section 5.9.2.4
3. All references to the **Expected SOR** response in section 5.9.2.5 should be replaced with **Average SOR Requirement**. Also, all references to the **Achieved SOR** Response should be replaced with **Average Achieved SOR**.

Equivalent changes should be made for the TOR1 performance assessment in 5.10.2.4 and 5.10.2.4.

The TSOs wish to be clear that these modifications do not in any way change the SOR and TOR assessments, these assessments will still use the same average calculation applied in the past. Rather, they resolve inconsistencies in terminology within the Protocol that have been highlighted by industry.

5.7.4 Performance Assessment of FFR Section 5.11

Three queries were raised on this topic, covering two subjects:

1. Clarification on the definition of energy provided and loss of energy.
2. Clarification on the tolerance applied during the performance assessment.
3. Clarification of the assessment of FFR Response Time.

A modified approach for the performance assessment of FFR was proposed through this consultation. Based on the comments received, this modified approach has been accepted by industry and the comments received provide an opportunity to clarify and refine the text around this modified approach.

1. The TSOs agree that clear definitions of the Energy Provided and Loss of Energy would improve the clarity of the Protocol.
2. The TSOs agree that the description of how the tolerance is applied during the assessment of FFR provision (S_1) could be clarified.
3. The TSOs agree that the approach for assessing the FFR response time should be clearer.

5.7.4.1 TSOs' Recommendations

The TSOs recommend retaining the modified approach for FFR Performance Assessment that was proposed in the consultation.

1. Clarification of terms

For the definition of the Energy Provided and Loss of Energy the TSOs' recommend that the definitions given below are included in Section 5.11.1.1 of the Protocol, that these terms are included in the glossary of defined terms as FFR Energy Provided and FFR Loss of Energy and that the Protocol is updated to reflect the use of these terms.

The **FFR Energy Provided** is defined as the additional energy provided by a **Providing Unit** during the period of $T=0$ to $T+10$ seconds, when compared to the energy that would have been provided in this period based on the **Providing Unit Pre-Event Output**.

The **FFR Energy Provided** can be calculated by taking the sum of the equation below for each sample point t where the result of the equation below is greater than zero (all negative values are discarded). Note, dt is the time between samples.

$$(\text{Measured Response}(t) - \text{Pre Event Output}(t)) * dt$$

The **FFR Loss of Energy** is defined as the energy not provided by a **Providing Unit** during the period of $T=10$ to $T+20$ seconds, when compared to the energy that would have been provided in this period based on the **Providing Unit Pre-Event Output**.

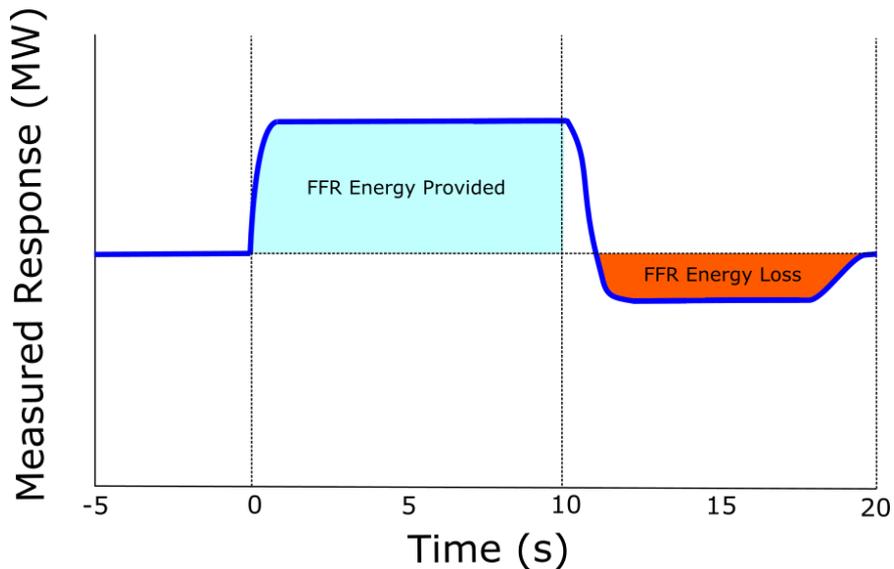
The **FFR Loss of Energy** can be calculated by taking the sum of the equation below for each sample point t where the result of the equation below is greater than zero (all negative values are discarded). Note, dt is the time between samples.

$$(\text{Pre Event Output}(t) - \text{Measured Response}(t)) * dt$$

“FFR Energy Provided” has the meaning given to it in Section 5.11.1.1 of this document;

“FFR Loss of Energy” has the meaning given to it in Section 5.11.1.1 of this document;

Note, below is an illustration of the application of this approach:



2. Assessment of FFR Response Time

Based on industry comments, the TSOs recommend that the text included in the consultation document regarding the assessment of FFR response time (quoted below) is not included in the protocol.

In Section 5.11.1.1 ‘Notwithstanding the methodology used in the determination of Time Zero for the purposes of Performance Assessment, the FFR Response Time will be assessed for each Providing Unit utilising the Providing Unit’s individual Reserve Triggers and not the response from Time Zero

However, the TSOs would note that the changes made to the definition of Time Zero could impact the proper assessment of the FFR Response Time. Thus, the TSOs shall monitor the response time of Providing Units relative to their contracted capability outside of the performance assessment process defined in the Protocol. Based on the results of this, the TSOs will consider introducing a dedicated response time component into the FFR performance assessment, if necessary.

3. Application of tolerances

For the clarification of the tolerance the TSOs' recommend that the text describing the tolerance applied be clarified as below:

Original modification to text:

At each **Sample Point**, a tolerance of the maximum of 10 % of the **Expected FFR Response** at the sample point or 1 MW applies, where the tolerance cannot be a negative value.

Recommended modification to text:

At each **Sample Point**, a tolerance of the maximum of 10 % of the **Expected FFR Response** at the sample point or 1 MW applies (if 1 MW is greater than 50% of the **Expected FFR Response** then a tolerance of 50% of the **Expected FFR Response** is applied). This tolerance is subtracted from the **Expected FFR Response** for the assessment of under Frequency Events, ~~where the tolerance cannot be a negative value.~~

This change reflects the change to the 10% or 1 MW approach to the calculation of tolerances and has removed the reference to negative tolerance values to allow this methodology to be equally applicable to over Frequency Events in the future.

4. Associated modifications

The TSOs also recommend the following modifications to the text in Section 5.11.1.2

If the **Expected FFR Response for all sample points** is less than 1 MW, an N/A **Data Record** will apply to the **Providing Unit** for the **Performance Incident**.

And

If the **Expected FFR Response for all sample points** is less than 1 MW, an N/A **Data Record** will apply to the **Providing Unit** for the **Performance Incident**.

These changes are to reflect explicitly that the Expected FFR Response is not a single value (unlike other expected responses)

6 Next Steps

Once the Regulatory Authorities have considered these recommendations and made their final decision, the TSOs will then publish a revised Protocol document for the Regulated Arrangements. The TSOs will also publish a Protocol document for the Fixed Contracts arrangements in draft form with the first version to be finalised in advance of the tender stage of the Volume Capped tendering process.



**DS3 System Services Protocol Document
Consultation Paper
RESPONSE on behalf of
AES Kilroot Power Ltd and AES Ballylumford Ltd**

25th January 2019

Introduction

From the inception of the DS3 System Services enduring arrangements AES has had concerns regarding the concept of significant parameters affecting DS3 contracts being placed in a Protocol Document and with the governance arrangements surrounding that document. These concerns centred on the potential for Eirgrid to agree DS3 contracts with service providers with agreed terms and conditions only to subsequently change them by amending a protocol document and significantly altering the previously agreed contract.

This protocol document consultation provides confirmation of those concerns as Eirgrid is attempting to move the goal post after contracts have been agreed and signed. Throughout the DS3 process Participants have objected to governance of the Protocol document which affords Eirgrid the opportunity of placing significant contract affecting requirements and parameters in a subsidiary document that can be changed without due consideration and the agreement of the market Participant as counterparty to the DS3 contract.

The impact of the changes proposed is primarily concerned with reducing payments for participants who have already agreed and signed DS3 contracts and are performing to those agreed requirements. AES objects to a significant number of the proposed changes in the document and specifically the changes relating to Frequency Event Definition. This proposed change creates a misalignment in the Definition of a Frequency Transient event with the Grid Code, deliberately creating the commercial circumstances for more performance failures for units.

The fact that there are less Frequency Events on the system is evidence in itself that participants are performing better.

Protocol Consultation

DS3 System Services are enacted through the award of System Service Contracts which have already been agreed and signed between Eirgrid and the System Service Provider in this case AES. AES had in previous consultation stated its objection to placing significant contract affecting parameters in a subsidiary document – the Protocol Document for the reason that the lack of governance around the protocol document allows one party to amend the contract (Eirgrid) to substantially change the nature of the contract without the agreement of the counterparty (AES).

Changes to the protocol document should have been consulted upon as part of the contracts consultation to allow parties to understand the full details of the contracts being proposed. A change in parameters after signing is not acceptable.

General Comments

- Operational Requirements and definitions that have the potential to change the agreements should not be held in the Protocol
- Drafting assumes payment rates are tariffs yet this is not the case for fixed contracts.
- Increased number of scalars sub divided to create more scalars and factors to increase complexity and further reduce payments to providers.

Specific Comments

Related to specific clauses identified.

- 5.4 - PE – Subdivided into 2 scaling factors KM and VM – introducing a monthly scaling basis and time weighting factor increasing complexity.
- 5.5 - Categorisation of TOR2 and RRS as reserve services but assessed using the methodology developed for Ramping Margin services. AES disagrees with the simple recategorisation of the assessment of these two services as although both are initiated by dispatch instruction TOR2 and RRS follow on from a Reserve response where in the case of a conventional the generator an initial response has already occurred.
- 5.7.1 – An additional definition of Frequency Event is added here but it is not identical to the Glossary – The Frequency event definition is also not aligned with grid code frequency transient definition and should be maintained at a 0.5Hz deviation.
- 5.7.1.2 – Pre-event frequency and output. A one second assessment period does not afford sufficient time for the assessment of the frequency and unit status pre-event. If the unit is ramping or is already responding to frequency variations, this should be accounted for in the assessment period. The term “significant” variation is not defined.
- 5.7.1.3. – Multiple Frequency events – AES has concerns that a 30 second recovery time is insufficient for a conventional boiler or HRSG in the case of a CCGT to recover energy to its full starting position. This should be kept at 5 minutes.
- 5.8.2.6, 5.9.2.5, 5.10.2.5 – Tolerance band of the greater of 10% or 1 MW is removed from the tolerance in the expected reserve provisions. This is not acceptable and should be maintained as is.
- 5.8.2.1 – Providing Unit Output Delta has a definition that is in error – Error in document formatting.
- 5.9.2.4, 5.10.2 - Achieved reserve average is removed and replaced with determination for each “sample point” during the POR period. There is a lack of clarity on how this calculation is achieved - no other calculation provided. How many sample points are there in a POR, SOR, TOR1 periods – why move away from the Average response?
- 5.13 – TOR2 must be assessed for its provision in the same manner as TOR1, as it is contracted and paid based on its provided curve and droop characteristics. TOR2 is an

extension of the response and should be measured in accordance with the established reserve methodology.

- Some definitions have errors in the wording e.g. POR Assessment Time

Questions

Question 1: Do you have any comments on the assessment methodology for these products being amended to align with Ramping Margin assessment methodology?

AES is unclear how a ramping performance assessment based on a “failure to follow notice to synchronise instruction” is applicable to a reserve response performance where the unit is already synchronised and has responded already to the incident in the POR, SOR and TOR1 timeframes. The TOR2 curve follows on from the previous TOR1 response and is defined on that basis. On this occasion, no synchronisation instruction would be issued.

The TSO acknowledged this as a temporary solution back at the start of DS3 and a new solution is required. Generators respond to numerous ramping instructions each month and only assessing the synchronisation of the units is not a viable solution. Therefore, as the TOR2 product is paid in the same manner as the TOR1 the same assessment criteria must apply. The TOR2 period is from 5 mins therefore will most likely only be payable to units that are synchronised. Late Synchronisation is definitely not the correct assessment criteria for this product on any occasion. This should not be changed until a correct ramping assessment solution is up and running.

Question 2: Do you have any comments on the Frequency Event definition being amended to make reference to a Significant Frequency Disturbance, which is now defined as a deviation of 0.30Hz from Nominal Frequency?

This is a significant change to the protocol document which gives effect to a major change in the terms of the DS3 contracts. A frequency transient is defined in the NI grid code as a period when the NI system frequency is at or below 49.5 Hz - a deviation from a nominal frequency of 50Hz of 0.5 Hz.

No evidence has been presented to identify a need to change the requirement either at the Grid code review panel or other forums. This is not an attempt to improve the performance of the generating units as the response performance of generators has already improved under the existing definition. However, this change appears to be an attempt by the TSO to reduce the revenue paid to contract holders by creating the potential for more failed performances by tightening the requirements i.e. moving the goal posts after the contracts have been signed. Changing this definition also creates a misalignment with the frequency transient technical requirements in the Grid Code.

The definition of the “Frequency Event Threshold” contains the wording of a deviation in Transmission System Frequency of 0.3 Hz, **or as determined by the TSO**. This is inconsistent with the definition of a frequency event creating ambiguity and an element of TSO discretion to determine frequency

events. There is no justification provided either for the need for this change or for the requirement to allow some TSO determination on the threshold.

AES acknowledges the problem of data poor position for units which have not been generating during frequency transients or due to improved performance of the system have not experienced a transient event and the subsequent for unnecessary testing this creates. AES suggests that the Data Backstop Timeframe be extended to reduce the number of tests required by providing units.

Question 3: Do you have any comments on the application of the Time Zero definition being amended and the removal of the reference to the end of a Frequency Event?

The time zero definition needs to be sufficient to determine the stable position of the unit prior to the event i.e. if the unit was ramping, or already responding to a previous event. The previous assessment period T-30 secs allowed for this assessment and the expected response of the unit to be adjusted as required.

AES views that the period of assessment for each product should continue through the full product period, except for:

- If a despatch instruction has been sent by the TSO to vary the output.
- A second drop in frequency which changes the response of the unit cancelling the original response at that point as it will have a different pre-event assessment and so the 2 events are mixed up and it isn't possible to assign any MW of movement to either event.

The 'Consultation on DS3 System Services Volume Capped Fixed Contracts, October 25th 2018' makes reference in section 7.4 to a period of 90 minutes after a frequency event were availability will not be assessed. To define when this 90 minute period commences, a definition is required for when a frequency event ends, including whether it is net of the 30 seconds for the frequency to be considered recovered.

Section 3.3.3 of the protocol includes the paragraph 'A Providing Unit that is unable to operate without recovering its resource until the system Frequency has recovered will be classified as having static capability. The exact timeframes shall be agreed by the TSOs.' AES request further clarity on the intent of this statement, noting that energy storage providers under Fixed Contracts are required to provide a Dynamic response.

Question 4: Do you have any comments on the amendment to the methodology for calculating Pre-Event Frequency and Pre-Event Output?

A one second assessment period does not afford sufficient time for the assessment of the frequency and unit status pre-event. If the unit is ramping or is already responding to frequency variations, this should be accounted for in the assessment period. The term “significant” variation is not defined. AES favours the assessment over the period from 0.5s to 60s is used for each Event and so the best solution is found for every Event.

Question 5: Do you have any comments on the proposal to amend the process for analysing multiple frequency events?

The nature of conventional thermal units is that following a transient a recovery time is required prior to responding to another event. This is required to enable boiler pressures and Boiler Drum levels to become re-established and stabilise. A second event in the same direction was not asked for in the design of the system services products and this represents another attempt by the TSO to move the goal posts after contract signing and creates the circumstances for an increased number of performance fails by participants. Multiple frequency events must be clearly defined and not open to the discretion of the TSO as suggested. The time between events for assessment should be kept at 5 minutes.

Question 6: Do you have any comments on the proposed inclusion relating to Availability Performance Monitoring for providers under the Fixed Contracts arrangements?

Availability Performance Monitoring must be clearly defined that it does not relate to thermal generators. Thermal generators declare their live availability of all products on EDIL and cannot provide forecasts as they are often heavily constrained on the system and have no control of these constraints.

In reference to section 6.1.1 of the Protocol, the calculation does not reference previous consultation positions that a certain portion of time for planned outages and a post event dispatch of 90 minutes will not be assessed in Availability Performance. Additionally, section 8 Glossary states that a number of definitions will have the meaning given under the Fixed Contract Agreement, however the previously consulted upon Fixed Contract Agreement did not include these definitions.



AUGHINISH ALUMINA LIMITED
(Registered in Ireland No.59982)

DS3 System Services Consultation – Protocol Document

**Aughinish Alumina Ltd
Response**

DS3 System Services Consultation – Protocol Document

Respondent Name	<i>Vivion Grisewood</i>
Contact telephone number	<i>061 604497</i>
Respondent Company	<i>Aughinish Alumina</i>

This response is non-confidential

Introduction

As a large grid connected consumer of power Aughinish is aware of the risks to Ireland Inc. should the pursuit of government policy result in a weakened power grid. We are glad that Eirgrid, in this document, highlight the new risk to grid security by way of secondary trips ‘on a lighter system’. We support the DS3 team in ensuring the Irish grid remains competitive on a world stage and in so doing support indigenous and foreign investment. Aughinish as owner of the two Sealrock High Efficiency CHP units have invested in the evolving electricity market and will continue to participate in consultations and follow clear market signals.

General Comments

Aughinish welcomes this opportunity to contribute to the DS3 Protocol Document consultation. Aughinish have been a supporter of the DS3 program since its inception, and provide a number of system services from its two CHP units. Aughinish understands the changing dynamic of energy generation, and is supportive of new and clean technology to help Ireland to achieve its 2020 targets. Aughinish has undertaken all the necessary requirements to facilitate an increased SNSP, such as ROCOF testing, and welcomes the social benefits it will provide. Aughinish’s core business is the production of Alumina, and is one of the country’s largest consumers of electricity. It is imperative that while the dynamic of energy generation in Ireland changes, that the quality of power remains excellent. A characteristic of increased renewables is a ‘noisier’ supply of electricity. Any loss of supply to Aughinish, however brief, would prove catastrophic, bringing Alumina production to a halt. It is Aughinish’s view that any proposed change to the DS3 program to provide a more stable and secure grid, is a welcome one.

Comments on the proposed modification

As a large energy user dependant on a stable grid we agree that it is vitally important that Providing Units perform during all subsequent Performance Incidents. We therefore support the proposed modification 2.2.5 Multiple Frequency Events – Section 5.7.1.3 modifications.

Aughinish also welcome the proposed inclusion relating to Availability Performance Monitoring for providers under the Fixed Contracts arrangements. Aughinish would go further however, and propose a slightly different Availability Performance Scalar. Aughinish propose that units that provide >97% availability receive a 105% scalar.

For all other proposed modifications, Aughinish offer no comment.

DS3 System Services Consultation – Protocol Document

This questionnaire has been prepared to facilitate responses to the consultation. Respondents are not restricted to this template and can provide supplementary material if desired.

Please send responses in electronic format to DS3@eirgrid.com or DS3@soni.ltd.uk

Respondent Name	<i>Julie-Anne Hannon</i>
Contact telephone number	<i>01 2335302</i>
Respondent Company	<i>Bord Gáis Energy</i>

Note: It is the TSOs' intention to publish all responses. If your response is confidential, please indicate this by marking the following box with an "x". Please note that, in any event, all responses will be shared with the Regulatory Authorities.

Response confidential

The closing date for responses is Friday 18th January 2019.

Question	Response
<p><u>Question 1:</u> Do you have any comments on the assessment methodology for these products being amended to align with Ramping Margin assessment methodology?</p>	<p>Answer 1:</p> <p>Bord Gáis Energy (BGE) does not agree with the proposal to align the assessment methodology for TOR2 and RRS with the methodology applied for assessing Ramping Margin services. Our main rationale for this is that the Ramping Margin assessment methodology only takes into account the performance of the unit as it transitions from an offline state to synchronising, as opposed to the unit’s performance when it is already synchronised, which is in our view wholly unintuitive. BGE has long been opposed to using a FAIL SYNC only assessment for ramping products where a unit can only provide the relevant ramping product once they are synchronised – the failure of the TSOs not to differentiate between a unit being in startup mode or being in synchronised mode and their response to dispatch instructions up/ down the MW operational ranges for the DS3 service provision, is not only an inaccurate way of assessing ramping but it discriminates against cycling units who are more susceptible to picking up FAIL SYNCs.</p> <p>Such inequitable treatment has an impact on the revenue certainty of units, and in particular large units which are susceptible to cycling, and most of which can only provide these products while synchronised. This in turn undermines investment signals and commercial viability of projects.</p> <p>The proposal therefore to extend the ramping margin assessment using a FAIL SYNC only to assess TOR2 and RRS reserve performance, is especially unintuitive. If the assessment approach seeks to use EDIL instructions for performance monitoring of DS3 products that are dispatchable by the National Control Centre, then BGE strongly believes that all MWOFF dispatch instructions as well as sync, desync and fail sync should be included. This should be the performance monitoring approach applied for the following dispatchable products: TOR2, RRS, RRD, RM1, RM3 & RM8. If the TSOs do not have the capability to assess all of these instruction types, we submit that this proposal should be postponed to a time when the TSO has such capability. In the meantime, the current assessment approach should apply.</p> <p>This in our view is the most pragmatic solution to the issue given: a) that the nature of the services (reserves) require that the unit be at least in synchronised state; b) that this would</p>

<p><u>Question 2:</u> Do you have any comments on the Frequency Event definition being amended to make reference to a Significant Frequency Disturbance, which is now defined as a deviation of 0.30Hz from Nominal Frequency?</p> <p><u>Question 3:</u> Do you have any comments on the application of the Time Zero definition being</p>	<p>better align with the basis of how DS3 payments are actually made (which is when the unit is synchronised and operating on its operational range).</p> <p>In conclusion, BGE's preference is for an assessment methodology for TOR2 and RRS that uses EDIL instructions to include all MWOFF instructions as well as sync, desync and fail sync. If the TSO does not have the systems to enable this type of assessment we suggest that the proposal is postponed and the current method of frequency injection or online dispatch instruction is retained. We are entirely opposed to application of a FAIL SYNC only assessment method being applied to TOR2 and RRS or indeed any of the dispatchable products noted above, for the reasons outlined above.</p> <p><u>Answer 2:</u></p> <p>BGE agrees with this proposed amendment to the definition of Frequency Event. We believe the proposed new range offers better assessment of a unit's reliability in terms of regularity and should cause no additional administration for the TSOs given the automatic nature of performance monitoring triggering when the relevant nadir is reached. Furthermore, DS3 providers with moderate to high running hours should not find themselves in a position where they are considered data poor and have to book test days with the TSO in order to restart their performance scalars and mitigate negative revenue impacts. It is important in our view that a solution to the regular data poor situations that service providers find themselves in is found as a matter of priority. Finally, we are of the view that for consistency in treatment across service providers that the same frequency performance assessment trigger/ Hz deviation from Nominal Frequency, should apply to all providers.</p> <p><u>Answer 3:</u></p> <p>BGE accepts the proposal to amend the application of the Time Zero definition to either 49.8Hz (if the unit's frequency trigger is between 49.8Hz – 50.2Hz) or the frequency trigger of the unit if set otherwise.</p>
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amended and the removal of the reference to the end of a Frequency Event?

We do however have significant concerns around the proposed change to the definition of the end of the frequency event to >49.9Hz for 30 seconds when viewed in conjunction with the proposed changes for multiple frequency events. As a standalone change, Frequency Event end time being defined as >49.9Hz for 30 seconds aligns with the normal frequency operating range of 49.9 Hz to 50.1 Hz and the existing DS3 protocol has no subsequent performance monitoring for 5 minutes after the event which is acceptable. The proposal (related to question 5 below) to amend the process for analysing multiple frequency events does however put a different perspective on this.

Pursuant to the proposal on multiple frequency events, if a second or subsequent Frequency Event happens at any time after 30 seconds after the frequency has returned to 49.9Hz the performance of the unit will be assessed for service provision. The problem here is that regardless of the severity of the initial event, applying immediate performance monitoring for subsequent events raises significant uncertainty as to performance outcomes for service providers and consequently also raises considerable revenue uncertainty.

The ability of a unit to respond satisfactorily from a performance assessment perspective, depends on the performance of the grid itself. A frequency event is a stress event for both the provider unit and the power system and normal mode of operation and system reserves might be fully recovered before a second or subsequent event occurs but if it is not, it severely hampers the service provider's ability to meet required volumes. Take the scenario for example where a second event happens within one minute of an earlier event, then the higher average output associated with the first event could be relevant to your pre-event average required service volume provision and make performance under the second event much harder to achieve. Actions such as ramping and frequency oscillation can heavily impact pre-event output against which subsequent performance might be benchmarked for example.

In conclusion, given the complications as regards performance requirements that this proposal raises and the lack of foreseeability/ predictability as to how it might work in practice and impact investor revenues, we firmly believe that the TSOs should retain the current 5-minute window post the end of a frequency event, within which performance assessment will not apply if a subsequent frequency event happens. This 5-minute timeline is fair in our view not least due to the timeline needed to get the system itself back to normal mode of operation. Please see answer 5 below for further views on multiple events.

Question 4: Do you have any comments on the amendment to the methodology for calculating Pre-Event Frequency and Pre-Event Output?

Answer 4:

Given the potential level of changes that can happen in a system within a 30 second timeframe, we are in favour of reducing the current average for pre-event frequency and output to something less than the mean value between T-30 and T-60. The proposed reduced range of T-1.5 to T-0.5 is however in our view much too short and close to the frequency event in order to get a sensible average against which to assess provider performance. It is difficult to grasp how the TSO would get a realistic average over 1 second to as close to 0.5 seconds before the Time Zero defined is crossed; rather the proposal of 1 second is effectively a single point as opposed to average.

BGE instead suggests that a more reasonable pre-event average against which to benchmark performance based on close to real time system conditions, would be in the range of T-15 to T-5 seconds.

Furthermore, we note the statement in the Consultation that “The TSOs acknowledge that on certain occasions (where there is significant variation in the Transmission System Frequency during the T-1.5 – T-0.5 seconds) issues may arise when determining both parameters. In such circumstances we propose to revert to the original timeframe (T-30 to T-60 seconds) for analysing both parameters.” This statement appears subjective and open to interpretation and we request more insight or an example from the TSOs of such an occasion that might require reversion to the original timeline? It is critical for investor certainty to know in advance what pre-event output the generator’s expected performance is being benchmarked against. Finally, we note that our proposed range of T-15 to T-5 should help alleviate the TSOs’ concerns in this regard.

Question 5: Do you have any comments on the proposal to amend the process for analysing multiple frequency events?

Answer 5:

Please also see our response to question 3 above. In summary, BGE is not in favour of the proposals around changing when assessments of performance in times of multiple frequency events should commence. In our view, given that frequency events are stress events for both the system and for unit providers, and practically speaking the system needs to be fully back to normal mode of operation before a service provider can reasonably be expected to perform as required, the current 5-minute window after the end of a frequency event within which performance will not be assessed if another event occurs, should be maintained.

Question 6: Do you have any comments on the proposed inclusion relating to Availability Performance Monitoring for providers under the Fixed Contracts arrangements?

On a related point, with regard to the specific mark-up outlined in section 5.7.1.3 (d) regarding Static Response Providing Units, BGE believes that this provision could unduly penalise affected units unless they are given sufficient time to re-charge their units. For example, a unit which has an equal MIC and MEC, on provision for example of TOR2, will be unable to recharge to make itself fully available without incurring availability penalties, through no fault of the service provider. This is unintuitive in our view and we suggest that in setting the timeline for assessing for subsequent events, the TSOs should take account of the potential restrictions the actual provision of DS3 services may have on a unit and not penalise service providers for non-performance that is outside their control. We would also welcome further insight into the method and rationale behind choosing the 15-minute period in this proposal noting that the consultation document does not reference it at all. Similar insight and input into the method and rationale behind the time period that will ultimately chosen is also requested.

Answer 6:

With regard to the Availability Performance Monitoring changes noted at pages 69-70 of the Protocol document, we wish to re-iterate the concerns we outlined in our December 2018 response to the DS3 system services fixed contracts arrangements. In summary, we believe that in the interests of revenue stability and cashflow certainty that an equal monthly weighting (e.g. 1/12) should be applied in the availability performance scalar monthly weighting table rather than the “front heavy” monthly weighting approach outlined.

We also seek confirmation that the method for calculating the Availability Performance Scalar will, for the first 12 months of the relevant DS3 fixed contract, enable units to earn their full potential revenue. This could be achieved by for example assuming the unit’s availability for the 12-months before the Go-Live date is 100% which is in line with the approach applied to the regulated arrangements’ contracts. Otherwise, the equation as written suggests that DS3 payments will have a factor of zero applied in month 1, 0.12 in month 2 and so on and that a scalar of 1 would not be recognised until at least 13 months into the contract. Such an approach is inequitable and does not align with investor expectations. We request this clarification as early as possible.

Finally, we would welcome confirmation that a unit’s availability during times of compliance tests will not be included in the Performance Availability Scalar, akin to a scheduled outage?

OTHER:

Other comments:

A. Frequency event – 10% tolerance

Although not mentioned in the paper, the revised formulas for the performance incident scaling factors (Sections 5.8.2.6, 5.9.2.4, 5.10.2.5) have removed the 10% tolerance which was always allowed for frequency event assessments. POR below is an example:

$$\text{Let } S = \frac{\text{Achieved POR Response}}{\text{Expected POR Response (inclusive of the POR Inertia Credit) } - \text{MIN}(10\%, 1 \text{ MW})}$$

If $S \geq 0.9$, $Q_i = 0$,

If $S \leq 0.7$, $Q_i = 1$,

Otherwise, $Q_i = (0.9 - S) \cdot 5$.

We do not agree with this change and request that the 10% tolerance is retained and also request further insight as to the rationale for suggesting the change in the first place and why it was not flagged in this consultation?

B. Temporal Scarcity Scalar (TSS) Values

As outlined in Bord Gáis Energy's response to the DS3 system services fixed contracts consultation in December 2018, BGE has concerns that the methodology for calculating the TSS value will not reflect the actual value provided by the DS3 Fixed Contract service provider if a single year only is used in the model. Given contracts are of up to 6 years duration we believe that the forecast SNSP should be modelled over this duration to provide a more reflective forecast of SNSP and the value of service providers during high SNSP, scarcity periods.

We note also the table 6 on page 71 of this Protocol document outlining the TSS Variable Values and understand that these apply only to units under the regulated arrangements (uncapped volumes). It remains unclear as to how the TSS values referenced for the fixed contracts arrangements will be calculated and we would welcome more detail on this as early as possible considering the imminent tender process. Further is there is scope for them to change over the <6-year duration of a fixed contract?

DS3 System Services Consultation – Protocol Document

This questionnaire has been prepared to facilitate responses to the consultation. Respondents are not restricted to this template and can provide supplementary material if desired.

Please send responses in electronic format to DS3@eirgrid.com or DS3@soni.ltd.uk

Respondent Name	<i>Justin Maguire</i>
Contact telephone number	<i>086 2378864</i>
Respondent Company	<i>Bord na Móna</i>

Note: It is the TSOs' intention to publish all responses. If your response is confidential, please indicate this by marking the following box with an "x". Please note that, in any event, all responses will be shared with the Regulatory Authorities.

Response

confidential

The closing date for responses is Friday 18th January 2019.

Question	Response
	<p data-bbox="898 344 1417 376">1 Context & Recommendations</p> <p data-bbox="898 405 1021 437"><u>Context:</u></p> <p data-bbox="898 459 2047 596">Bord na Móna welcomes this opportunity to respond to this consultation. We have expressed our high level views in previous consultation responses about the mirror-like interdependence of the needs of the system operators and the Service providers. In respect of this consultation response we highlight:</p> <ul data-bbox="949 603 2047 1369" style="list-style-type: none"> <li data-bbox="949 603 2047 778">• Our recognition of the importance to the RA’s of <u>security of supply</u>, especially in the context of the dynamic nature of increasing demand going forward driven by datacentres, electric vehicles, the electrification of heat, etc. Likewise we have pointed out that market participants, both existing and new must have confidence in the <u>stability of the DS3 Framework</u>. <li data-bbox="949 801 2047 1050">• The need for those <u>existing and new facilities</u>, which are valuable to the RA’s, <u>to be remunerated to a sufficiently financially viable degree</u> – being conscious of the limited revenue pool available to service providers across Energy, Capacity and Ancillary services and of their linked nature in overall remuneration to the Service provider/market participant. We are also keen to support DSUs and aggregators. There must be an investor case for existing and new projects (<u>for as much and for as long as needed</u>) <li data-bbox="949 1072 2047 1321">• <u>-Our recognition of the transitional journey</u> in getting from where the generation, demand side, ancillary services landscape is now, to where it needs to get to support higher levels of SNSP, emphasising the <u>need for incremental rather than radical change</u>. We therefore advocate an approach which allows a sustainable supply delivery model for both the System Operator and the Supplier/service Provider, while ensuring value to the consumer. In this regard we would refer to the <u>quite radical nature/large step changes of some of the proposals within this consultation</u>. <li data-bbox="949 1343 2047 1369">• Where decisions are made on foot of consultations, such as this, they should be

introduced in such a manner as to balance the risk between the TSOs and the Providers, and in a manner which additionally remunerates the Provider in cases where the Provider takes on additional risk.

Preliminary Fundamentals

There are two inter-related consultations playing out, of which this is the second. The first one¹ was conducted without sight of the second, and the second (the subject of this consultation) is taking place without published decisions on the first. This makes drafting a comprehensive response difficult because risk/reward decisions need to be made on a holistic basis rather than piecemeal.

It leads to the fundamental realisation that if current and new service providers are valued by the TSOs in providing high levels of SNSP they are effectively partners with the SOs.

It leads to the fundamental conclusion that these providers/partners should be remunerated for any additional step change in risk which they take on (all other things being equal²) from the introduction of the new measures/provisions which will be adopted as a result of separate consultations on the Protocol document and Fixed Contracts.

The first consultation also drew attention to other areas³ on which there needed to be consultation, which signals further areas of revenue uncertainty to the provider.

Bord na Móna's Position & Recommendations on this Consultation

The points on the interdependence of the aforementioned consultations has been made – as well as the limitations arising from the process.

A common strand in our responses below recognises that the paper has not set out a measured need for any of the changes, nor has it included an impact assessment in terms of system benefits nor, of financial implications for the Service provider. It is our understanding that such

¹ Consultation on DS3 System Services Volume Capped Fixed Contracts, October 25th 2018

² Which of course they are not over a time horizon, but which they are at the time of change

³ Such as the proposed mechanism for determining the all-important values for the temporal scarcity scalar

	<p>an approach would be more closely followed in the case of modifications to Energy or to Capacity revenue streams.</p> <p>In this regard <u>our first recommendation</u> is to highlight the need for a closer relationship between the TSOs and industry to help table ideas, and to explore them sufficiently before putting them out for broader consultation.</p> <p>We have highlighted that the proposals in this consultation would introduce a step-change increase in service provider risk, and that such increased risk should be accompanied by increased reward.</p> <p>We summarise our responses to specific questions from this Protocol document consultation below, while also referring to parallel risks to the service provider relating to the Fixed Contracts document.</p> <ol style="list-style-type: none"> 1) We have already expressed that a source of concern for investors (existing and new) is that the Protocol document can be changed up to 4 times per year (albeit with consultation⁴) 2) Q1. <u>We do not support the proposed amendment to align the assessment methodology for the specified reserve services with the ramping margin assessment methodology.</u> In summary, there is simply too much uncertainty concerning the impact on the supplier around what the Ramping Margin methodology in the future will look like to make a definitive recommendation to change. Without a clearly stated benefit to TOR2 and RRS being assessed as a ramping service, we recommend that it remains under the reserve assessment methodology. We also highlight difficulties in applying this to DSUs. 3) Q2. With regard to the proposal to amend the Frequency Event definition we highlight again that the rationale for change is not set out in the paper. Furthermore, a smaller frequency event deviation threshold provision (of 0.3Hz, in place of the existing 0.5Hz) will give rise to an increased number of frequency events. This introduces extra risk on the service provider – asymmetric risk – with little upside (other than reducing the need for Performance Testing) but an increased downside
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⁴ Subject to reservations expressed in relation to industry involvement pre-consultation and impact studies

exposure due to an increased number of events.

If the purpose of this proposed amendment is to help service providers avoid having to submit for grid testing then **we recommend that there are alternative approaches which should be first evaluated:**

- i) industry be given the primary option to use 'additional data' to get them out of a Data Poor scenario (subject to trialling of this primary option first); by 'additional data' we mean that they could use their unit's reaction to dummy 'events' at 49.55Hz, 49,6Hz, etc, as required
- ii) and then, as a secondary option the service provider could extend the data poor period to 24 months without suffering decay in DS3 revenues

We recognise that the system is currently operating well at high levels of SNSP and fail to understand the need for reliable providers of services which contribute to this stability suffering financially by being subjected to a grid testing requirement.

Our **underlying recommendation would be for the TSOs to revisit their proposals and to replace them with the expressed approach** – with the emphasis on i) established need ii) trials with the additional data approach, subject to back up by iii) extension of the Data Poor period.

- 4) Q3. While we do not currently have an issue with the Time Zero definition we are concerned about the proposal to remove the reference to the end of a frequency event.

The response to this question is intrinsically linked to proposals and issues raised in the context of i) pre-event frequency and output and ii) the treatment of multiple frequency events (the subjects of Qs 4 & 5 respectively).

As is apparent from our responses to these two questions **we do not believe that it is appropriate to remove the end of a frequency event.**

- 5) Q4. Regarding proposed amendments to the methodology for calculating Re-Event Frequency and Pre-Event Output we recognise the scale of the proposed change, moving from T-30 and T-60 seconds to T-1.5 and T-0.5 seconds for Pre-event Output

and Pre-event Frequency respectively.

We believe that the times proposed of T-1.5s to T-0.5s for output and frequency respectively are much too short as they are likely, in many cases to include unstable transients for which average values could be meaningless and we do not believe that this risk will be mitigated to sufficient degree by the proposal that, where there is significant variation in the Transmission System Frequency during the selected time stage trial period that the TSOs would revert to the original timeframe (T-30s and T-60s) for analysing both parameters.

We therefore recommend that, after working closely with a broad technology based industry group, and having established a clearly demonstrated need for change and impact study, that a staged approach towards trialling the pre-event output and frequency periods be adopted, with the time stages/windows agreed with industry. We would propose that an initial stage test might be at no less than T-15s and T-30s for output and frequency averages respectively.

We highlight in our response that the very short timeframes proposed would not work with DSUs.

- 6) Q5. The proposed simplification is intimately related to the proposal to remove the reference to an end time to the event, meaning that the event time effectively becomes the service's assessment period.

This gives rise to complications, instanced in our response which could expose the service provider to unjustified lost revenues.

We believe that the removal of the reference to the end of a Frequency Event and the related change to the expectation of response to multiple events in short sequence undermines a long, standing understanding on the basis of which units are contracted to provide DS3 System Services and therefore oppose its change of definition.

The proposals are not suitable for DSUs and undermine the conditions on which DSUs/AGUs clients agreed to participate, thereby illustrating a substantive issue.

Consequently we recommend that, should there be a clearly demonstrated need for

change, that there be a period of work with an industry group, followed by trial for these changes before they are considered for change in the Protocol Document. The industry group would extend across all main technology providers.

- 7) Q6. - Regarding the proposed inclusion relating to Availability Performance Monitoring for providers under the Fixed Contracts arrangements, while we do not comment on the proposed inclusion, we do object to the provision whereby available volume is reduced due to Network Congestion in that this does not provide sufficient investor security. We note the potentially very punitive positioning of the investor should their plant be rendered unavailable over an extended period due to what is very loosely termed 'network congestion', where such 'congestion' could occur due to no fault of the investor, where, in such case the investor would receive no payments. **We believe that this provides an incorrect investor signal to a sector on which the steady progress of the achievement of the DS3 2020 target, and beyond, is dependent, and that there needs to be a re-balancing of risk between the TSOs and the Providers.**

We have already flagged other issues relating to the Fixed Contracts consultation, some of which increase Provider risk

-Temporal Scarcity Scalars, and that the final mechanism concerning these will be developed subsequent to the Volume Capped Fixed Contract

-We also recognise that because contacts will be awarded on a 'Pay as Bid' basis that otherwise viable projects could fail where they compete without sufficient risk premium. This could undermine investor confidence in the provision of volume capped services. Consequently there is a need to return to some form of 'Pay as Clear' mechanism.

In conclusion, while we recognise the direction of travel, we are concerned that the changes proposed are radical in scale and in many cases are not suitable in that they are likely to impact negatively on service provider revenues. Our closing recommendation proposes that any

<p><u>Question 1</u>: Do you have any comments on the assessment methodology for these products being amended to align with Ramping Margin assessment methodology?</p>	<p>decisions on the consultation proposals would follow identification of a clearly demonstrated need for change, and an impact assessment, which could be facilitated by the TSOs working closely with a cross-industry group, where changes to the Protocol Document would be trialled before adoption – and where measures would be trialled, and introduced on an incremental rather than step change basis. Finally, any step change increases in risk resulting from changes should be reflected in increased reward to the service provider.</p> <p><u>-No Objective Stated Reasoning for Suggested Changes, nor Impact Assessment – Governance</u> Unlike the case regarding proposed changes to Energy Revenues or to the Capacity Remuneration Mechanism there seems to be little or no rationale set out for changes proposed within this consultation, nor of their potential negative impact on the service provider. This gives rise to Governance issues which we believe, if not addressed, could result in the unintended consequence of over-stretching the service provider, potentially putting them out of business, thereby threatening the supply of services which are required to maintain the system.</p> <p><u>-Link between Risk & Reward – need for Increased Tariffs</u> Because of the omission of Impact Assessment it is not possible to assess the financial impact to the service provider. This uncertainty raises the inherent risk exposure of the supplier and it follows that Increased Risk should translate to Increased Reward in the form of increased tariffs.</p> <p>The relationship between risk and remuneration is a common theme across this BnM response. Changes which result in revenue erosion or which bring additional risk to the Service provider need to be adjusted in such a way as to at least restore/retain current revenues, all other things being equal. Naturally we fully appreciate that all other things will not be equal over time, with increasing levels of SNSP and with the potential reduction of rates under Regulated Arrangements associated with increasing levels of Volume Capped services on the system; our focus is on the step change increase in risk arising from ‘changes to the rules’.</p> <p>If, resulting from decisions arising from the two complementary consultations⁵ there is a step reduction in services revenues (for the same risk) or there is an increase in risk, then these revenues should be adjusted accordingly to reflect the change in risk.</p>
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⁵ The Consultations on i) the Protocol Document and ii) the Volume Capped Fixed Contracts

	<p>Furthermore, we believe that it is inappropriate for shorter duration and higher value products to take on the Performance Incidence Response Factor for RM1, a significantly longer duration and lower value product. In consideration of DSU/AGUs, they will be required to maintain the expected response for RM1, which is considerably longer and more onerous than the durations of the TOR2 and RRS products.</p> <p><u>-Uncertainty of Impact of Moving TOR2 from ‘Reserve’ to ‘Ramping’</u></p> <p>Given the provision of the ‘bundled’ service from FFR all the way out to TOR2 we do not see the rationale behind switching it from a Reserve service to Ramping.</p> <p>Furthermore, a key consideration regarding the current proposal is the Ramping Margin methodology vs the Reserve Methodology and the unknown impact on the Service provider. For instance:</p> <ul style="list-style-type: none"> -The Reserve Methodology allows for Partial passes while the Ramping Methodology is binary, Pass/Fail in nature -We understand the Ramping Margin Methodology to be under consideration, ie., in development. The Consultation paper on Interim Performance Scalars gave voice to concerns that a unit’s performance for ramping services should be measured against all dispatch instructions issued and not solely instructions to synchronise. The TSO’s subsequent decision paper described that the TSOs are currently working on implementation of an automated system which could potentially account for <u>all dispatch instructions</u> as an enduring DS3 System Services Performance Scalar Design Consultation. -The Consultation paper flags that the Response Factors may move to an independent service-based assessment, based on Ramping Margin methodology, at a later time, thereby demonstrating further uncertainty and risk. <p>In summary, there is simply too much uncertainty concerning the impact on the supplier around what the Ramping Margin methodology in the future will look like to make a definitive recommendation to change. <i>Without a clearly stated benefit to the reserve services being switched to a ramping service, we recommend that they remain under the reserve assessment methodology.</i></p> <p>To the above response we add three further comments:</p> <p>a) <u>-Over-frequency Response and Service Provider Revenues</u></p> <p>A general point applying across several of the services, incl ramping, is that given the recent focus on over-frequency response it is not clear how the service provider is clearly</p>
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<p><u>Question 2</u>: Do you have any comments on the Frequency Event definition being amended to make reference to a Significant Frequency Disturbance, which is now defined as a deviation of 0.30Hz from Nominal Frequency?</p>	<p>remunerated for ramping down services in the context of ISEM and lost Energy Market Revenues.</p> <p>b) <u>In relation to DSUs</u>, noting that RRS and Ramping Services are assessed against the performance compliance requirements specified in both the SONI and EirGrid Grid Codes we observe that the methodology contained therein sections OC10 & OC11 is based on the use of Quarter Hourly data and so is clearly intended for use over longer duration dispatches. Such an approach is too coarse to provide a reasonable assessment for products with shorter response times and duration than RM1. <u>This method makes this approach unsuitable for the proposal where such products would be assessed individually using this methodology.</u></p> <p>c) We do not believe that it is appropriate to continue with the provision whereby if a unit's expected response is less than 1MW, it is disregarded from providing unit's data record. We believe that this imposes an unnecessary impediment on smaller/new providers.</p> <p>We again refer to the consistent theme of our recent responses – which is that DS3 revenues should fairly be maintained, 'all other things being equal'⁶ through any change in policy, or they should be increased to reflect greater risk; in other words there should not be a change in policy which will result in a step change in service provider revenues. DS3 revenues are a key revenue stream, but they are characterised by very punitive performance scalars. Any change which increases the risk of reduced revenues, all other things being equal, will fairly need to be adjusted upwards to restore provider revenues and leave them unchanged. To do otherwise will undermine investor confidence for both existing and for new services providers.</p> <p>A smaller frequency event deviation threshold provision (of 0.3Hz, in place of the existing 0.5Hz) will give rise to an increased number of frequency events. This means that all significant frequency disturbances with a nadir of 49.7Hz (or a zenith if 50.3Hz for units contracted to provide high frequency response) will now be utilised in determining the units's Performance Incident Response Factor (PE). This introduces extra risk on the service provider – asymmetric</p>
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⁶ Ie, there should not be a step change in provider revenues (revenue erosion) as a result of decisions arising from these two complementary consultations, as well as from other flagged imminent changes.

risk – with potentially small upside (by avoiding being Data Poor and needing Grid testing) but an increased downside exposure due to an increased number of events with an unknown impact on Service supplier remuneration.

Also, similarly to the previous response, there is the issue that the rationale for the change is not set out in the consultation paper – the ‘need’ is not clearly expressed. If the change is purely to address the Data Poor issue then we see no reason as to why the ‘Data Poor’ ‘reducer’ kicks in at 12 months, reducing to zero payments value by 48 months. We fail to fully appreciate why ‘Data Poor’ is an issue. The system appears to be operating in a stable fashion at SNSP levels in excess of 60% and it appears illogical for providers of services which contribute to this stability suffering financially by being subjected to grid testing.

If the purpose of this proposed amendment is to help service providers avoid having to submit for grid testing then ***we recommend that there are alternative approaches which should be first evaluated:***

- i) industry be given the primary option to use ‘additional data’ to get them out of a Data Poor scenario (subject to trialling of this primary option first); by ‘additional data’ we mean that they could use their unit’s reaction to dummy ‘events’ at 49.55Hz, 49,6Hz, etc, as required
- ii) and then, as a secondary option the service provider could extend the data poor period to 24 months without suffering decay in DS3 revenues

Our underlying recommendation would be for the TSOs to revisit their proposals and to replace them with those expressed – with the emphasis on i) established need ii) trials with the additional data approach, subject to back up by iii) extension of the Data Poor period.

Lastly, it is not clear, given that we are informed that the Protocol document covers both the Fixed Volume AND Regulated Arrangement contracts that the Fixed Volume provisions are fully factored into these provisions. In this regard we raise a concern, noting that the language supporting the definition of “Frequency Event Threshold”, being a deviation in Transmission System Frequency of 0.3 Hz, *or as determined by the TSOs*, appears to give the TSOs complete freedom to set different Frequency Event Thresholds for different technologies. If this is the proposal then we would object to it on the basis that such a proposal is not clearly flagged, neither is its impact quantified.

Question 3: Do you have any comments on the application of the Time Zero definition being amended and the removal of the reference to the end of a Frequency Event?

While we do not currently have an issue with the Time Zero definition we are concerned about the proposal to remove the reference to the end of a frequency event.

The response to this question is intrinsically linked to proposals and issues raised in the context of i) pre-event frequency and output and ii) the treatment of multiple frequency events (the subjects of Qs 4 & 5 respectively).

As is apparent from our responses to these two questions ***we do not believe that it is appropriate to remove the end of a frequency event.*** The range of services being supplied and rewarded extend to the supply of services from less than 0.15 seconds, all the way out to 16 hours post instruction.

We expand in our response to Q5 on particular difficulties we envisage with the proposal to remove reference to the end of frequency event in the context of multiple frequency events.

Question 4: Do you have any comments on the amendment to the methodology for calculating Pre-Event Frequency and Pre-Event Output?

Clearly the proposed provisions are to cater for where, say the providing unit was ramping, or the system was experiencing oscillations pre-event.

Without a clearly defined benefit/need statement and impact assessment we understand, in part only, the proposal to assess pre-event output and pre-event frequency at a time closer to the start of the event than the current T-30s to T-60s for output and frequency averages respectively. We believe that the times proposed of T-1.5s to T-0.5s for output and frequency respectively are much too short as they are likely, in many cases to include unstable transients for which average values could be meaningless and we do not believe that this risk will be mitigated to sufficient degree by the proposal that, where there is significant variation in the Transmission System Frequency during the selected time stage trial period that the TSOs would revert to the original timeframe (T-30s and T-60s) for analysing both parameters.

We therefore suggest that, post work with an industry group across the technology horizon, and having established a clearly demonstrated need for change and impact study, that a staged approach towards trialling the pre-event output and frequency periods be adopted, with the time stages/windows agreed with industry. We would propose that an initial stage

<p><u>Question 5</u>: Do you have any comments on the proposal to amend the process for analysing multiple frequency events?</p>	<p><i>test might be at no less than T-15s and T-30s for output and frequency averages respectively.</i></p> <p>With reference to the very short timeframes proposed in the context of DSUs we would note that they would create a difficulty in that DSUs are performance monitored on the basis of the aggregate main in-comer demand which can exhibit substantial modulation within such a short time frame as is proposed. This could have a significant bearing on the providing unit's performance assessment given that the averaging of the providing unit's pre-event demand over the original and current defined period is critical to accounting for this characteristic.</p> <p>While we recognise that it is important that performance monitoring principles are updated to take in developments to the Power system operation the paper does not clearly set out the system requirement for this change, or indeed this scale of change at this juncture. We believe that it should do so and that an associated impact assessment on service providers is required, clearly recognising that it is important that operational policy takes into account the needs of the valued service provider to be remunerated effectively.</p> <p>In common with our responses to other questions we recognise that there is a mutual dependence between system operator and service provider, effectively partnering each other and comment below in relation to the financial implications on the service provider.</p> <p>The core of the proposal is to move from a situation where, if one or more subsequent events occur within five minutes after the end of the Frequency Event, the Providing unit's response to the subsequent Performance Incidents will not be taken into account for Performance Assessment purposes – moving to another situation where individual Significant Frequency Disturbances are analysed independently, regardless if a second or multiple frequency event occurs.</p> <p>The proposed simplification here is intimately related to the proposal to remove the reference to an end time to the event, meaning that the event time effectively becomes the service's assessment period.</p> <p>This gives rise to the possibility for instance if there were two events 16 seconds the first POR response would leave potentially no available reserve to deliver a POR response to the second</p>
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<p><u>Question 6:</u> Do you have any comments on the proposed inclusion relating to Availability Performance Monitoring for providers under the Fixed Contracts arrangements?</p>	<p>event, potentially exposing the service provider to unjustified lost revenues.</p> <p><i>We believe that the removal of the reference to the end of a Frequency Event and the related change to the expectation of response to multiple events in short sequence undermines a long, standing understanding on the basis of which units are contracted to provide DS3 System Services.</i></p> <p>The proposals are not suitable for DSUs. Under the proposed change DSUs would have to energise and de-energise at individual demand sites at intervals which could be damaging to the underlying equipment. Such an imposed change would undermine the conditions on which DSUs/AGUs clients agreed to participate, thereby illustrating a substantive issue.</p> <p><i>We recommend that, should there be a clearly demonstrated need for change, a period of consultation with an industry group, followed by trial for these changes before they are considered for change in the Protocol Document. The industry group would extend across all main technology providers.</i></p> <p>Bord na Móna has already responded to this question within our response to the Fixed Contracts consultation.</p> <p>The basis of remuneration for services within Schedule 2, draft DS3 SYSTEM SERVICES FIXED CONTRACTS AGREEMENT is ‘availability volume’.</p> <p>While we do not object to the proposed inclusion per se, we do object to the provision whereby available volume is reduced due to ‘Network Congestion’ as this does not provide sufficient investor security.</p> <p>The term ‘network congestion’ has a direct bearing on ‘available volume’, which, in turn is a key determinant of the level of remuneration within Schedule 2 of the draft Fixed Contract. The current wording is a misnomer as it does not convey the broad scope of eventualities which could result in network congestion, and the potential severity of associated impact on a potential investor – which we believe is appropriate and where there is unbalanced exposure.</p> <p><i>We strongly advocate that there needs to be a balance of risk introduced to this provision under which, currently, the likes of a substation could be put out of service for an extended period, say two months, due to say a transmitter fault, ie, a fault not attributable to the</i></p>
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provider, where the service provider will not receive any payment relating to the project's available volume.

It exposes the investor to a very high level of risk which may not be possible to forecast at the go/no go investment decision time. In short, it provides the incorrect investor signals to what is a growing sector on which the true development of DS3 at 2020 target levels of 75% is dependent.

Also, given that the basis of remuneration will be 'pay as bid' from the competitive bidding process there will be no opportunity for cost effective projects to earn infra-marginal return. Participants' uninformed appetite for risk could reduce the competitive bidding process to one where many of the projects which win contracts fail commercially when faced with, perhaps a network congestion, or other unforeseen event. Should this occur then otherwise viable projects which may not have allowed sufficient risk premium will fail – sending out a negative investment signal to other potential investors. This highlights the shortcoming of 'Pay as Bid' as a suitable mechanism and points towards the need for an optimal auction design which would permit a 'Pay as Clear' mechanism.

DS3 System Services Consultation – Protocol Document

This questionnaire has been prepared to facilitate responses to the consultation. Respondents are not restricted to this template and can provide supplementary material if desired.

Please send responses in electronic format to DS3@eirgrid.com or DS3@soni.ltd.uk

Respondent Name	<i>Paddy Finn</i>
Contact telephone number	<i>085 1499 257</i>
Respondent Company	<i>DRAI</i>

Note: It is the TSOs' intention to publish all responses. If your response is confidential, please indicate this by marking the following box with an "x". Please note that, in any event, all responses will be shared with the Regulatory Authorities.

Response confidential

The closing date for responses is Wednesday 30th January 2019.

Question	Response
<p><u>Question 1</u>: Do you have any comments on the assessment methodology for these products being amended to align with Ramping Margin assessment methodology?</p>	<p><u>Question 1</u>: The DRAI believe that it is wholly inappropriate for shorter duration and higher value products to inherit the Performance Incident Response Factor for RM1, a significantly longer duration and lower value product. The duration over which a DSU/AGU will be required to maintain the expected response for RM1 is significantly longer and, as a result, more onerous, than the durations of the TOR2 and RRS products while the financial impact of a poor Performance Incident Response Factor on revenues from TOR2 and RRS will be considerably higher. A unit's ability to achieve a consistently high Performance Incident Response Factor for RM1 is not representative of the characteristics that are required to deliver TOR2 and RRS and, as such, is it not a fair reference.</p> <p>The DRAI also disagree with the proposal to align TOR2 and RRS with the methodology used to assess Ramping Margin. The methodology set out in the EirGrid Grid Code Section OC10.4.5.2 / SONI Grid Code Section OC11.10.3 is based on the use of QH data and was intended for use over longer duration dispatches. This approach is too coarse to provide a reasonable assessment of response for products with shorter response times and duration than RM1. This makes this approach unsuitable for the future scenario where such products would be assessed individually using this methodology.</p> <p>While the amended text does not constitute a change to the threshold, the DRAI would like to express our opposition to events where a providing unit's expected response is less than 1 MW being disregarded from the providing unit's data record as this imposes an unnecessary impediment on smaller/new providers.</p>

Question 2: Do you have any comments on the Frequency Event definition being amended to make reference to a Significant Frequency Disturbance, which is now defined as a deviation of 0.30Hz from Nominal Frequency?

Question 3: Do you have any comments on the application of the Time Zero definition being amended and the removal of the reference to the end of a Frequency Event?

Question 4: Do you have any comments on the amendment to the methodology for calculating Pre-Event Frequency and Pre-Event Output?

Question 2: The DRAI welcomes the change of thresholds whereby events where the frequency falls below 49.7 Hz or rises above 50.3 Hz will now result in a providing unit's performance being assessed as this will provide an increased number of opportunities for the unit to contribute to its data record.

Question 3: The DRAI do not have any issues with the application of the Time Zero definition. However, we believe that the removal of the reference to the end of a Frequency Event and the related change to the expectation of response to multiple events in short sequence undermines a critical, long-standing understanding on the basis of which providing units contracted to provide DS3 System Services. This is discussed further in response to Question 5.

Question 4: The DRAI oppose the amendment to the methodology for calculating Pre-Event Frequency and Pre-Event Output in the strongest terms. While the methodology may have little or no impact on high inertia conventional generation, the DRAI believe it to be entirely unsuitable for other providing unit types such as wind and, in particular DSUs/AGUs. DSUs and AGUs are performance monitored on the basis of the aggregate main incomer demand which can exhibit substantial modulation within such a short time-frame which could have a significant bearing on the providing unit's performance monitoring assessment. The averaging of the providing unit's pre-event demand over the originally defined period is critical to accounting for this characteristic, particularly in the case of smaller providing units. The DRAI would like to propose a time period of -10 seconds to -40 seconds for assessing pre-event output. -10 seconds allows for consideration of the fluctuation of output of the DSU and

Question 5: Do you have any comments on the proposal to amend the process for analysing multiple frequency events?

Question 6: Do you have any comments on the proposed inclusion relating to Availability Performance Monitoring for providers under the Fixed Contracts arrangements?

for the most appropriate pre-event output level to be considered for performance assessment. The 30 second timeframe, out to -40 seconds allows for consideration in the performance assessment of any response that has been provided by the DSU after the frequency threshold has been triggered, which may be slightly in advance of the TSO detecting a frequency event.

Question 5: The DRAI are strongly opposed to the proposal to amend the process for analysing multiple frequency events. The original, long-standing condition that multiple frequency events occurring within 5-minutes following the end of a prior event would not be subject to performance monitoring critically underpinned the conditions under which providing units contracted to provide DS3 System Services. For DSUs, the proposed change would necessitate the de-energisation and re-energisation of loads on IDs at intervals that may be damaging to the underlying equipment. This undermines the conditions under which our members' clients agreed to participate and, as such, any reduction in this interval is entirely unacceptable to the DRAI.

Additionally DRAI feel that it is beneficial to the system that once a DSU has provided the required response for a first frequency event and there is a subsequent event, that they provide any remaining power to benefit system recovery. We feel that forcing a providing unit to declare down until their full resource has been restored may not be beneficial to the system. Can the TSO clarify if a providing unit is partially depleted and not capable of fully responding to a subsequent event fully, should it be declared down to the degree of depletion or fully declared down until the full response is again available

Question 6: The DRAI believes that the inclusion of the Availability Performance Monitoring for providers under the Fixed Contracts arrangements constitutes a cloaked attempt to make participation exclusive to storage technologies. The DRAI strongly oppose any such conditions that unnecessarily undermine the principle of technology neutrality by tailoring requirements to align with the technical characteristics of an individual technology class.

DS3 System Services Consultation – Protocol Document

This questionnaire has been prepared to facilitate responses to the consultation. Respondents are not restricted to this template and can provide supplementary material if desired.

Please send responses in electronic format to DS3@eirgrid.com or DS3@soni.ltd.uk

Respondent Name	<i>Ruth Young</i>
Contact telephone number	<i>01 2370551</i>
Respondent Company	<i>EirGrid East West Interconnector</i>

Note: It is the TSOs' intention to publish all responses. If your response is confidential, please indicate this by marking the following box with an "x". Please note that, in any event, all responses will be shared with the Regulatory Authorities.

Response

confidential

The closing date for responses is Friday 18th January 2019.

<i>Question</i>	<i>Response</i>
<p><u>Question 1</u>: Do you have any comments on the assessment methodology for these products being amended to align with Ramping Margin assessment methodology?</p>	<p>EIDAC believe the methodology proposed is appropriate.</p>
<p><u>Question 2</u>: Do you have any comments on the Frequency Event definition being amended to make reference to a Significant Frequency Disturbance, which is now defined as a deviation of 0.30Hz from Nominal Frequency?</p>	<p>Can the TSO confirm that this definition of Frequency Event fully align with the definition in the Grid Code?</p>
<p><u>Question 3</u>: Do you have any comments on the application of the Time Zero definition being amended and the removal of the reference to the end of a Frequency Event?</p>	<p>Time Zero definition and its use to define an event clarifies this and makes the identification of the start for performance monitoring clear.</p> <p>It would be useful to assess fully the implications of the definition change of Time Zero and Significant Frequency Disturbance over an appropriate trial period.</p>

<p><u>Question 4:</u> Do you have any comments on the amendment to the methodology for calculating Pre-Event Frequency and Pre-Event Output?</p>	<p>EIDAC support a more accurate approach to the calculation of Pre-Event Frequency and Pre-Event Output. However, there is potential for inaccuracies to be introduced and differing results depending on the sampling rate of the frequency measurement. In order to consider the impact of these changes it would be useful to assess over an appropriate trial period</p>
<p><u>Question 5:</u> Do you have any comments on the proposal to amend the process for analysing multiple frequency events?</p>	<p>It would be useful if the TSO could provide worked examples of how this will be applied using sympathy trip scenario. The example would cover static and dynamic response providers for each of the events.</p>
<p><u>Question 6:</u> Do you have any comments on the proposed inclusion relating to Availability Performance Monitoring for providers under the Fixed Contracts arrangements?</p>	<p>No comments.</p>

DS3 System Services Consultation – Protocol Document

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Please send responses in electronic format to DS3@eirgrid.com or DS3@soni.ltd.uk

Respondent Name	<i>Electricity Association of Ireland</i>
Contact telephone number	<i>01 5313063</i>
Respondent Company	<i>Stephen Douglas</i>

Note: It is the TSOs' intention to publish all responses. If your response is confidential, please indicate this by marking the following box with an "x". Please note that, in any event, all responses will be shared with the Regulatory Authorities.

Response

confidential

The closing date for responses is Friday 30th January 2019.

General Comments

The Electricity Association of Ireland (EAI) welcomes the opportunity to comment on the TSO's proposed changes to the DS3 Protocol Document. The DS3 framework is a fundamental component of the SEM arrangements and for the majority of market participants (and service providers) is intrinsically linked to their position in the capacity and energy markets. In order for the overall SEM arrangements to operate efficiently, market participants, both existing and new, must have confidence in the stability of the DS3 framework. A particular example of this is the ability of market participants to factor their forecast revenues from the DS3 framework into their bids into the T-4 capacity auction as implied in the SEM-18-025 BNE decision paper.

The Protocol Document represents a key aspect of the DS3 framework such that the EAI believes that any changes to its terms should only be implemented where there is a clearly demonstrated need to do so and further where the proposed changes have been shown to not have any unintended impacts on service providers. The consultation does not give any evidence to support the need to implement the proposed changes, equally it does not demonstrate that the changes will not, individually or in combination, have unintended impacts on service providers. In the absence of this evidence it is almost inescapable to conclude that the TSOs are seeking to amend the DS3 Protocol Document on an ad-hoc basis with the resultant risk being borne by service providers. Should the need for change be clearly demonstrated, then the check for unintended impacts on service providers can be done through trialling the proposed changes in parallel with the existing arrangements for a meaningful period.

This dynamic does not act to support investor confidence and highlights the TSO's monopsonist position in the DS3 framework. To address this, the EAI proposes that the governance structure in relation to the DS3 framework be revised so that it is more open. The codes that govern the energy and capacity components of the market (T&SC and CMC) have either dedicated representative panels to which modification proposals can be brought or a specified code modification process which includes the arranging of workshops. In either case participants have the opportunity to both propose and discuss potential modifications. The EAI considers that while recognising the nature of the DS3 framework (bilateral contracts between TSO's and service providers) there is potential for an open forum to discuss potential modifications to be put in place, in the first instance this forum could be set up as an adjunct to the Grid Code Review Panel meeting.

DS3 System Services Consultation – Protocol Document

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Please send responses in electronic format to DS3@eirgrid.com or DS3@soni.ltd.uk

Respondent Name	Sean McParland
Contact telephone number	028 90685993
Respondent Company	Energia

Note: It is the TSOs' intention to publish all responses. If your response is confidential, please indicate this by marking the following box with an "x". Please note that, in any event, all responses will be shared with the Regulatory Authorities.

Response

confidential

The closing date for responses is Friday 18th January 2019.

Question	Response
	<p>Energia’s response to the DS3 System Service Consultation (“the Consultation”) on the Protocol Document (“the Protocol Document”) has been broken down into three individual sections. These include general comments on the Protocol Document and its intended use, Energia’s responses to the specific questions detailed within the Consultation and finally some additional comments on specific sections within the Protocol Document that have not been addressed in response to the questions. In addition, as a member of The Electricity Association of Ireland (EAI), Energia are aware of the EAI response to the Consultation and fully support the EAI response.</p> <p><u>General Comments:</u></p> <p>The proposed Protocol Document is intended to work across two distinct set of contractual arrangements – Regulated Arrangements and Fixed Contracts (Volume Capped). However as currently drafted it is not clear what elements of the Protocol Document apply to which set of contractual arrangements. This introduces unnecessary confusion and uncertainty under both sets of arrangements, which is generally unhelpful, but in the case of the Fixed Contract arrangements undermines their primary purpose which is to provide clarity and certainty for investors. Energia therefore requests that either separate Protocol Documents are issued for both Regulated Arrangements and for Fixed Contract Arrangements, or that the proposed Protocol Document is amended so that it clearly delineates the differences between both Regulated and Fixed Contract Arrangements, and how it is intended to apply to each.</p> <p>The values and governance arrangements for key parameters under the DS3 System Services Fixed Contract Arrangement need to be unambiguous, clearly defined and locked down at time of contract execution, including any restrictions on charging, provisions and limitations on TSO dispatch of services, etc. Where the option for the TSO to change values is a necessity, applicable ranges for parameters should be set out in the arrangements, and in general any changes implemented in arrangements should not place service providers in a materially worse position in relation to either their remuneration under the contract, or their overall costs of service provision, relative to the original values agreed for such parameters under the arrangement.</p>

Question 1: Do you have any comments on the assessment methodology for these products being amended to align with Ramping Margin assessment methodology?

If the same Protocol Document is used for Regulated and Fixed Contract Arrangements it should be made clear under the DS3 Fixed Contract Arrangements that the agreement take precedence over the Protocol Document.

Due to the number of changes to the protocol document in such a short period, it may be worth setting up a panel (such as the Grid Code and T&SC review panels) to discuss changes prior to consultation documents being issued.

Specific Questions:

Energia have argued in previous consultations that individual services should be performance monitored according to the actual provision of the services. Assessing performance of RRD, RM1, RM3 & RM8 based on Fail to Sync events is a flawed process. For example, a unit 20 minutes late to synchronise would receive a Fail to Sync instruction but could successfully provide all four of these services. Also, the performance assessment is based on the number of starts of the unit, which gives inconsistent assessment across different units. Eirgrid have acknowledged that this should be a temporary assessment process and *“Once an enduring assessment methodology is developed, a similar method of Performance Assessment will be employed for each of these DS3 System Services”*. Adding TOR2 and RRS to this assessment process is compounding the issue. We suggest that all six services (TOR2, RRD, RRS, RM1, RM3 & RM8) are assessed according to the provision of the services, i.e. the response to dispatch instructions. If this is not possible in the short term then Energia would strongly recommend that the existing process should be retained until the enduring assessment methodology is developed.

In relation to the DS3 Fixed Contracts the RM1 product is not included within the arrangements, it is not necessarily the case that service providers under these arrangements will be delivering RM1 under standard contracts, and therefore we would welcome clarification on how this proposal is intended to work for fixed contract service providers.

<p>Question 2: Do you have any comments on the Frequency Event definition being amended to make reference to a Significant Frequency Disturbance, which is now defined as a deviation of 0.30Hz from Nominal Frequency?</p>	<p>Energia would welcome some supporting data showing the number of events per year with frequency deviations of 0.5Hz, 0.4Hz & 0.3Hz in order to assess the potential impact of the proposed change. However if the TSO are minded to make a change to the frequency deviation, given that a change from a deviation of 0.5Hz to 0.3Hz is significant and material Energia are of the view that this should be modified and would instead suggest that the deviation is changed to 0.4Hz and monitored for a period of time. We believe that changing the deviation to 0.4Hz would provide an adequate number of events for most units to demonstrate performance and that this could be assessed during the monitoring period. In addition, we note that this change would apply to the Protocol Document only and not to the Grid Code and would caveat that any response is subject to no such corresponding change being applied to the Grid Code.</p> <p>As the frequency definitions have changed to include over frequency events, it should also be clarified that over-frequency events only apply to fixed contracts.</p>
<p>Question 3: Do you have any comments on the application of the Time Zero definition being amended and the removal of the reference to the end of a Frequency Event?</p>	<p>Energia are of the view that rather than simplifying the Performance Assessment process the application of a Time Zero definition will complicate the expected response of the units. This is because it will become difficult for the unit to know when a second or subsequent frequency event has occurred as this is based on the TSO attributing the 'change in frequency to a Significant Discrete Change on the power system'. This poses the question of how the unit would determine in real time if this is a 'Significant Discrete Change' or part of the initial Frequency Event? Therefore to keep the unit expected response clear Energia recommend that no change is made here and that the existing Frequency Event End Time definition is retained (i.e. when the frequency recovers above 49.80Hz).</p> <p>In relation to storage systems we would welcome clarification that this change will not result in additional energy requirements to meet frequency product requirements. Providers need certainty on the maximum potential response required from their systems to adequately size their storage units.</p>

Question 4: Do you have any comments on the amendment to the methodology for calculating Pre-Event Frequency and Pre-Event Output?

Whilst Energia welcome moving the Pre-Event Output and Pre-Event Frequency times closer to the event time, we are of the opinion that the proposed times of T-1.5 and T-0.5 would not be suitable. A one second period is not a suitable time to get a sensible average of frequency/output as the frequency and/or output could be rapidly changing at the time, giving a false indication of the average. Also, measuring the output and frequency so close to the event time would not give an accurate reflection of the pre-event values. For example, at T=0 the frequency is 49.8Hz and dropping (assuming a negative frequency event) and the output is increasing. At T-0.5, depending on the RoCoF, the frequency and output could be measured as they are moving from their pre-event values. Given the above Energia would suggest as an alternative that the pre-event output and frequency are measured between T-15 and T-5. A second, possibly more accurate solution, would be to take the 'best' average of the pre-event frequency and pre-event output. For example, the most stable 10 second period between T-30 and T-5.

In addition, the Consultation states that on occasions where 'significant variation' occurs the TSO will revert to the original timeframe (T-30 to T-60 seconds) to measure both parameters. However it is not clear what would be classified as a 'significant variation' in the Transmission System Frequency and thereby trigger the T-60 to T-30 range to be used. There is a requirement that the triggers for reverting to this timeframe be clearly defined.

Regardless of the decision taken on these matters Energia request that the final methodology is carefully worked through and checked for storage units – e.g. a storage unit may be charging (or otherwise have a negative pre-event output) prior to an event. In particular, the calculation mechanics must not unduly penalise a storage unit due to its reasonably unique response characteristics. We would therefore welcome worked examples demonstrating the calculation methodology where a storage unit is: 1) charging when an event occurs; 2) not charging or discharging when an event occurs, but drawing house load. In each instance clarification of the expected response from the unit based on the measured versus the actual prevailing instantaneous system conditions would be useful.

Question 5: Do you have any comments on the proposal to amend the process for analysing multiple frequency events?

As per our response to Question 3, Energia are of the view that it will be difficult for the unit to know when a second or subsequent frequency event has occurred as this is based on the TSO attributing the 'change in frequency to a Significant Discrete Change on the power system'. This presents a difficulty for the unit to determine in real time if this is a Significant Discrete Change' or part of the initial Frequency Event. In order to keep the unit expected response clear Energia recommend that the existing Frequency Event End Time definition is retained (i.e. when the frequency recovers above 49.80Hz).

It is also not clear if the initial Frequency Event ends once the frequency recovers above 49.9Hz for 30 seconds or it is assessed in parallel with the second frequency event. Section 5.7.1.3 (d) of the Protocol Document states: *"If a Static Response Providing Unit (specifically DSUs, WFPS and Energy Storage Providing Units) has depleted or exhausted its reserve capability during the first Frequency Event, its performance will not be assessed during any subsequent events (up to 15 minutes after the first Frequency Event). If applicable, such providers are required to declare all impacted services down..."*

Currently a unit is not expected to respond to a second frequency event within five minutes of the end of a previous frequency event. This is important to allow units to 'recharge' and be ready for the next event. It is proposed that this allowance will be removed, making it very difficult for units to respond to multiple frequency events. Energia propose that this 5 minute allowance is retained.

We would also like to clarify if a performance assessment will end once a dispatch instruction is issued to a unit. Issuing a dispatch instruction will change the output profile of a unit and the normal assessment methodology will not work due to this new output profile.

Energia note that the provisions under 5.7.1.3 (d) seem to contradict the TSO Recommendation in Section 3.4 of the DS3 System Services Fixed Contracts Procurement Arrangements decision paper (SEM-18-049): *"Service providers will not be counted as unavailable for the full duration of the response times (FFR out to TOR2) and for a 90 minute recovery window following activation (or the first trading period to complete after this time)." We therefore request clarification of if / how 5.7.1.3 (d) is intended to apply under fixed arrangements – please also see our concerns raised in relation to our answer to Question 6 below.*

Question 6: Do you have any comments on the proposed inclusion relating to Availability Performance Monitoring for providers under the Fixed Contracts arrangements?

Energia would welcome clarification of whether the Availability Discount Factor (PA) is intended to apply under fixed contracts. We believe it should not be applied and would note that application of the factor would result in three different penalties associated with system unavailability under the fixed arrangements: 1) removal of immediate payment for the periods system is unavailable; 2) reduction/removal of payments consequent to the unavailability of the system via the fixed contract Availability Scalar; and 3) reduction of payment due to availability forecast errors. This is not economically rational for the reasons identified by EirGrid below – i.e. see highlighted wording of the EirGrid Recommendation on the Volume Capped procurement consultation¹ which seems to clarify that the forecast availability scalar should **not** be applied on top of the 97% availability scalar.

Event Performance Scalar

The TSOs can confirm that the 'event' performance scalar, as outlined in the volume uncapped arrangements, will apply for service delivery under Volume Capped. This scalar is explicitly outlined in the System Services Regulated Arrangements Protocol¹³.

Under the Volume Uncapped arrangements, the Performance scalar (P) will consist of two components:

- Performance Availability (P_A)
- Performance Incident Response Factor (P_E)

The value of the Performance scalar will be a multiple of the two components:

$$P = P_A \times P_E$$

P_A will account, in the uncapped arrangements, for the ability of a Providing Unit to accurately forecast its availability to provide System Services. **Given the requirement for high availability in the Volume Capped, we would propose that this scalar is, instead, used to account for availability, as per the proposed scalar and percentage thresholds.**

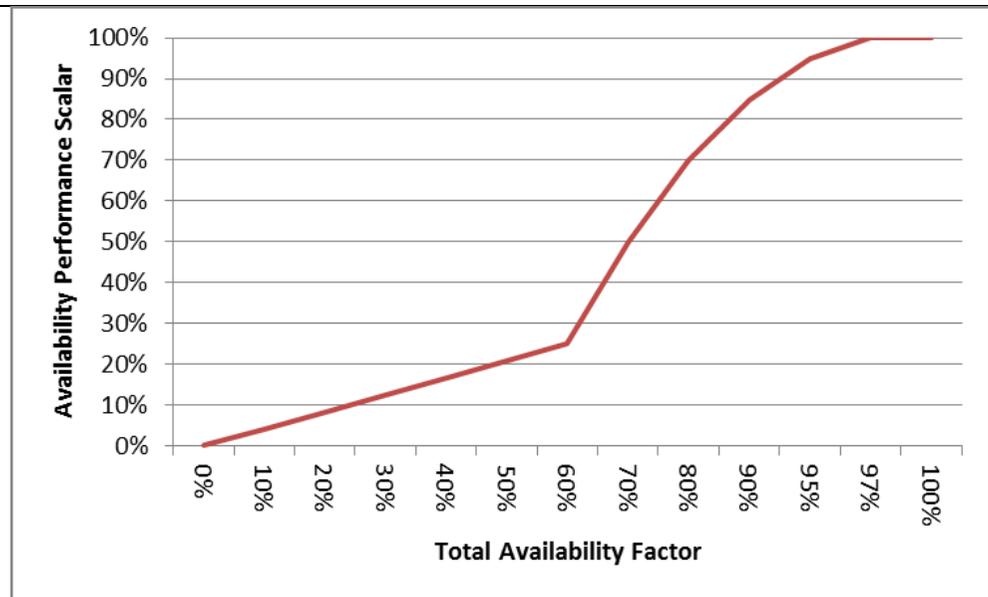
Energia request that this position is clearly and unambiguously reflected in the drafting of the protocol document.

¹ Section 4.6.2.3 of Recommendation on DS3 System Services Volume Capped Competitive Procurement – DS3 System Services Implementation Project (published by EirGrid on 6th September 2018)

In general the grace period for Performance Assessment should align with the grace period provided for the availability scalar under the DS3 Fixed Contracts Arrangements, and the period of time afforded for both should be sufficient to allow appropriate management of a storage systems State of Charge (SoC). As set out in our response to the DS3 Fixed Contract Consultation the current 90 minute grace period proposed for the availability scalar is insufficient, and imposes unnecessary costs and risks on service providers. It effectively requires a unit to recover SoC within a 30 minute window once I-SEM gate closure is taken into account. This imposes significant dispatch risk on storage service providers (the units bid/offer may not be accepted in the market during the available trading period), and results in unnecessary inflation of capex / opex costs, either due to imposing a requirement to oversize systems, or carry a high MIC to manage SoC.

Under the Fixed Contract Arrangements we also note that service providers' availability will not be counted during a frequency event and for 90 minutes post-event (or the end of the first trading period to complete after this time). Notwithstanding our comments above, we believe similar relief should be in place for the performance scalar. This ensures the approach for performance and availability assessment are consistent, and will allow storage units more time to recharge following a frequency event prior to incurring an adverse performance event scalar should a subsequent frequency event occur during this period. Please note our comments recommending extension of the current proposed 90 minute time period to facilitate adequate provisions for SoC management under the arrangements.

Energia furthermore recommends defining a continuous curve to calculate the Availability Performance Scalar. The advantage of defining a continuous curve as opposed to a stepped function, as currently being proposed, is it avoids cliff edge effects and more accurately represents the intended outcome of the function i.e. that the Availability Performance Scalar increases as the Total Availability Factor increases.



While noting the decisions already taken on fixed contract availability requirements, and our support for the ex-ante provision of the SNSP scalar, we observe that imposing the availability scalar is effectively a double penalty on service provision (i.e. on top of the removal of payment), while imposing such a high availability requirement via the scalar presents a barrier to revenue stacking, raising the effective costs of DS3 service provision for the consumer, as well as reducing the overall utility of the asset. We therefore request that the TSO reconsiders whether the stepped availability scalar curve as currently proposed achieves ‘best value’ for the consumer when considered on a holistic basis.

Treatment of Planned Maintenance

Further to the above, Energia request that the granularity for assessing the utilisation of maintenance days is set as low as possible. For example, if a unit has notified 6 hours of planned maintenance on a given day this is counted as one quarter of a maintenance day in terms of the planned maintenance allowance rather than a full day. Furthermore, given the modular nature of storage systems that planned maintenance can be allocated on a portion of

the system such that if a 50MW system notifies unavailability of 25MW due to planned maintenance for 24 hours this is deemed to utilise only a half day of the planned maintenance allowance. We would welcome clarification of whether a service provider will be paid for periods of planned maintenance up to the allocated planned maintenance allowance under fixed contract arrangements. Regardless, notified planned maintenance should not have a negative impact via either the Performance Event Scalar or the Performance Availability Scalar and we would welcome this being clearly set out in the fixed contract agreement. We furthermore request that the Event Performance Scalar is not applied when a providing unit is declared unavailable for unplanned maintenance as it will already be penalised due to loss of payment and the Performance Availability Scalar. Again we would appreciate if this could be made clear in the fixed contract agreement.

Additional Comments on Sections of Protocol Document:

Introduction

Page 5 - the last paragraph states that payment rates are included in the Statement of Payments. For the Fixed Contracts however the payment rates are fixed at the time of the auction for the duration of the contract.

Figure 1 is a bit misleading for fixed contracts. Temporal Scarcity Scalar values for Fixed Arrangements should be in the Agreement and not in the Protocol Document.

Section 3.3.3

Any recharge limitations and limits on ramp rates must be clearly defined in the DS3 System Service Fixed Contracts Agreement. These must not be outlined in the Protocol Document due to the less onerous governance arrangements in place for that document and the commercial risks changes to ramp rates could have on service providers given the already tight restrictions on SoC management. In general, significantly too much latitude is provided to the TSO in relation to SoC management for storage units under the current Fixed Arrangements given the commercial implications of storage units not responding or being available due to being unable to recover SoC under the performance and availability scalars.

We would like to confirm that the last bullet point in this section only applies to the first frequency event in any series of events. For a storage unit, in the event of there being a number of back to back frequency events, if you have not been able to recover SoC between events (so insufficient energy stored to meet contractual obligations) you may not be able to operate for the full duration of any subsequent event without recovering your resource.

Section 3.4.1

Operational requirements for service providers with Fixed Contracts should be defined in the contract agreement. It needs to be clear in the Protocol Document that, for Fixed Contracts, regardless of later versions of the Protocol Document, operational requirements are set out in the agreements.

Page 13 - the second from last bullet point should be qualified such that it only applies to the first event in any close sequence of events and that the service provider's obligation is only to deliver from FFR out to TOR2 for any one event – i.e. so there is a maximum defined response across all products.

Page 14 – the second from last paragraph, for service providers with Fixed Contracts this should just be what is in the Agreement and if changed from this it should not result in the service provider being paid less or having otherwise higher opex / capex costs.

Section 5.8.2.6, 5.9.2.4, 5.10.2.5

The new calculations for the Performance Incident Scaling Factor for POR, SOR & TOR1 have removed the 10% tolerance which was a fundamental part of this calculation. There is no rationale given for the removal of this tolerance and it is not mentioned in the consultation document. Energia propose that this tolerance is retained in the calculations.

Section 5.8

Although not a change to the existing Protocol Document, measuring the achieved POR at a point in time is a very punitive method of assessment. At the instant in time of the maximum frequency deviation the system frequency and unit output are usually changing rapidly. Any slight inaccuracy in measurement during assessment could result in a large inaccuracy in measurement of achieved POR. We suggest that the achieved POR should be averaged over the

	<p>POR period.</p> <p>Section 5.9.2.4 & 5.10.2.4 It is not clear from the Protocol Document if the achieved SOR & TOR1 is averaged over the period as with the expected SOR & TOR1. We have assumed that is the case but this should be clarified in the Protocol Document.</p> <p>Section 5.11.1.2 Please can you confirm that a positive tolerance will work for over frequency response, i.e. it does not need to be a negative tolerance.</p> <p>Section 5.23 Figure 5 appears in the Protocol Document twice, one with the end cut off the diagram (Page 54). We are assuming these are the same diagram and accidentally included twice – please confirm.</p> <p>Section 6 The Availability Performance Scalar table is included in the Fixed Contract Agreement Schedule 2 and is also included in the Protocol Document. This should only be included in the Agreement as the Protocol Document is subject to change.</p> <p>The Monthly Weightings table is included in the Protocol Document only. Again, this should only be included in the Agreement as the Protocol Document is subject to change.</p> <p>The Total Availability Factor, Total Available Volume and Total Contracted Volume are defined as having the meaning given in the Fixed Contract Agreement (Page 89), yet they seem to be defined in the Protocol Document also in Section 6.</p> <p>Section 7 Value of Temporal Scarcity Scalar for Fixed Contracts should be set out in the Agreement and advised to service providers in an appropriate and defined period in advance of the auction.</p> <p>Glossary Frequency Event Threshold is defined as “...a deviation in Transmission System Frequency of 0.3</p>
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	<p>Hz, or as determined by the TSOs...". Wording to the effect that a Frequent Event Threshold can be determined by the TSO is not appropriate and should be removed from the definition.</p> <p>A number of reference errors are present in the glossary section.</p> <p>Service Provide Workshops</p> <p>Energia kindly request that Eirgrid hold workshops covering key areas of the Fixed Contract arrangements such as the application of performance and availability scalars, the qualification processes, relevant auction processes (including bid submission), etc.</p>
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DS3 Industry Consultation on the DS3 System Services Protocol Document ESB Customer Solutions Response

30/01/2019

ESB Customer Solutions welcomes the publication by EirGrid and SONI of their consultation on the DS3 System Services Protocol Document. This is the first opportunity that Demand Side Aggregators have had to input and provide feedback to the Performance Monitoring Procedures, Operational Requirements and minimum standards for aggregation units like ours. We welcome this opportunity to input to what is a complex but important improvement program for the Irish Grid, and to provide a demand side response perspective on the changes proposed by the TSO's and the opportunity to highlight potential impacts on the fledgling provision of demand side response delivery of system services.

There have been a number of issues with the startup of provision of DS3 services for demand side aggregators. The link between energy provision, system services provision and system capacity provision is still not clear. Demand response aggregators were surprised when capacity provision was linked to the provision of DS3 ramping services during DS3 testing and certification. This was never outlined in any of the extensive DS3 consultations or TSO documentation published and has severely limited the onboarding of new DS3 services from demand side customers. The initial implementation of I-SEM by design does not allow demand side aggregators to earn energy in the balancing market, and the EU Commission as part of its state aid approval has called for this to be remedied *"The Commission however notes that the situation that DSUs cannot access energy payments needs to be remedied in the medium term"* (Brussels, 24.11.2017 C(2017)7789 final). But for the immediate term Demand Side Aggregators are therefore comfortable providing faster frequency response services (as these have a observable technical event frequency which can be measured and predicted to some extent) but are often reluctant to provide despatchable services which have a larger energy component especially where there is no guidance or guarantee as to how often those despatchable services would be exercised by the National Control Centres. Demand Side aggregators are therefore very concerned that this DS3 Protocol Document consultation seeks to change the definition of services (specifically TOR2) from Reserve to Ramping as this moves them from automated frequency response to NCC despatched. This puts demand side aggregators at a disadvantage for two reasons, firstly the frequency of use or conditions under which NCC might use the ramping service is not outlined anywhere (what is the difference between a 5 minute energy balancing action and a TOR2 despatch?), and secondly ramping services are being artificially bundled with I-SEM capacity contracts as part of the testing/certification process which is limiting the amount of DS3 services that end customers can provide. We believe that the proposal to reclassify services as Ramping instead of Reserve is in direct contradiction of the wording of the signed DS3 contracts, and therefore any change to the protocol document service definitions cannot be implemented without new DS3 contracts for volume uncapped participants.

While we appreciate that considerable progress has been made on DS3 implementation and that Ireland is progressive by international standards, the frame of reference for its

introduction has been the Grid Code, Trading and Settlement Code and historical Harmonised Ancillary Services requirements which have been formulated around conventional generation. These are not always suitable for ‘new energy’ participants like demand side aggregation and we call for more consideration of the technical characteristics of demand side service provision. Ultimately most of the revenue from demand side aggregation finds its way back to the customer, which is the win/win position for TSO and customer.

In summary we welcome the opportunity to input to the Protocol Document. DS3 provision from demand side response has been difficult to implement to date and there were some unforeseen TSO implementation issues which are limiting the ability of demand side response to provide services. There is an issue with I-SEM implementation which prevents demand side units earning energy for the immediate future, and we would call for this to be recognised as a special factor when changing the Protocol Document. We have a major concern with the proposal to change the definition of services from reserve to ramping for all service providers and do not believe that this is consistent with the signed DS3 contracts for volume uncapped. We have some additional comments on the other changes proposed which are outlined below, and would request that the specific characteristics of demand side customers and aggregators are considered as increased demand side participation in DS3 service provision provides the best value for money for the System Operator and end customer.

<i>Question</i>	<i>Response</i>
<p><u>Question 1:</u> Do you have any comments on the assessment methodology for these products being amended to align with Ramping Margin assessment methodology?</p>	<p><u>Question 1:</u> We believe that the TSO’s are prohibited from changing the definition of TOR2/RRS in the Protocol document as these services are already very clearly defined in the DS3 System Services Regulated Arrangements contract between TSO’s and providers. TOR2 and Replacement Reserve are very clearly defined as reserve services in the Contract (reserve is even part of the service name!) and it is wholly inappropriate to try and reclassify these services after the fact as ramping/despatchable services. It is unfortunate that TOR2 testing has to date been carried out using the performance assessment for Ramping Margin, we have objected to the TSO that testing to date is not aligned with the actual contracted service definition and have not received a satisfactory response. TOR2 and Replacement Reserve should continue to be treated as per their contracted (reserve) definition. They should not be defined as reserve services but measured and paid for as ramping services. This is important for demand response aggregators who have in turn contracted with customers for the defined services, it is unreasonable to change service definition in a “Protocol Document”.</p> <p>Treatment of TOR2/Replacement Reserve as ramping services artificially limits the amount of service that can be provided from demand side as ramping services have been artificially linked to capacity contracts via technical ‘ramp rates’. There should be no</p>

<p><u>Question 2:</u> Do you have any comments on the Frequency Event definition being amended to make reference to a Significant Frequency Disturbance, which is now defined as a deviation of 0.30Hz from Nominal Frequency?</p> <p><u>Question 3:</u> Do you have any comments on the application of the Time Zero definition being amended and the removal of the reference to the end of a Frequency Event?</p> <p><u>Question 4:</u> Do you have any comments on the amendment to the methodology</p>	<p>link between DS3 service provision and capacity provision, this has never been outlined or consulted on by the TSOs. This has come about by the TSO bundling of DSU and DS3 into a single technical providing unit and applying the same ramp rate to DSU capacity and DS3 services. For aggregators there is a major difference between reserve services (unrestricted by capacity ramp rates) and ramping services (which places severe restrictions on the service amount allowed through technical ramp rates). The response factors for both TOR2 and RRS should not be set equal to the Performance Incident Response Factor calculated for RM1. The quarter hourly measurement intervals for RM1 are not technically suitable for measuring the much faster reserve service response times.</p> <p>We would call on the TSO's to immediately revert to testing and certifying TOR2 and Replacement Reserve as reserve services per contract and to remove these proposed changes to reclassify them as Ramping Services from the proposed new Protocol document.</p> <p><u>Question 2:</u> In general we would agree with changing thresholds to 49.7 Hz (or 50.3Hz) as the additional data will allow more data points to evaluate a providing unit's performance.</p> <p>We have some reservation in terms of the Frequency Event Time Zero proposed Modifications. For faster DS3 services (up to and including TOR2) the frequency deviations are detected and responded to locally in the customer premises via a local frequency meter. If an event has no specific duration or end time, it is not clear how a demand side frequency response unit can 'know' an event is over and allow the customer assets to resume normal operation. More detail on the practical implementation of this would be required to fully assess what is being proposed. This question is also part of the question 5 proposals on multiple frequency events. Demand response customer assets may not have the capability to respond to multiple frequency events within what was previously defined as a single event window, and it is unreasonable to introduce additional technical requirements of the customer assets at this stage.</p> <p><u>Question 4:</u> We believe that in the absence of sub-metering of demand response assets (being pursued in other jurisdictions), demand response from customers is measured via the incomer. As there are multiple things happening behind the meter (as the</p>
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DS3 Industry Consultation on the DS3 System Services Protocol Document
 – ESB Customer Solutions Response

<p>for calculating Pre-Event Frequency and Pre-Event Output?</p> <p><u>Question 5:</u> Do you have any comments on the proposal to amend the process for analysing multiple frequency events?</p> <p><u>Question 6:</u> Do you have any comments on the proposed inclusion relating to Availability Performance Monitoring for providers under the Fixed Contracts arrangements?</p>	<p>controlled assets are responding, other parts of the customers processes may be acting differently), it is therefore important that some averaging is applied to best estimate and determine actual response from a customer’s premises. We would therefore not agree with the proposed changes to measure pre-event output over a very small interval (the T -1.5 to T -0.5 proposed) and would ask that for demand response providers the original T-30 to T-60 seconds are left in place for evaluating demand response provision.</p> <p><u>Question 5:</u> We would not agree with the proposal to amend the process for analysing multiple frequency events. The requirement to have a 5 minute interval post an event would have been an important consideration when we evaluated customers assets suitability for DS3 response, and we would object to amending the response characteristic timing requirements at this late stage.</p> <p><u>Question 6:</u> Availability performance monitoring is a new requirement introduced solely for the Volume Capped / Fixed Contract arrangements. We would point out that these do not apply to volume Uncapped Providers and creates a distortion between both type of service providers which may not be desirable. There were other differences between Volume Uncapped and Volume Capped service provision in the area of Over Frequency Response (OFR) which does not appear to be addressed in the new Protocol Document at all? In general we would believe that additional services like OFR should be paid for and offered to both Volume Capped and Volume Uncapped providers (and not just bundled in as a ‘free service’ requirement for volume capped tenderers). The availability performance monitoring criteria are very onerous and appear to be designed to attract only very high availability technologies (batteries) which is not really aligned with the principle of being technology neutral.</p>
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We thank you for your consideration of these points.

Respondent’s Details

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DS3 System Services Consultation – Protocol Document

This questionnaire has been prepared to facilitate responses to the consultation. Respondents are not restricted to this template and can provide supplementary material if desired.

Please send responses in electronic format to DS3@eirgrid.com or DS3@soni.ltd.uk

Respondent Name	<i>William Carr</i>
Contact telephone number	<i>+353 1 702 6664</i>
Respondent Company	<i>ESB GT</i>

Note: It is the TSOs' intention to publish all responses. If your response is confidential, please indicate this by marking the following box with an "x". Please note that, in any event, all responses will be shared with the Regulatory Authorities.

Response

confidential

The closing date for responses is Friday 30th January 2019.

General Comments:

DS3 Governance Structure

ESB GT welcomes the opportunity to respond to the consultation on the DS3 Protocol Document. Given the Protocol Document sets out the operational and performance monitoring requirements of the DS3 framework and is central to both maintaining the assurance the TSOs require in securing the system through the services provided under DS3 framework and equally the commercial position of service providers, the adherence to transparent governance practises in developing and implementing revisions to the Protocol Documents is paramount to ensuring confidence in the integrity of the framework.

ESB GT note however that unlike the other aspects of the industry, namely the energy and capacity markets, the DS3 framework does not have an open governance structure that allows participants to raise modifications to the framework. In part this is a function of the directly contracted nature of the DS3 framework but ESB GT considers that given the degree of importance and expected growth in the system services market, consideration such be given to instituting a dedicated forum that would meet regularly to allow new and existing service providers, along with the TSOs, to propose and discuss modifications to the DS3 framework and related processes, initially this forum could be held as an adjunct to the Joint Grid Code Review Panel meetings.

Performance Scalar Structure

ESB GT recognises the significant work the TSOs have done since the Interim DS3 agreement introduced the first Protocol Document and the related application of a performance scalar to develop and refine this aspect of the DS3 framework. However it is ESB GT's view that there remains a significant flaw at the core of the calculation of the performance scalar. This flaw is the unbalanced nature of the incentive. The performance scalar currently basis on solely penalising service providers. A balanced incentive would see service providers that reliably deliver their contracted service provision being rewarded, and those that fail to deliver being censured. ESB GT believe that this balanced incentive can be achieved readily within the established framework in a cost neutral manner.

It is proposed that in determining the performance scalar to be applied to a service provider for a given service, their performance is compared to the system average performance for that services in that period. In this way a service provider that is above average would have a performance scalar greater than one and a service provider who is below average would have a performance scalar less than one. Where the system average is calculated on the basis of the volume weight service delivered in the period there would be no overall impact to the cost to the TSO for provision of the service (compared to the cost where all service providers where perfectly reliable) it would also increase the incentive to improve performance, something that we understand is central to the TSO's incentive design.

It is considered that a balanced incentive of this nature would shift the dynamic in the delivery of services so that contracted service providers would be incentivised to compete to be increasingly reliable and also that the performance monitoring framework is as effective as possible in assessing the reliability of all service providers. It would also remove any risk of the TSOs being perceived as applying the performance scalar as an expenditure control mechanism rather than as a tool to ensure the security of the system is not compromised by poor performance.

ESB GT would welcome the opportunity to discuss this proposal further with EirGrid and SONI.

Measurement Error Bias

ESB GT would like to raise our concern in relation to a change to the Protocol Documents made under the Interim Arrangements. The revision to Version 2.1 of the Protocol Document under the Interim Arrangements (which has been inherited by the Regulated Arrangements, although not shown in the redline Protocol Document published alongside the consultation) amended the Reserve Specific Event Factor (S) so that the calculation of this parameter became the “Achieved Response divided by the Expected Response” whereas previously the Expected Response was adjusted by the OR Tolerance (defined as $\text{MIN}(10\%, 1\text{MW})$), ESB GT believes that this revision will result in erroneous assessments. The OR tolerance was in place to take account of measurement errors in the MW response of a unit. Under the revised calculation where there is a measurement error of 1 MW for a given event where the level of response is low then the S parameter calculated will result in the unit being deemed to have failed the event and result in a significant impact on the providing unit’s system services revenues. We believe that this change should have been flagged more transparently and we also think that it has now become disproportionate. This measurement error itself should not be a proxy for performance and therefore this change should not be adopted.

For example, in a given event a unit is expected to deliver 3MW of SOR, as a result of a measurement error the MW response is recorded as 2MW. The S parameter calculated will be 0.67, as a result the unit will receive an event scaling factor (Q) of 1 (Fail). If there were to be no further events for six months the providing unit would see its annual SOR revenue reduced by 25%. This outcome would be manifestly unfair particularly given the fact that if a measurement error resulted in the MW response being recorded as 4MW the Reserve Specific Event Factor parameter is capped to a value of 1. In this way there is a significant bias introduced to the impact of measurement errors on service providers. ESB GT considers that the OR Tolerance should be reinstated in combination with the proposed rebalancing of the incentive structure above.

Assessment of Operating Reserves

Clarity is sought on the proposed basis of assessment of operating reserves. The revised Protocol Document wording removes reference to the averaging of any calculated deficit in a sample period over the service window (e.g. averaging over T+15 to T+90) however it is not explicitly stated as to how the calculation will be made in future. While it is defined that the sample point Expected OR value will be averaged over the service period to give the Average OR Requirement, this term is not referenced in the calculation of the Performance Incident Scaling Factor (S).

ESB GT is strongly of the view that if it proposed to move away from the calculation the Expected OR and Achieved OR as the average of the sampling period values over the service window this must be explicitly stated and justified. The impact of this change, if intended, is so fundamental that ESB GT could not accept its implementation without further consultation including a detailed assessment of the impact this would have on providing units.

Given the increasing oscillatory nature of the system frequency post event and the accepted innate, albeit short, lag between changes in system frequency and the response of providing units, removing the averaging across sampling periods would fundamentally undermine the performance monitoring framework as the ability of a providing unit to pass an event would become a function of the system frequency profile.

Assesment of FFR

In addition to the concerns raised above in relation to the assessment of operating reserve, the proposed assessment methodology for FFR make no provision for the impact of inertia on the recorded response of providing units. Where an FFR providing is directly coupled to the system and during the FFR timeframe the system frequency begins to recover the providing unit will be seen to draw back from the system the energy that was given up as frequency was falling (thereby reducing the rate of change). The proposed methodology will in effect prevent these units from being assessed as delivering their contracted response and as such falls short of the TSO principle of being technology neutral.

ESB GT is of the view that an Inertia Credit for directly coupled service providers of FFR is required, similar to that applied in the assesment of POR, before the assessment of FFR can be reliably undertaken.

<i>Question</i>	<i>Response</i>
<p><u>Question 1</u>: Do you have any comments on the assessment methodology for these products being amended to align with Ramping Margin assessment methodology?</p>	<p>ESB GT supports the proposal to align the assessment methodology for TOR2 and RRS to the Ramping Margin products. However, as recognised in the consultation paper the application of EDIL ‘Fail to Sync’ Instruction as the basis for the assessment of performance for ramping services was intended to be a temporary measure in advance of the development of an enduring methodology.</p> <p>The application of the ‘Fail to Sync’ methodology represent a significant risk for service providers whose running regime sees few starts other than following scheduled outages but who may cycle from min to full load regularly and so provide a significant proportion of the ramping requirement of system. ESB GT suggests that the TOR 2 and RRS should remain unchanged until an enduring ramping service performance methodology is developed which recognises ramping service provision of this nature.</p>
<p><u>Question 2</u>: Do you have any comments on the Frequency Event definition being amended to make reference to a Significant Frequency Disturbance, which is now defined as a deviation of 0.30Hz from Nominal Frequency?</p>	<p>ESB GT welcomes the proposal and considers that the resulting increase in number of assessable events will increase the resolution of the performance monitoring framework and mitigate against service providers being defined as Data Poor. However given the operational impact of an increase in the number of events in terms of reviewing the resulting system event reports and performance assessments, ESB GT</p>

Question 3: Do you have any comments on the application of the Time Zero definition being amended and the removal of the reference to the end of a Frequency Event?

would welcome guidance from the TSOs as to the number of assessable events that they would have seen on the system under the revised definition of significant Frequency Disturbance in the last 12 months. In addition ESB GT is concerned that aspects of the performance monitoring framework have tailored to the current definition of an assessable event, for example the derivation of the POR Inertia Credit. Before this change is implement ESB GT believes that a trial period should be applied to test whether all aspects of the performance monitoring framework operate effectively for these smaller deviations in system frequency.

ESB GT welcomes the additional clarity that the Time Zero definition brings. The reference to end of a Frequency Event in the current version of the Protocol Document is related to the assessment of multiple events. In the current version of the Protocol Document if a second frequency event happens within five minutes of an initial frequency event the second event is not assessable. It is considered that this provision is intended to recognise that providing units have innate limitations such as combustion dynamics or boiler stability which limit their ability to respond to a series of frequency events in rapid succession. Noting that as the level of inertia on the system has fallen in recent years, the profile of frequency post a system event has been increasingly oscillatory, ESB GT accepts that the current definition for the end of a frequency event as system frequency rising back above 49.8 Hz requires amendment.

Question 4: Do you have any comments on the amendment to the methodology for calculating Pre-Event Frequency and Pre-Event Output?

However, ESB GT does not agree with reducing the window within which a second frequency event will be assessable from 5 minutes to 30 seconds.

ESB GT welcomes the proposal to amend the methodology for the calculation of Pre-Event Frequency and Pre-Event Output. Determining the window over which these parameters should be determined is a balance between accurately capturing the conditions the providing unit was operating under immediately before the system event while not allowing the start of the event to be included. ESB GT would welcome clarity on the basis under which the TSOs determined the proposed window of T-1.5 seconds to T-0.5 seconds. Also the revised Protocol Document provides for reverting to the current T-60 seconds to T-30 second where there is significant variation in system frequency in the T-1.5 seconds to T-0.5 seconds window but with no definition of significant variation given which leads to concerns in relation to transparency and consistency.

Alternatively the Pre Event Frequency and Pre-Event Output could be based the average values in the most stable 20 second window over the period from T to T-60. With this window being defined as the minimum of the sum of absolute deviations from nominal frequency.

Question 5: Do you have any comments on the proposal to amend the process for analysing

<p>multiple frequency events?</p> <p>Question 6: Do you have any comments on the proposed inclusion relating to Availability Performance Monitoring for providers under the Fixed Contracts arrangements?</p>	<p>Please see response to Question 3</p> <p>ESB GT supports the inclusion of the Availability Performance Monitoring under the Fixed Contracts arrangements. However as noted in response to the earlier consultation on the Fixed Contracts ESB GT remains concerned with the SEMC decision in relation to the risk of unavailability due to network limitations resting wholly with services provider.</p> <p>In SEM-15-071 (Outturn Availability Decision Paper) the SEMC determined that generators that are disconnected from the network due to system outages would be allowed to declare themselves available after 5 days of annual maintenance or due works to connect unrelated generation assets, in this way generators are protected from the impact of long term network outages in terms of their position in the energy and capacity markets. It is worth noting that this decision was made under the SEM arrangements and the subsequent implementation of the ISEM arrangements and the CRM RO mechanism have significantly change the risk faced by generators when disconnected from the system in the first five days of annual maintainance. It is ESB GT view that this change in market arrangements would justify the revision of the outturn</p>
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	<p>availability decision with a view to reducing to zero the number days disconnected generator are unable to declare themselves available at least until the secondary market for reliability options is established.</p> <p>ESB GT believes that the principle that drove the outturn availability decision should be applied to services providers under the Fixed Contract process. It is proposed that a similar position as the Outturn Availability decision be adopted so that service providers disconnected from the system through actions of their connecting system operator not be penalised. To achieve this, and subject to the revision of the Outturn Availability decision as discussed above, it is proposed that if the service provider is disconnected for more the 5 days of annual maintenance or due works to connect unrelated generation/service provision assets the unit should be deemed to have been available for the proposes of both remuneration and the availability performance scalar.</p>
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DS3 System Services Consultation – Protocol Document

This questionnaire has been prepared to facilitate responses to the consultation. Respondents are not restricted to this template and can provide supplementary material if desired.

Please send responses in electronic format to DS3@eirgrid.com or DS3@soni.ltd.uk

Respondent Name	<i>Frank Burke</i>
Contact telephone number	<i>00353 879075072</i>
Respondent Company	<i>Irish Energy Storage Association (IESA)</i>

Note: It is the TSOs' intention to publish all responses. If your response is confidential, please indicate this by marking the following box with an "x". Please note that, in any event, all responses will be shared with the Regulatory Authorities.

Response

confidential

Introduction:

The Irish Energy Storage Association (IESA) welcomes the opportunity to make a submission to this Protocol Consultation. This is the first such submission from IESA, having been established last year. We look forward to having the opportunity of making further valuable submissions and contributions on energy storage related matters in the future.

We have answered the questions listed in the Consultation but highlight a key matter here, namely that of providing greater certainty to investors to come into the market to provide the relevant services; there are a number of proposals in the Protocol that have the effect of introducing uncertainty and thereby leading to higher costs for electricity customers in the longer term. One of the purposes of the Volume Capped “Fixed” contracts is to provide certainty to investors. However, this is undermined by having operational requirements, minimum standards and weightings in the Protocol document which can be changed during the lifetime of a contract. Also, there are several decisions/definitions which are outstanding and the outcome of which can have a material impact on plant design. DS3 bids are now just months away and hence final positions from EirGrid are required.

Question	Response
<u>Question 1</u> : Do you have any comments on the assessment methodology for these products being amended to align with Ramping Margin assessment methodology?	Volume Capped contracts will not include RM1 so the Response Factors for TOR2 cannot be set equal to the Performance Incident Response Factor calculated for RM1. We urge that this be re-examined.
<u>Question 2</u> : Do you have any comments on the Frequency Event definition being amended to make reference to a Significant Frequency Disturbance, which is now defined as a deviation of 0.30Hz from Nominal Frequency?	The new definition is acceptable in the context of the Frequency Event Threshold being 0.3Hz. However the inclusion of the phrase “ <i>or as determined by the TSOs</i> ” introduces uncertainty which increases risk for investors in new plant under the Volume Capped contracts and should be removed. This is another example of the additional uncertainty referred to at the top of this submission.

<p><u>Question 3:</u> Do you have any comments on the application of the Time Zero definition being amended and the removal of the reference to the end of a Frequency Event?</p>	<p>This proposal is acceptable, as the required output from a plant will depend only on:</p> <ul style="list-style-type: none"> • the Frequency Response Curve (FRC) with its contracted values of Trigger Frequency and Trajectory, and • the time over which it has to maintain the relevant output (in accordance with the FRC) determined by the Reserve Products for which it has contracted (FFR, POR, SOR....)
<p><u>Question 4:</u> Do you have any comments on the amendment to the methodology for calculating Pre-Event Frequency and Pre-Event Output?</p>	<p>Regarding the required output, the Pre-Event Frequency is no longer relevant in relation to the calculation of Expected FFR or POR for batteries and other non-synchronous plant. The required output will depend only on the frequency Response Curve and the absolute values of the Trigger Frequency and the Trajectory. These are set at 49.8Hz and 0.3Hz for the Volume Capped contracts.</p> <p>We do not have any comment to make on the amendment to the methodology for calculating Pre-Event Frequency and Pre-Event Output. The reason for this is that the Pre-Event Output is relevant only to the extent that it affects the Available Volume of Reserve e.g charging the batteries increases the available volume. It does not affect the required output for FFR (or POR which is the same, just in different timeframes from t=0). At any point in time, the required output is purely a function of the actual frequency and the contracted values of Trigger Frequency and Trajectory. The required output is independent of either the frequency or output Pre-Event, unlike conventional synchronised plant,</p>
<p><u>Question 5:</u> Do you have any comments on the proposal to amend the process for analysing multiple frequency events?</p>	<p>The duration of 30s for the frequency to be above 49.90Hz to make it a new Performance Incident is very short. It is a major change from the earlier concept of not counting the performance of a second Event within 5 minutes of the end of a previous Event. We understand the benefit this could provide to EirGrid but it potentially requires significant additional energy storage with the associated higher costs which would have to be passed on to the end consumer. We urge</p>

	<p>that this be re-examined.</p> <p>It is not clear why, under (d) the 15 minutes allowed for Energy Storage-providing units only applies to Static rather than Dynamic units. It should apply to Dynamic as well. It needs to be clarified whether the 15 minutes is from the start or the end of the previous Event.</p>
<p><u>Question 6:</u> Do you have any comments on the proposed inclusion relating to Availability Performance Monitoring for providers under the Fixed Contracts arrangements?</p>	<ul style="list-style-type: none"> • We urge that the proposed figures for the Availability performance Scalar are revisited. We believe they are too penal, where for example, a plant with 94% availability would be hit with a scalar of 85% as well as losing revenue anyway because it is only available 94% of the time. • The proposal that the contract can be terminated if the Availability Performance Scalar is zero for 3 consecutive months does not seem pragmatic. This should be changed to 6 months to take account of practical issues that could arise in any power plant facility. For example, the loss of a long lead-time item such as a transformer could result in a single prolonged outage of the plant during its lifetime when account is taken of time for procurement, installation and commissioning as well as the lead-time of the equipment. • IESA proposes that the Availability Performance monthly weightings as outlined in the Consultation document be included in the Contract rather than the Protocol document. These apply only to the Fixed contracts. One of the purposes of the Fixed contracts is to provide certainty to investors. This certainty is undermined by having operational requirements, minimum standards and weightings in the Protocol document which can

	be changed during the lifetime of the contract.
Other Points	<p>5.2</p> <p>The value of the Availability Discount Factor (P_A) to EirGrid for battery plants and other high availability technologies will be significantly less than for conventional plant. The uncertainties around how this will operate and what numbers will be used introduces unnecessary risk for new build projects trying to raise finance. We propose that the Availability Discount Factor does not apply to Capped contracts. IESA understands that EirGrid is open to not applying the Availability Discount Factor to Capped contracts.</p>
	<p>5.11.1.2</p> <p>IESA urges that the proposed Performance Assessment for FFR be revisited, particularly in relation to a difficulty with one single sample point. For example, if there is any problem with one single sample point, even if all the other sample points are within tolerance, the response to the Event is assessed as a Fail. This seems disproportionately penal. The original assessment methodology for FFR and the current assessment methodology for all other products is more reasonable and provides sufficient incentive to perform well. The original methodology for FFR should be applied.</p>
	<p>5.11.1.1</p> <p>Can EirGrid clarify the following the last paragraph means. <i>“Notwithstanding the methodology used in the determination of Time Zero for the purposes of Performance Assessment, the FFR Response Time will be assessed for each Providing Unit utilising the Providing Units individual Reserve Triggers and not the response from Time Zero.”</i></p>

	<p>5.7.1.1</p> <p>states that “<i>The Time Zero (T) for a Frequency Event is the time at which the Frequency first passes through the Reserve Trigger of the Providing Unit.</i>” Our reading of this is that there is not a single Time Zero for an Event. Each providing Unit has its own Time Zero for an Event depending on its Reserve Trigger.</p>
Glossary Terms	<p>Energy Storage: the definition refers to “consumption”. In practice the energy is exported back into the grid. It is not consumed on site. A generic term like “usage” may be more appropriate.</p>

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Irish Wind Energy Association
Sycamore House,
Millennium Park,
Osberstown,
Naas,
Co. Kildare.

RE: IWEA response to the DS3 System Services Consultation.

30 January 2019

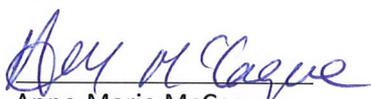
Sent via email to : DS3@eirgrid.com

Dear EirGrid,

The Irish Wind Energy Association (IWEA) is committed to the promotion and education of wind energy issues and plays a leading role in the areas of conference organisation, lobbying and policy development on the island of Ireland. IWEA is committed to promoting the use of wind energy in Ireland and beyond as an economically viable and environmentally sound alternative to thermal or nuclear generation.

IWEA welcomes the opportunity to respond to the DS3 Services Consultation. We would like to thank EirGrid for the opportunity to respond to these important consultations on the DS3 System Services Consultation.

As the leading association for the Irish renewable energy sector, IWEA would consider ourselves as a proactive partner, willing to step out in explaining the benefits of an effective, modern and climate friendly Irish electricity system, and we look forward to continuing our work alongside EirGrid in this regard. Please feel free to contact us should you have any questions.


Anne-Marie McCague
Head of Policy for IWEA

DS3 System Services Consultation – Protocol Document

This questionnaire has been prepared to facilitate responses to the consultation. Respondents are not restricted to this template and can provide supplementary material if desired.

Please send responses in electronic format to DS3@eirgrid.com or DS3@soni.ltd.uk

Respondent Name	<i>Helen Ellis</i>
Contact telephone number	<i>087-1357345</i>
Respondent Company	<i>IWEA</i>

Note: It is the TSOs' intention to publish all responses. If your response is confidential, please indicate this by marking the following box with an "x". Please note that, in any event, all responses will be shared with the Regulatory Authorities.

Response confidential

The closing date for responses is Wednesday 30th January 2019.

Question	Response
<p><u>Question 1:</u> Do you have any comments on the assessment methodology for these products being amended to align with Ramping Margin assessment methodology?</p>	<p>We understand that the only service for the Volume Capped regime which will be effected is TOR2. The issue we see with this approach at present is that the process is based on synchronous units and a Storage unit is not synchronous. Therefore, this process would need to be adapted in order for a Storage Unit to be able to comply. We have no issue in principle with the performance assessment of a Providing unit's TOR2 response being based on its ability to follow an adaption of the synchronising dispatch process, so long as this process makes clear what is expected from a Storage unit, in order to demonstrate compliance. In particular, it is not clear how section 5.12, 5.13 & 5.16 of the Protocol Document will apply to a Storage unit which is connected to the grid via an inverter and therefore not synchronised. 5.16.2.1 describes the process for all non-DSU units as follows: <i>"A summary description of this process is given below:</i></p> <ol style="list-style-type: none"> 1. The TSO sends a Synchronisation Dispatch Instruction to a Providing Unit, e.g. <i>"Time 1300 hours. Unit 1, Synchronise at 1600 hours".</i> 2. The Providing Unit accepts the Synchronisation Dispatch Instruction (unless the Providing Unit has given notice to the TSO under the provisions of SDC2.4.2.10 regarding non-acceptance of dispatch instructions). 3. If the Providing Unit has not Synchronised 15 minutes after the Start Synchronising Time the TSO will issue a Failure to Follow Notice to Synchronise instruction. Otherwise, a Synchronisation Confirmation Notice will be sent by the Providing Unit. " <p>We request specific clarification on this point.</p>
<p><u>Question 2:</u> Do you have any comments on the Frequency Event definition being amended to make reference to a Significant Frequency</p>	<p>We welcome the clarity on multiple events and how these are treated from a performance assessment perspective but have no comment on the proposal in relation to a Significant Frequency Disturbance. We would ask that EirGrid consider the impact this change may have on operational/ performance monitoring resources within EirGrid in order to monitor Providing Unit compliance to these events.</p>

Disturbance, which is now defined as a deviation of 0.30Hz from Nominal Frequency?

Question	Response
<p><u>Question 3:</u> Do you have any comments on the application of the Time Zero definition being amended and the removal of the reference to the end of a Frequency Event?</p>	<p>Again, we are happy to see the clarity on how individual Performance Incidents are defined with reference to Time Zero</p>
<p><u>Question 4:</u> Do you have any comments on the amendment to the methodology for calculating Pre-Event Frequency and Pre-Event Output?</p>	<p>We think these amendments may make sense, in particular, in relation to Providing Units with variable output such as wind. However, we believe a worked example is required to look at the following scenarios:</p> <ul style="list-style-type: none"> • Where a unit is charging when an event occurs- clarity on expected response in this case • Where a unit is idle but drawing house load- clarity on expected response in this case

Question	Response
<p><u>Question 5:</u> Do you have any comments on the proposal to amend the process for analysing multiple frequency events?</p>	<p>5.7.1.3 (d) states <i>“If a Static Response Providing Unit (specifically DSUs, WFPS, and Energy Storage Providing Units) has depleted or exhausted its reserve capability during the first Frequency Event, its performance will not be assessed during any subsequent events (up to 15 minutes after the first Frequency Event). If applicable, such providers are required to declare all impacted services down or unavailable through EDIL or a real-time signal no later than 15 minutes from Time Zero of the initial Event “</i></p> <p>We wish to clarify how part (d) applies under fixed arrangements since these allow Providing Units 90mins to recharge prior to impacting availability scalar¹, which is already tight. Grace period for performance assessment should be aligned with availability scalar and the timeline provided for recharging should also be extended from current 90mins as given energy market gate closure this leave only 30mins to replenish storage volumes.</p>
<p><u>Question 6:</u> Do you have any comments on the proposed inclusion relating to Availability Performance Monitoring for providers under the Fixed Contracts arrangements?</p>	<p>Section 5.1 states <i>“The Performance Scalar¹ (P) will consist of two (2) components:</i></p> <ul style="list-style-type: none"> • <i>Availability Discount Factor (PA)</i> • <i>Performance Incident Response Factor (PE)</i> <p><i>The value of the Performance Scalar will be a multiple of the two (2) components:</i> $P = PA \times P$</p> <p>...</p> <p><i>Footnote 1 Note that in the Fixed Contracts (or Volume Capped) Arrangements, this Scalar is called the Event Performance Scalar in order to differentiate it from the Availability Performance Scalar”</i></p>

¹ Section 3.5.3 of EirGrid’s Recommendation Paper on the Volume Capped procurement consultation, ‘Recommendation on DS3 System Services Volume Capped Competitive Procurement’, 6 September 2018

The protocol document is already quite difficult to read for a Volume Capped vs. Volume Uncapped unit but we believe the above will cause a lot of confusion- i.e. where the same term has different names in Volume Capped vs. Volume Uncapped. We also believe that the drafting here does not match EirGrid intention as laid out previously:

Section 4.6.2.3 of the EirGrid Recommendation Paper on the Volume Capped procurement consultation seems to clarify that the forecast availability scalar is **not** applied on top of the 97% availability scalar. Except included below,

Event Performance Scalar

The TSOs can confirm that the 'event' performance scalar, as outlined in the volume uncapped arrangements, will apply for service delivery under Volume Capped. This scalar is explicitly outlined in the System Services Regulated Arrangements Protocol¹³.

Under the Volume Uncapped arrangements, the Performance scalar (P) will consist of two components:

- Performance Availability (P_A)
- Performance Incident Response Factor (P_E)

The value of the Performance scalar will be a multiple of the two components:

$$P = P_A \times P_E$$

P_A will account, in the uncapped arrangements, for the ability of a Providing Unit to accurately forecast its availability to provide System Services. Given the requirement for high availability in the Volume Capped, we would propose that this scalar is, instead, used to account for availability, as per the proposed scalar and percentage thresholds.

From this highlighted text, our reading is that, P_A for the fixed contracts will be the 97% availability performance scalar and not the forecast availability scalar as outlined in the Protocol Document.

We request clarification on this point from EirGrid.

Availability Performance Scalar

- Can EirGrid clarify what happens if a unit is partially available within a specific trading period? We are thinking of the scenario where a Providing Unit is unavailable (or has a reduced MW capability) for part of a trading period. The question is whether the unit is treated as unavailable for the trading period in this case- i.e. if the system available MW falls to 0MW for any time it counts as 0% available for the whole 30min.
- A further question arises when the unit is only partially available for a portion of the trading period- e.g. If the system were fully available e.g. 30MW for 15min, fell to 15MW available for 5 min and was restored to 25MW for the remaining 10min- in this case it seems reasonable that the the availability for the period would count as 15MW/30MW = 50%?

Planned maintenance

In order to maximise the Storage units performance, It is important to provide Storage units with some flexibility in how they utilise their 5 days of planned maintenance under the Volume Capped regime. Normal planned maintenance regimes may require a portion of the battery modules to be taken out of service or blocks of a number of hours at a time. We believe that it is reasonable to allow units to break up the planned maintenance into half hour blocks and also to declare down a portion of the total unit size without being deemed fully unavailable.

- Can we assume this maintenance can be taken in trading period blocks, for example 24 trading periods (12 hours) of planned maintenance can be used without counting as a full day?
- Can we assume that planned maintenance allows for partial availability declarations if only partial MWs are taken offline; i.e. not a binary state where either the system is fully online or fully offline?
- For periods of planned maintenance is the unit paid fully for services during the maintenance period so long as the period remains under 5 days or does the unit receive no revenue for the 5 days? In either case we understand there will be no impact on the Performance Availability Scalar but please confirm

Interaction of Availability Performance Scalar and Event Performance Scalar

	<p>We are working on the principle that the Event Performance Scalar is only used where a unit has declared itself available and subsequently fails to perform when an event occurs. Where a unit is declared unavailable, either within the allowable 5 days planned maintenance or beyond that such that it is being impacted by the Performance Availability Scalar, then the Event Performance scalar should not apply. We ask EirGrid to clarify this point.</p> <ul style="list-style-type: none"> • Can EirGrid clarify that the Event Performance Scalar will not apply when a Providing Unit is declared unavailable for planned maintenance? • Can EirGrid clarify that the Event Performance Scalar will not apply when a Providing Unit is declared unavailable for unplanned maintenance? • The same relief should be granted for Event Performance Scalar as Availability Performance Scalar and time needs to be extended from the current 90mins. It appears as if Providing Units only get relief from availability scalar and would be liable under performance scalar if there is a second event within the 90min timeframe. This is not very clear and we request clarity from the SOs on this point. <p>We note that EirGrid presented a sample Performance Availability calculation at the DS3 Industry Workshop in November but it did not provide sufficient detail in the areas described above. We request a separate, dedicated workshop in 2 key areas for Volume Capped Auction participants:</p> <p>Availability Scalar workshop- going through both Event and Availability Performance scalars and detailed worked examples for each frequency reserve service.</p> <p>Auction Bid Workshop- working through detail of auction bid and EirGrid assessment of bids</p>
<p><u>General Feedback on Protocol Document</u></p>	<p><i>It would be useful if document could clearly de-lineated the differences between standard and fixed contract arrangements and how the protocol document is intended to apply to each. It probably mostly works but is difficult to follow.</i></p> <p><i>Introduction Section:</i></p> <ul style="list-style-type: none"> • <i>The drafting is a bit unclear. References single DS3 agreement but protocol document is intended to work in conjunction with 2 agreement types – standard and fixed contracts.</i>

- *Drafting assumes payment rates are set at tariff but for fixed contracts payment rates are fixed at time of auction for duration of contract.*
 - *Figure 1 is a bit misleading for fixed contracts. Temporal Scarcity Scale for fixed arrangements should be in the agreements and not in protocol documents. Payment rates for fixed contracts should not be in statement of payments but in agreements.*
- 3.1- In relation to first bullet point, don't think you can provide the frequency services simultaneously as they are defined in relation to time from event. Intent is probably in relation to making service available.*
- 3.3.3 - We wish to note the commercial implications of latitude proposed for the TSO in relation to State of Charge management given commercial via performance and availability scalars under fixed contract arrangements – providers need certainty on these variables prior to Volume Capped Auction*
- 3.3.3 – “A Providing Unit that is unable to operate without recovering its resource until the system Frequency has recovered will be classified as having static capability” – it is unclear what ‘operate’ means in this context (ie., does it mean ‘able to export’ or ‘empty but available’) and also is unclear how this applies for battery storage assets which will need to charge after responding to a system frequency event. The TSOs are requested to clarify.*
- 3.4.1*
- *Operational requirements for fixed contracts needs to be set out in the contract agreement and needs to be clear in protocol that for fixed contracts, regardless of later versions of protocol document, operational requirements are set out in the agreements.*
 - *The second from last bullet point should be qualified such that it only applies to the first event in any close sequence of events and that the service provider’s obligation is only to deliver from FFR out to TOR2 for any one event – i.e. so there is a maximum defined response across all products.*
 - *P.14 paragraph beginning “The TSOs shall define....”. For fixed contracts this should just be what is in the actual agreement and if changed from this should not result in*

service provider being paid less or having otherwise higher opex / capex costs. See wording from other response below:

"The governance arrangements for key parameters in relation to service provider's obligations and remuneration under the DS3 System Services Fixed Contracts Agreement need to be unambiguous and clearly defined, to allow participants to understand and assess their risks under the arrangements. Furthermore, key parameters should be locked down at time of contract execution, or where the option for the TSO to change values is a necessity, such changes should not place service providers in a materially worse position in relation to either their remuneration under the contract, or their overall costs of service provision, relative to the original value agreed for such parameters under the agreement. Minimising service provider's risk under the arrangements will ensure fixed contracts deliver defined services at lowest possible cost, while delivering the required revenue certainty to underpin long term investment in the DS3 market."

5.8.2.1 (13) reference error

5.8.2.6 POR Inertia Credit - term not defined

5.10.1- Mismatch between this clause (requiring assessment over full TOR1 period out to 5min) and data record table under 5.5.1 (which seems to only want data out to 60s)

5.11.1 FFR assessment

'The MW response from the Providing Unit should be sustained for the T=0 to T+10 seconds period'
But this should only be from the expected response time of the unit in the region of 0.15s to 2s?

This clause introduces the term 'FFR Period' which seems to mean that SOs will assess the unit from whenever the unit is expected to respond based on its reserve characteristic- i.e.

some time between T0 and T+10s- i.e. for battery this would mean assessment from between t+0.15s to t+0.3s. But we ask SOs to clarify this as it is not clear

5.26 Performance testing – details of the Performance Test are not included in the Protocol Document. Are the Performance Test as referenced in the Protocol Document intended to mirror the DS3 system service compliance tests? It is noted that the test procedures for Energy Storage Units are yet to be published by the TSOs.

Section 8 Glossary

“Expected”- This definition needs expansion to link it to where 'expected' response is defined- i.e. assume in the reserve characteristic defined in contract schedule

“Inertia Response Calculation Tolerance”- reference error in definition

“Inertial Response”- reference error in definition

“POR Frequency Delta”- reference error in definition

“POR Governor Droop Multiplier”- reference error in definition

“Providing Unit Output Delta”- reference error in definition

DS3 System Services Consultation – Protocol Document

This questionnaire has been prepared to facilitate responses to the consultation. Respondents are not restricted to this template and can provide supplementary material if desired.

Please send responses in electronic format to DS3@eirgrid.com or DS3@soni.ltd.uk

Respondent Name	<i>Tim Cox</i>
Contact telephone number	<i>028 9043 7580</i>
Respondent Company	<i>Moyle Interconnector Limited</i>

Note: It is the TSOs' intention to publish all responses. If your response is confidential, please indicate this by marking the following box with an "x". Please note that, in any event, all responses will be shared with the Regulatory Authorities.

Response confidential

The closing date for responses is Friday 18th January 2019.

Question	Response
Introductory remarks	<p>These comments are submitted by Moyle Interconnector Limited, 'Moyle', as a provider of POR, SOR, TOR1, TOR2 under phase 1 of enduring regulated arrangements, but also as provider (though not contracted) of fast frequency response (FFR), through a dynamic product which we understand to be valued by the SONI team. The frequency response provided by Moyle has been delivered under bilateral, HAS and DS3 SS contracts for many years, and the characteristics of its delivery have been adjusted, and continue to be adjusted in accordance with feedback and requests from the SONI team, in order to provide maximum value to SONI.</p> <p>In this response we offer replies to the SOs' specific questions set out in the consultation paper, but also to other changes that have been proposed. Additionally we offer brief remarks on important issues that relate to inaccurate assessment of a unit's performance, including ramping.</p> <p>We note that some potentially very significant proposed changes have not been highlighted by the SOs as such.</p> <p>Some of our comments on ramping, performance measurement etc, would be assisted by a dialogue or forum with the SOs using real world data to demonstrate the issues we have tried to explain. We stand by to engage with the SOs on that process, with the aim of assisting the SOs to form workable and preferably automated tools for performance assessment.</p>
<p><u>Question 1</u>: Do you have any comments on the assessment methodology for these products being amended to align with Ramping Margin assessment methodology?</p>	<p>We suggest that the RM1 performance assessment methodology does not appear to work for an interconnector unit, which does not receive synchronisation instructions. Further, response of an interconnector unit in TOR2 and (potentially) RRS timeframes is the same as that for shorter timeframe reserve products, that is automatic response to frequency deviation as opposed to response to an instruction from the SO. (Although the interconnector will respond to updated dispatch instructions issued by the SO.) Therefore</p>

	<p>a new approach is not required for this unit type and the new approach will not work for all service providers.</p> <p>We suggest that the TOR1 performance assessment methodology could be applied to TOR2 for these unit types. Alternatively the existing approach applying the TOR1 scalar to the TOR2 product also could be retained.</p>
<p><u>Question 2:</u> Do you have any comments on the Frequency Event definition being amended to make reference to a Significant Frequency Disturbance, which is now defined as a deviation of 0.30Hz from Nominal Frequency?</p>	<p>In general we cautiously welcome the proposed changes to how a Frequency Event is defined and how an assessed Frequency Event/a Performance Incident is defined, since a previous version of the protocol appeared ambiguous and subject to dispute.</p> <p>We note that the proposed new definition means that Frequency Events/Performance Incidents will be more common so that there will be more data to contribute to formation of performance scalars, which should consequently be more reflective of a unit's performance.</p> <p>It is not specified that the SOs will only consider 49.7 Hz events for performance assessment from go-live of the new protocol document. This should be explicitly specified, not least because assessment of such events under the current arrangements may provide inaccurate results (see our comments on ramping in this response, for example). Therefore the SOs should not look back but should apply the revised protocol looking forwards.</p>
<p><u>Question 3:</u> Do you have any comments on the application of the Time Zero definition being amended and the removal of the reference to the end of a Frequency Event?</p>	<p>In general we cautiously welcome the change to set Time Zero based on the Reserve Trigger for the providing unit, since it simplifies and standardises the approach across reserve products.</p>
<p><u>Question 4:</u> Do you have any comments on the amendment to the methodology for calculating Pre-Event Frequency and Pre-Event Output?</p>	<p>In general we welcome the change to determine the pre-event output based on the period T-1.5 to T-0.5 seconds, not least since it is a better reflection of a unit's actual pre-event output. Any reversion to T-60 to T-30 seconds would need to be carefully applied, since it would amplify the apparent negative effects of a unit ramping on performance assessment. The draft protocol is vague on the circumstances in which the sampling of</p>

	<p>pre-event power and frequency would vary. This should be properly defined, to remove the potential for dispute, especially if ramping is not adequately considered.</p> <p>The consultation document appears to acknowledge that ramping is an issue in performance assessment (section 2.2.4). Unfortunately, notwithstanding our comments on improving measurement of pre-event power in the preceding paragraph, the performance assessment methods set out in the draft protocol still fail to take account of ramping for an interconnector unit. Please see our more detailed comments on ramping, below.</p> <p>We suggest aligning the terms Pre-Event Frequency and Pre-Event System Frequency, since they appear to have the same meaning.</p>
<p>Question 5: Do you have any comments on the proposal to amend the process for analysing multiple frequency events?</p>	<p>We disagree with the proposed approach on analysing multiple frequency events. The proposed approach significantly complicates performance assessment and the wording is imprecise. For example, the wording in section 5.7.1.3 b allows the SOs arbitrarily to set a new Frequency Event. The circumstances in which a new Frequency Event is set should be fully defined or removed. Further, the wording of the relevant text in section 5.7.1.3 c is vague:</p> <p><i>c. In order to carry out Performance Assessments, the assessment period in question needs to be free from interruptions (i.e. other Significant Frequency Disturbances). In practice, this means that FFR and POR should always be assessable, but the assessment of SOR and TOR1 could be affected if, for example, the frequency were to recover above 49.9Hz for 30 seconds and then drop below the Frequency Threshold before the SOR or TOR1 timeframes had elapsed.</i></p> <p>The TSOs should state whether in such circumstances response to frequency deviation between 15 seconds and 5 minutes of the first event should be assessed as part of the response to the first event or assessed as part of the second event, as it cannot be both. Based on the updated definition of a a Performance Incident (must follow a period of at least 30 seconds with the frequency above 49.9 Hz), it is intuitive that such a disturbance is part of a second event, so it should be assessed as such and the protocol should say so. In that case the fact that SOR and TOR1 are not measurable for the first event is of no consequence.</p>

	<p>Preferably however this confusion should be removed by reverting to the previous approach to multiple events.</p> <p>Note also that there is some (undesirable) duplication of Frequency Event and Performance Incident definitions in section 5.7 and the definitions section.</p>
<p><u>Question 6:</u> Do you have any comments on the proposed inclusion relating to Availability Performance Monitoring for providers under the Fixed Contracts arrangements?</p>	<p>No comment.</p>
<p><u>Additional Comments on specific Proposals</u></p>	
<p><u>Section 3.1: General DS3 System Services Operational Requirements</u></p>	<p>This comment addresses the proposed addition to this section: <i>'Where Providing Unit sites are unmanned, the Providing Unit shall have the capability to remotely enable/disable each contracted service individually.'</i></p> <p>This text is new, it appears to impose a new requirement (which did not previously exist) on providers and it appears to contradict the message sent to providers through the FFR Continuous Scalar, which rewards continuous availability of products from FFR to TOR1. Further, it is not clear how this requirement would be managed in practice when no signal list appears to address operation of different products independently.</p> <p>It is theoretically unclear how a provider of (for example) dynamic response should respond and be assessed for provision of a single reserve product, so that delivery of reserve is intended to start and stop at a fixed time. E.g. TOR1 between 90 seconds and five minutes only: in this case, would the SOs really wish the unit not to respond for the first 90 seconds but then respond with the full armed reserve quantify (assuming the frequency deviation still justifies that quantity) in a near-step change in power, then remove the same quantity in a similar near-step change at the five minute boundary?</p> <p>To date, performance assessment has been on the basis of a minimum delivery; switching off some products rather implies assessment of non-delivery in the switched-off periods, otherwise there would be no incentive to disable delivery outside the 'live' product periods.</p>

	<p>Please also refer to our comments below about the imposition of additional technical requirements to the contractual framework.</p> <p>In summary, we strongly recommend this additional requirement should be removed until proper consideration can be given to both its technical and commercial implications.</p>
<p><u>Section 5.9.2: Measurement Process for Secondary Operating Reserve (SOR) Performance Assessment and</u> <u>Section 5.10.2: Measurement Process for Tertiary Operating Reserve 1(TOR1) Performance Assessment</u></p>	<p>We understand that the intention of the proposed SOR and TOR1 performance assessment approaches is to measure achieved delivery at each data point. That is stated reasonably clearly in the proposed draft protocol (sections 5.9.2.4, 5.10.2.4). Later the draft establishes ‘S’ based on Expected SOR/TOR1 Response and Achieved SOR/TOR1 Response ‘for each Performance Incident’ (sections 5.9.2.5, 5.10.2.5).</p> <p>It appears that a step is missing from the draft. We suggest it should be explicitly stated that ‘S’ is calculated from the average Expected SOR/TOR1 Response and the average Achieved SOR/TOR1 Response, each measured at every data point, over the SOR/TOR1 product period. (This appears to be the approach used in assessments issued by the SOs.)</p> <p>Additionally we suggest an adjustment for clarification and to align the approach with that for FFR (sections 5.9.2.5, 5.10.2.5):</p> <p style="padding-left: 40px;"><i>For each Performance Incident, where the <u>maximum</u> Expected [SOR/TOR1] response <u>during the [SOR/TOR1] Period</u> is greater than or equal to 1 MW then the Performance Incident Scaling Factor (‘Qi’) is then calculated as follows;</i></p> <p>We also suggest that the performance assessment approach for SOR and TOR1 (and potentially TOR2) should take account of ramping – see our comments below.</p>
<p><u>Section 5.11.1.2: Calculation of Performance Incident Scaling Factor (Qi) for Provision of FFR</u></p>	<p>Our comments on FFR performance assessment focus on the methodology to assess dynamic response, which appeared to be deficient in the previous version of the protocol.</p> <p>The proposed assessment approach for FFR does not appear fully to take account of the characteristics of a dynamic providing unit.</p> <p>There is no definition of ‘Expected FFR’ or ‘Achieved FFR’. Therefore one assumes since the performance assessment is to be undertaken at each assessment point that it is the</p>

intention that the Expected FFR and Achieved FFR will be determined at each data point based on the frequency at each data point, that is the instantaneous frequency. It is not explicitly said that the unit's performance before its contracted response time (its Reserve Response Time) will not be evaluated, though that is a reasonable assumption and it ought to be stated unambiguously.

In the case of a provider of dynamic response, a 10% tolerance at each data point alone is inadequate to cater for a complex PID controller determining a unit's dynamic response to instantaneous frequency.

For example, if the reserve trigger frequency has been passed so that performance is assessed and then at some time later the frequency falls rapidly, the controller will not deliver power instantaneously in proportion to the frequency deviation (even though a response has already begun). Delivery of response power should therefore be assessed in response to the earlier frequency, effectively measuring a delayed response to frequency where the delay is the unit's Reserve Response Time. The proposed wording in section 5.11.1.2 fails to cater for this.

Put simply, a unit with a response time of e.g. 1 second is effectively responding to frequency one second earlier and it is the earlier frequency, not the instantaneous frequency against which the unit's performance should be assessed.

(Similar logic applies to the other reserve products, except that their different timing and the different proposed assessment methodologies reduce the risk of an 'incorrect' performance assessment result.)

The topic of performance assessment of dynamic FFR has been the subject of separate correspondence between Moyle and SONI/EirGrid and an alternative approach had been suggested and appears to be more satisfactory. That approach would delay the assessment against frequency by the Reserve Response Time, looking forward from each data point to test for delivery of proportional power change within the Reserve Response Time, and looking back from each data point to ensure no unjustified drop-off of power between the response and the Reserve Response Time. That approach appeared to be

	<p>more satisfactory, since it properly handles a unit's Reserve Response Time, as opposed to relying on a 10% buffer which will likely be insufficient based on instantaneous frequency, especially with frequency falling fast. The method is easily automated in e.g. Excel. We have an example and we would be happy to discuss this approach again based on our previous correspondence with the SONI/EirGrid team.</p>
<p><u>General Remarks on the Contractual Framework and Changed Requirements</u></p>	<p>In line with our remarks on section 3.1, above, we have a concern about inadvertent use of the protocol to change the scope of the framework contract.</p> <p>Any addition to a new version of the protocol document of a technical requirement for one or more services imposes a new and additional requirement on a provider who is already a party to the framework agreement. Imposition of such a new specification effectively changes the scope of the framework contract. This appears to be grossly unfair to an existing contracted provider who has already demonstrated satisfactory compliance with the SO's requirements as set out in the contract and previous version of the protocol. Such a change in scope of the contract structure is problematic legally, with reference to the requirements of the Utilities Directive as implemented in national legislation. (E.g. UK SI 274 of 2016, section 60, which clearly states that 'The technical specifications shall be set out in the procurement documents'; Irish SI 286 of 2016, section 67, which clearly states that 'The technical specifications shall be specified in the procurement documents and shall lay down the required characteristics of works, services or supplies.')</p> <p>To be clear, the protocol should not be used change technical specifications that are set out in the contract and the procurement documents.</p> <p>Disregarding the legal/contractual position, it is in any case unclear how any change to the specification of the products should be handled. In order to ensure a level playing field, one would assume that it is that TSOs intention that all providers, both existing and new, would have their services assessed against the new specification. This raises obvious questions such as: When would this re-assessment be done? What are the consequences? Would contracts be terminated based on a change to the service or more regular failure of performance assessments?</p> <p>Again, the protocol should not be used to set specifications of the products.</p>

General Remarks on Governance

The present arrangements for governance of the DS3 system services protocol permit quite regular updates to be issued by the SOs, subject to approval by the RAs. In practice such updates have been infrequent.

Noting that some of the need for certain changes proposed in this revised draft of the protocol was identified a year ago (e.g. resolving ambiguity around the definition of a frequency event for the purposes of performance assessment), the need for other improvements (e.g workable measurement of dynamic FFR) has been flagged to the TSOs some months ago and further improvements are still required in addition to the current proposed draft (e.g. appropriate performance assessment of an interconnector unit when providing frequency response on a scheduled ramp), we suggest a different process for updates to the protocol.

We suggest that a process akin to the industry codes (Trading and Settlement Code, Capacity Market Code) modifications arrangements is appropriate for governance of the protocol. Advantages include:

- Providers would be able to raise suggestions for modifications and have such suggestions debated openly and transparently among both the SOs and providers. (The current process means that suggestions for improvements can fail to be incorporated without open discussion or even feedback.)
- Providers would be able to raise suggestions for modifications in a timely fashion so that they can be considered earlier than a re-write of the protocol. (Currently even when a need for a change has been identified industry and the SOs need to wait for a new whole version of the protocol to be consulted on and approved.)
- The SOs would benefit from timely industry input on the need for and detail of proposed changes rather than waiting to issue a new draft version of the whole protocol.

	<p>Naturally, the RAs would continue to retain the right to approve proposed modifications and would take both industry and the SOs' views into account when determining whether to do so.</p> <p>(We first made this suggestion in our feedback on the DS3 system services procurement process.)</p> <p>Although the protocol does support a procurement process for system services, the protocol itself should not be setting the scope or requirements for any products – its content is primarily concerned with performance assessment and some operational matters that do not set the product design.</p>
<p><u>Ramping</u></p>	<p>Moyle has become aware of the potential for inaccurate measurement of reserve product performance during a scheduled ramp of the interconnector.</p> <p>When frequency reserve is triggered Moyle automatically changes its power in order to deliver reserve as armed. This delivery of power is based on the position of the interconnector at the moment the reserve is triggered and the change of power also takes account of any ramp that the interconnector might have been on at the time. After the frequency is restored, the interconnector continues its ramp, as scheduled. For clarity, if the interconnector is on a ramp while the frequency is sufficiently low to trigger a response but stable (e.g. at 49.7 Hz constantly), the interconnector power will deliver a response that delivers power in response to frequency and additionally ramps in accordance with the interconnector schedule.</p> <p>This is intuitive behaviour, since the frequency response provided by Moyle is therefore in addition to the schedule and does not decay (or over-deliver) with a scheduled ramp.</p> <p>Currently assessment of reserve performance is based on pre-event power alone, so that expected delivery does not take account of any scheduled ramp. Therefore if the interconnector is on a ramp to lower or more negative power the performance assessment methods do not fully measure the interconnector's response.</p>

Further, performance measurement of SOR and TOR1 are based on each data point within each product period, regardless of the system frequency relative to a reserve trigger frequency. The consequence is that even if the system frequency has returned to normal and no response is anticipated, if the interconnector is on a negative ramp the unit may be assessed as having under-delivered, despite having performed as expected, agreed and understood by both service provider and the SO.

For example, if the interconnector was triggered for frequency reserve while at 200 MW, mid-way through a long -5 MW/min ramp, as scheduled by the SO, but the frequency was restored by T=15 s, so that at T=15 s the interconnector resumed its ramp from 198.75 MW: during the SOR and TOR1 product periods no frequency response would be required; the pre-event power (average over T-60 s to T-30 s) would be 203.75 MW; the average power over the SOR period would be 195.63 MW; the average power over the TOR1 period would be 183.75 MW; and the assessment sheet would show an under-delivery for SOR and TOR1 since the expected power over the SOR and TOR1 product periods (in this example the same as the pre-event power) does not take account of the scheduled ramp.

This problem is exacerbated by measuring pre-event power between T-60 s and T-30 s, since by T=0 on a scheduled -5 MW/min ramp the unit will already be 3.75 MW below its expected position (according to the current and proposed approaches). We note that measuring pre-event power between T-1.5 s and T-0.5 s, as proposed in the consultation, will improve but not resolve the situation.

The solution to this inaccuracy is to adjust the performance assessment sheet so that pre-event power, expected reserve, expected power and post-event power each take account of a scheduled ramp.

A similar problem exists in the FFR performance assessment approach, where S2 for the 10 s to 20 s period also does not cater for a ramp, though because of the shorter period the issue is less severe. It seems intuitive to apply the same proposed solution to the FFR performance assessment also and we encourage the SOs to take the same approach for all reserve products.

<u>In force date?</u>	The consultation paper does not specify when this updated protocol would come into force. We would welcome early clarity on that so that our own semi-automated performance assessment tools can be updated in good time.
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DS3 System Services Consultation – Protocol Document

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Please send responses in electronic format to DS3@eirgrid.com or DS3@soni.ltd.uk

Respondent Name	<i>Angela Blair</i>
Contact telephone number	<i>028090690525</i>
Respondent Company	<i>PowerNI Power Procurement Business</i>

Note: It is the TSOs' intention to publish all responses. If your response is confidential, please indicate this by marking the following box with an "x". Please note that, in any event, all responses will be shared with the Regulatory Authorities.

Response

confidential

The closing date for responses is Wednesday 30th January 2019.

Additional Comments

Process

These changes to the Protocol have been in development for over a year now and should have been consulted upon as part of the Regulated Contracts Consultation so parties understood what they were signing up too – a change in parameters and operational requirements after contract execution is not acceptable. Providers need time to analyse the impact and work with the TSO to get the best solutions.

Governance

The governance of the Protocol has been a concern from the outset. This is an important document and Providers should be able to seek changes and be involved much more closely in its development and changes. We propose that there should be some forum where things like this can be tabled and debated, such as exists for the Trading and Settlement Code and the Grid Code.

Structure

The operational Requirements, volume calculations and definitions that have the potential to change the expected revenues of providers should not be held in the Protocol but be part of the Framework Agreements.

We also believe there should be a separate Protocol for Volume Capped Fixed Contracts or separate sections within the one Protocol, as the document is too confusing with different requirements for both types of contracts.

Purpose

The purpose of the performance monitoring in the Protocol is to encourage providers to perform as per their contracted parameters. This should mean that the TSO is not changing payments to the providers but only penalising sustained poor performance or rewarding good performance.

Currently this is one sided, the TSO penalises poor performance and indeed is proposing to penalise perfect performance but it does not reward extra than contracted performance. There should be nothing in the Protocol to reduce payments to the providers by the changing of the assessment criteria but only better ways of accurately assessing performance, however these changes appear to be more in line with reducing DS3 payments rather than incentivising performance. Adding more Events to assess and changing the end of a Frequency Event will both increase the volume of assessments and so potentially increase the number of failures. Changes in payments should be handled in tariffs not through modified performance assessment criteria.

Question	Response
<p><u>Question 1</u>: Do you have any comments on the assessment methodology for these products being amended to align with Ramping Margin assessment methodology?</p>	<p>Firstly, PPB does not agree that the current Ramping Margin Performance Assessment is fit for purpose. The TSOs have already acknowledged this as a temporary solution and confirmed, in the DS3 System Services Interim Performance Scalar Calculation Methodology Consultation Paper published on 13 April 2017, that they were currently working on an enduring solution. This solution must be completed and proven to be appropriate and effective before consideration is given to employing similar arrangements for other products.</p> <p>Generators respond to hundreds of ramping instructions each month and only assessing the synchronisation of the units is not representative of the totality of the Ramping Services provided. The synchronisation of units is the most onerous ramping period and to apply a performance incentive only based on these will overly penalise units who provide the other ramping services on a continual basis without issue.</p> <p>For example, a unit that is 20 minutes late in synchronising could successfully provide RRD, RM1, RM2 and RM3. Until a proven and enduring and solution for ramping assessment is established, TOR2 and RRS should continue to be assessed on the same basis as the reserve products. The TOR2 period is from 5 minutes to 20 minutes, therefore will only be payable to units that are synchronised, there are not many units</p>

Question 2: Do you have any comments on the Frequency Event definition being amended to make reference to a Significant Frequency Disturbance, which is now defined as a deviation of 0.30Hz from Nominal Frequency?

on the system today that can avail of a TOR2 payment when they are not already synchronised therefore a Late Synchronisation is definitely not the correct assessment criteria for this product on any occasion.

PPB acknowledges that the system is more stable today and that there are fewer Frequency Events but we would also highlight that this reduction is due to improved performance from the DS3 contracted units. The proposed changing of a fundamental parameter i.e. 49.5 Hz to 49.7 Hz, will merely result in an increased number of instances where units will be assessed, and which is primarily being changed to prevent data poor situations arising. This increases risk for providers who have actually delivered the outcomes required (i.e. a more stable system) and a change to this parameter effectively imposes more risk and hence penalises providers as a consequence of performing as required. Such a change would represent a perverse outcome.

There is no evidence to support the need for the definition of a Frequency Event to be amended when the issue that the proposal is seeking to address is the lack of data. It is evident that performance has been good and therefore there is no requirement to seek to address this artificially by changing the threshold. Rather, recognising that providers have generally delivered as required and therefore seeking to address the data shortage issue, the period before data poor kicks in should be amended and increased to 2 years rather than 1 year.

In addition, we consider it might be feasible, if there remain no events after 2 years for an individual provider, to contemplate reducing the the threshold for that provider to capture some events. However, trials would need to be carried out on the Events with smaller deviations from Nominal Frequency to demonstrate that there are no unintended consequences. On completion of trials we suggest that individual providers could, where there are no events after 2 years at 49.5 Hz, opt to use these smaller Frequency Events to help them out of data poor senarios if they are happy that there is not material impact on such use. If subsequently there are Frequency Events at 49.5 Hz, then the assessment would revert to the normal process.

As a consequence of providers delivering the reserve responses as contracted, the TSOs proposed response would result in providers actually exposing themselves to more risk by dramatically reducing the number of Frequency Events on the system and the TSO subsequently moving the goal posts to artificially derive more Events. One of the ultimate aims of the Reserve Products is to reduce the number of Frequency Events. Having delivered that desired outcome, Providers should be rewarded rather than penalised by a movement in the Frequency Event trigger.

Further, if notwithstanding our objection and alternative proposals above the TSOs seek to proceed with their proposals, we do not agree that a change from 49.5 Hz to 49.7 Hz should be accepted without evidence and analysis, provided by the TSO, to prove that this is the optimum level of frequency assessment to provide enough Events

to prove performance. The TSO has proposed 49.7 Hz with no explanation as to why this should be the value rather than 49.55 Hz or 49.6 Hz. For example, what is the current number of Frequency Events with the Frequency Event Threshold set at 49.5Hz, and how would that increase for each 0.01 Hz change in the threshold?

Participants cannot be expected to be assessed on a larger number of Frequency Events compared to what was anticipated when they were contracted to provide the service and what is actually required in the Grid Code. Such, after the fact, contractual changes will greatly increase the risk and revenue uncertainty from changes outwith the control of the provider. Further it is also very important to recognise that such changes do not just affect the DS3 market but will also impact the Capacity Market in which commitments are made up to 4 years ahead of delivery (and potentially longer for a new entrant who may have a 10 year capacity contract). Hence DS3 revenue risk and volatility will have consequential impacts on the wider electricity markets and therefore changes should be driven by coherent and carefully considered requirements and not driven by issues such as a shortage of data relating to measurement of performance.

Participants in the DS3 have contracted based on a frequency deviation of 0.5 Hz and have incorporated their risk of failure over the expected number of Events at 49.5 Hz. This proposed change will need to be investigated by each unit to confirm compliance to the new standard. Participants may not have captured or assessed any Events that have only fallen to 49.7Hz and would need to check that their units are not affected

negatively by this change. There could also be unintended consequences to the change e.g. POR Inertia Credit. Changes like this cannot be accepted until a reasonable period of testing has taken place to confirm there are no unintended consequences.

In addition, the definition of a Frequency Event now contains a rise in frequency as well as a drop, these have never been assessed before and have never previously been included in assessments of performance. Such “High” Frequency Events should not apply to Thermal Generators with Regulated Contracts. This is a fundamental change to the definition and no analysis of the volume of such high Frequency Events has been provided in this consultation. There should be separate definitions of “Low” and “High” Frequency Events with only “Low Frequency Events” applicable in Regulated Contracts and both types of Events applicable in Fixed Contracts.

We also note that the Frequency Event Threshold is defined as,

‘a deviation in Transmission System Frequency of 0.3 Hz, or as determined by the TSOs, The deviation is referenced from Nominal Frequency (50 Hz) and if exceeded denotes that a Frequency Event has occurred ‘

The inclusion of the words ‘...as determined by the TSOs’ is unacceptable. There must be strict governance arrangements around changes that impact on contractual obligations and that could affect participants’ revenues. PPB has previously raised concerns over the DS3 contractual structure and continues to believe that the

<p><u>Question 3</u>: Do you have any comments on the application of the Time Zero definition being amended and the removal of the reference to the end of a Frequency Event?</p>	<p>provisions in the Protocol should properly be incorporated within the contract. Failing that, the governance and change control mechanisms must be the same as would apply if they were in the contract and the TSOs must consult and provide evidence for all proposed changes in the Protocol. Volatility caused by ever changing parameters and the risk of TSO discretion only serves to increase risk (performance and revenue) for participants and will have a negative impact on the wider electricity market.</p> <p>PPB agrees that the period of assessment for each product should continue through the full product period on most occasions, however there are at least 2 occasions where this is not appropriate and the assessment of performance should stop. The first is when a dispatch instruction has been issued by the TSO. The second is when the frequency drops back below 49.5 Hz having already recovered above 49.8Hz for any amount of time as per the existing Frequency Event definition.</p> <p>If a despatch instruction has been sent by the TSO, as mentioned in the first scenario above, the unit will no longer be responding in free governor action as the operator has entered a new target load and so overridden the natural response of the unit. If this happens all assessment must stop.</p>
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Question 4: Do you have any comments on the amendment to the methodology for calculating Pre-Event Frequency and Pre-Event Output?

The second scenario is an agreement of the statement found in section 5.7.1.3 c of the Protocol; that the assessment period must be free from interruptions to allow Performance Assessment to be carried out. Once the second Frequency excursion has occurred the assessment is no longer free from interruptions. This then links into the Significant Frequency Disturbance definition which is open ended and subject to TSO discretion which provides additional risk to the provider. The current definition of a Frequency Event is much clearer and should be kept.

The purpose of the definition of Pre-Event Frequency and Output is to find a stable period against which to assess the provision of each Reserve Product. As the consultation correctly points out, the existing methodology did not always result in accurate pre-event conditions although that will be the case no matter what period is selected. The proposed movement of this to such a small window is only going to make the situation worse. A 1 second period for the average is too small to get an accurate value and 0.5 to 2.5 seconds is much too close to the Event start point. PPB believes that the period of stability is most likely different in every occasion and the TSOs have provided no evidence to support their proposal of between 1.5 and 0.5 seconds so we cannot possibly say whether or not this is a better solution. The proposal to use the shorter window and at the discretion of the TSO move to the previous window is too

<p><u>Question 5</u>: Do you have any comments on the proposal to amend the process for analysing multiple frequency events?</p>	<p>open ended and needs to be clearly defined so the participant knows exactly what the assessment period is. In light of this we propose a moving window of assessment (possibly 20s) over the period from 0.5s to 60s is used for each Frequency Event and so the best solution is found for every Event. Since there are relatively few Frequency Events (depending of course on the Frequency Event Threshold), this would not be an onerous task and could be carried out by calculating the period where the deviation across the period was smallest. Alternatively a period of 10 or 20 seconds could be used at a fixed point in the pre-event period but only after substantive analysis of the last few years of events to inform and determine the optimum solution.</p> <p>As already discussed in question 3 the TSO recognises that the Performance of units cannot be assessed if there are other Significant Frequency Disturbances. Therefore this new definition is just a replacement for the already well understood Multiple Frequency Events with the removal of clarify and the introduction of the TSOs' interpretation. Multiple Frequency Events must be clearly defined and not be open to the discretion of the TSOs as suggested. To enable this to be the case we propose the current Frequency Event definition is retained.</p> <p>Generators continue to follow the frequency throughout all frequency excursions and do not stop performing when the frequency has recovered above 49.8 Hz. By rejecting</p>
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this proposal we are not proposing we will no longer perform we are just requesting that Performance Assessment stops as the expected reserve provision is unclear and uncertain once additional frequency excursions have occurred and system dynamics are unpredictable. Participants need to be able to assess their risks and with TSO discretion on the second event this is not possible thereby increasing risk for providers which will ultimately lead to higher costs to the customer.

We also do not believe that 30s of recovery time before another Frequency Event can be assessed is sufficient. Providers of reserve need time for their temperatures, pressures, fuel systems etc to return to their normal stable position after the sudden increase in output. We therefore reject this proposal in favour of keeping the 5 minutes as this has been tried and tested over the years and generators can then stand over their contracted DS3 values. Reducing this recovery period will increase risk of failure for providers and again contribute to risk and increased costs.

This consultation is also short of evidence to support the proposal of 30s of recovered frequency above 49.9Hz. The TSOs should provide industry with reasons why 30s has been chosen along with data and analysis of where the current methodology has resulted in difficulties for the secure operation of the system, and demonstrating how the new proposal rectifies this issue. Without evidence we cannot support the change

<p><u>Question 6:</u> Do you have any comments on the proposed inclusion relating to Availability Performance Monitoring for providers under the Fixed Contracts arrangements?</p>	<p>as it removes certainty for the providers and leaves every Frequency Event on the system unclear. This is further compounded by the fact that settlement for DS3 is not available until 2 months after the month that the Frequency Event has occurred.</p> <p>Availability Performance Monitoring must be clearly defined such that it does not relate to thermal generators. Thermal generators declare their live availability of all products on EDIL and in accordance with the Grid Code and cannot provide forecasts of availability as they are often heavily constrained on the system and have no control over their despatch as the TSOs manage these constraints in real time. The unpredictable and volatile nature of the TSO indicative schedules provides evidence that even the TSOs, with full knowledge of the realtime system dynamics and requirements, have great difficulty accurately forecasting the output and system support services they require from the thermal generators.</p>
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General Comments not covered by the questions

- Section 3.4.1 - The second from last bullet point should be explained more fully in that it is only for one event – i.e. so there is a maximum defined response across all products and would be much clearer if the end of a Frequency Event is maintained.

- The 2nd from last paragraph on Page 14 should be in the Agreements for service providers with Fixed Contracts to ensure they are not being paid less or having otherwise higher costs.
- Section 5.1 - Availability Discount Factor does not state that it is set to one for thermal generators.
- Section 5.7.1 – An additional definition of Frequency Event is added here but it is not identical to the Glossary.
- Sections 5.8.2.6, 5.9.2.5, 5.10.2.5 - the tolerance of the greater of 10% and 1MW has been removed from the expected reserve provisions; this is a major change and not a minor one and should have been drawn out for the attention of those reading the consultation paper. This change is another erosion of the payments for the Reserve products we do not agree with its removal. The insertion of the new paragraph does not create the same financial implications.
- Section 5.8.2.1 – Providing Unit Output Delta has a definition that is in error.
- Section 5.9.2.4, 5.10.2 – The method of calculating the achieved reserve is missing – clarity is needed on the averaging of this actual response as overprovision could be counted differently in each jurisdiction.
- Section 5.13 – TOR2 must be assessed for its provision in the same manner as TOR1, as it is contracted and paid based on its provided curve characteristics and droop.
- The introduction of a Significant Frequency Disturbance does not appear to add anything additional except for some more confusion as to its purpose. The Frequency Event could just refer to the Frequency Event Threshold and fulfil the same purpose.
- Some definitions have errors in the wording e.g. POR Assessment Time.



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Dublin 4
D04 FW28, Ireland

16th January 2019

Dear EirGrid,

Re: Consultation on DS3 System Services Protocol Document

RES is the world's largest independent renewable energy company with a portfolio of over 16 GW and operations across Europe, the Americas and Asia-Pacific. RES has been at the forefront of renewable energy development for 35 years and is active in a range of energy technologies including onshore and offshore wind, solar, energy storage and transmission and distribution.

From our office in Larne Co Antrim, RES has been at the forefront of wind farm development in the Republic of Ireland and Northern Ireland since the early 1990s. RES has a growing portfolio of solar and energy storage projects across Ireland.

RES wants to be a part of Ireland's energy future, ensuring that our projects contribute to decarbonising our electricity system to the least cost to the consumer. We therefore welcome this opportunity to respond to the EirGrid Consultation on DS3 System Services Protocol Document of 14th December 2018.

As requested, our comments are included in the questionnaire template for responses that can be found below. We have also made comments on the proposed amended DS3 System Services Protocol document in the appended table.

RES' responses are offered in a spirit of positive cooperation to introduce the DS3 Volume Capped service; we would be happy to clarify any of the points raised in this consultation response.

Yours faithfully,

A handwritten signature in blue ink, appearing to read 'Edd Kenney-Herbert', with a long horizontal flourish extending to the right.

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RES general comments on DS3 System Services Protocol Document Redline

Location in DS3 System Services Protocol document Redline	Specific text	RES comment
3.3.3 Energy Storage Providing Units	<i>The Providing Unit shall provide a real-time signal confirming its remaining charge available.</i>	<p>TSO should justify why this should be provided. E.g. this is not required by NGENSO for EFR. Unavailability will be highlighted in performance reports.</p> <p>This should be a defined term.</p> <p>Charge has a specific meaning with respect to batteries i.e. it can refer to ampere hours or Coulombs of electric charge stored. However RES expects that the TSO is interested to know the quantity of stored energy available for discharge. This quantity may vary depending on the rate (power) of discharge.</p>
3.3.3 Energy Storage Providing Units	<i>A Providing Unit that is unable to operate...</i>	<p>More precise language required. The ESS can operate with 0% state of energy to provide high frequency response and reactive power services.</p> <p>Suggest this is amended to "unable to discharge energy" or "unable to provide [listed services]"</p>
3.3.3 Energy Storage Providing Units	<i>...recovered will be classified as having static capability.</i>	<p>What static capability?</p> <p>What does this mean?</p>
3.4.1 FFR Provision with Dynamic Capability	<i>The Providing Unit shall be able to operate with a minimum FFR Trajectory Capability of 2 Hz in response to a Reserve Trigger.</i>	We think this should be maximum, not minimum
3.4.1 FFR Provision with Dynamic Capability	<i>The Providing Unit shall be able to operate without recovering its resource until the Transmission System Frequency has recovered</i>	Transmission System Frequency recovery should be more precisely defined
Figure 2: FFR Dynamic Capability Frequency Response Curve.		It would be helpful if this figure illustrated and referenced the FFR Reserve Trigger and the FFR Trajectory

3.6 Operational Requirements for SSRP	<i>A Providing Unit shall provide SSRP dynamically over its entire dispatchable power range and not in discrete steps.</i>	This prevents a Provider from offering a combination of dynamic reactive power (e.g. from generators) and static reactive power (e.g. from shunt capacitors and reactors). Is this restriction beneficial to load customers?
4 SNSP Forecasting		While the TSOs do not take any commercial responsibility for the forecasts they should commit to using best endeavours for the benefit of all users and their license/legal obligations as TSOs. The TSOs should also publish, within an agreed period after real time, a report describing the accuracy of their forecasts in each settlement period and statistical analysis of their forecasts over relevant periods.
5.1 Performance Scalar Composition	<i>Footnote 1. Note that in the Fixed Contracts (or Volume Capped) Arrangements, this Scalar is called the Event Performance Scalar in order to differentiate it from the Availability Performance Scalar</i>	Suggest TSO's make this consistent for all contracts
5.2 Availability Discount Factor (PA)	<i>For the Regulated Arrangements, the PA component...</i>	Not applicable to Volume Capped. Is this TSOs intent?
Table 2: Proposed Performance Scalar Calculation Methodology	<i>[In Reserve column] A Providing Unit's MW response to any Performance Incident from T - 5 to T + [3]60, where T is the Time Zero of the Performance Incident.</i>	Due to text formatting, it was not clear whether 60 or 360 seconds was proposed 60 seconds is insufficient for monitoring SOR which extends to 90 seconds and TOR1 response which extends to 5 minutes. This should this 360 seconds.
5.7.1 Definition of a Frequency Event and Performance Incident	<i>A Frequency Event is an event where the Transmission System Frequency experiences a Significant Frequency Disturbance in excess of the Frequency Event Threshold. A Frequency eEvent is therefore deemed to have occurred if the Transmission System Frequency</i>	Measured how and where? This assumes that the frequency (measured to what standard?) is identical at all points and this is not absolutely correct, particularly for fast response services where 20ms sample rate is proposed.

	<i>falls below 49.7 Hz or rises above 50.3 Hz.</i>	It would be better to define a Frequency Event as measured locally in accordance with a particular frequency measurement specification.
5.7.1.1 Determining the Time Zero of a Performance Incident	<i>The Time Zero (T) for a Frequency Event is the time at which the Frequency first passes through the Reserve Trigger of the Providing Unit.</i>	This implies that the Frequency is measured locally. Is that the TSOs intent? Please amend text to make explicit.
5.7.1.1 Determining the Time Zero of a Performance Incident	<i>For all Providing Unit's that have a Reserve Trigger higher than 49.8Hz the Time Zero shall be determined as being the time when the Transmission System Frequency first passes through 49.8Hz. A Frequency Event is solely described by this Time Zero and it has no specific duration.</i>	Unnecessary complication. Make this apply to everyone. We suggest that for simplicity the Time Zero definition should be 49.8Hz for all units, rather than having different Time Zero's for different units.
5.7.1.2 Pre-Event Frequency and Output	<i>Where there is a significant variation in the Transmission System Frequency during this time,</i>	What does "significant variation" mean? Who will evaluate this, how and when?
5.8.2 Measurement Process for Primary Operating Reserve (POR) Performance Assessment	<i>For Synchronous Providing Units...</i>	Does this mean that this paragraph and the one below do not apply to asynchronous units?
5.8.2 Measurement Process for Primary Operating Reserve (POR) Performance Assessment	<i>...at the assessment time.</i>	What is the assessment time
5.8.2 Measurement Process for Primary Operating Reserve (POR) Performance Assessment	<i>The basis for calculating the Expected POR is the Expected Providing Unit response to the Transmission System Frequency deviation. The change in the Providing Unit output is driven by the governor response and is limited by the sustained loading ability of the Providing Unit. In the initial phase of the POR Period it is recognised that the output of some Providing Units may lag behind the theoretical droop determined response due to the physical reaction of the unit to a Transmission System Frequency change. To compensate for this, the assessment uses the POR Governor Droop Multiplier (which decays to a value of one over</i>	It is unclear to which generators this applies. If it is intended to apply to non-synchronous generators then it should be clarified. If it is intended to apply to synchronous generators only then there is an absence of explanation for non-synchronous generators 5.8.2.2 says "For the avoidance of doubt, the POR Governor Droop Multiplier will only be applicable to those Providing Units to which it previously applied in the Interim arrangements." Perhaps this

	<i>time), the value during the POR Period determined from the POR Governor Droop Multiplier Alpha, and the POR Governor Droop Multiplier Beta.</i>	clarification should apply to (or be moved to) 5.8.2
5.9 Secondary Operating Reserve (SOR)	<i>...performance during the entire time range of T+15 to T+90 seconds, i.e. the SOR Period.</i>	This may be a good point to describe the sample rate required (otherwise not specified) for measurements during the SOR Period.
5.9.2 Measurement Process for Secondary Operating Reserve (SOR) Performance Assessment	<i>The Expected SOR is determined for each sample point</i>	This is the first reference to sampling of data. The sample rate should be specified. Is this the same as the "Minimum Data Resolution Requirement" described in Table 2
5.9.2.4 Calculation of Achieved Provision of SOR	<i>The Achieved SOR following a Frequency Event will be calculated for each sample point during the SOR Period as the Providing Unit MW Output minus the Providing Unit Pre-Event Output.</i>	The Achieved SOR should be averaged over the SOR Period
Equation 5: Calculation of Performance Incident Scaling Factor for Secondary Operating Reserve	<i>Achieved SOR Response</i>	This should be the average of the "Achieved SOR" over the SOR Period which should specified and given a defined term in 5.9.2.4
Equation 5: Calculation of Performance Incident Scaling Factor for Secondary Operating Reserve	<i>Expected SOR Response</i>	This should say "Average Response Requirement" as defined in 5.9.2.3
5.9.2.5 Calculation of Performance Incident Scaling Factor (Qi) for Provision of SOR	<i>If the Expected SOR response is less than 1 MW</i>	This should say "Average Response Requirement" as defined in 5.9.2.3
Equation 6: Calculation of Performance Incident Scaling Factor ('Qi)' for Tertiary Operating Reserve 1	<i>Achieved TOR1 Response</i>	This is not a defined term. It should be averaged over the TOR1 Period
Equation 6: Calculation of Performance Incident Scaling Factor ('Qi)' for Tertiary Operating Reserve 1	<i>Expected TOR1 Response</i>	This should be the Average TOR1 Requirments
5.10.2.5 Calculation of Performance Incident Scaling Factor (Qi) for Provision of TOR1	<i>If the Expected TOR1 response is less than 1 MW...</i>	This should be the Average TOR1 Requirments
5.11 Fast Frequency Response (FFR)	<i>The additional energy (MWs)response provided in this timeframe must be greater than any loss of energy in the</i>	The "energy provided" and the "loss of energy" are not defined. They should be defined vs the energy that would have been

	<i>following ten seconds i.e. in the period between T+10 seconds and T+20 seconds.</i>	provided had no Performance Incident occurred.
5.11.1.1 Measurement Process for Fast Frequency Response (FFR) Performance Assessment	<i>The first assessment determines the Expected FFR for each sample point...</i>	What sample rate should be used for monitoring FFR?
5.11.1.1 Measurement Process for Fast Frequency Response (FFR) Performance Assessment	<i>The second assessment compares the Achieved FFR Response provided...</i>	It is not clear how this is defined. It should be defined vs the energy that would have been provided had no Performance Incident occurred.
5.11.1.1 Measurement Process for Fast Frequency Response (FFR) Performance Assessment	<i>...any energy recovery in the T+10 seconds to T+20...</i>	This energy recovery is not defined. It should be defined vs the energy that would have been provided had no Performance Incident occurred.
5.11.1.2 Calculation of Performance Incident Scaling Factor (Qi) for Provision of FFR	<i>Let S1 be equal to an assessment of each sample point...</i>	The sample rate should be a reasonable multiple of the response time to ensure that the response and any overshoot and settling has completed
5.11.1.2 Calculation of Performance Incident Scaling Factor (Qi) for Provision of FFR	<i>If the additional response provided...</i>	Delete "response" and substitute "energy"
5.11.1.2 Calculation of Performance Incident Scaling Factor (Qi) for Provision of FFR	<i>Otherwise a Fail is awarded (S2=0).</i>	A severe cliff edge. This does not reflect the impact on the System of a minor deviation from the service specification
5.16.2.1 Measurement Process for Ramping Margin 1 (RM1) Performance Assessment for all Providing Units except DSUs	<i>The Providing Unit will be performance assessed using the EDIL 'Fail to Sync' Instructions process as outlined in EirGrid and SONI Grid Codes Section SDC2.A.4.</i>	This doesn't evaluate the successful execution of loading programme or dispatch instruction following synchronisation.
5.22 Synchronous Inertial Response (SIR)		The TSOs should consider how these requirements might be delivered by a non-synchronous generator with "Virtual Synchronous Generator" control
5.25 Providing Units with less than the Minimum Data Records Requirements	<i>Following 12 months without a Performance Incident, the Performance Scalar will begin to tend towards zero over a period of 3 years, with the scalar reducing from 1 to 0.7 over the period of 12 – 30 months and more rapidly from 0.7 to 0 between 30 to 48 months as shown in</i>	It is unfair to penalise such generators if there are no incidents of suitable magnitude to produce a Performance Incident Record

DS3 System Services Consultation – Protocol Document

This questionnaire has been prepared to facilitate responses to the consultation. Respondents are not restricted to this template and can provide supplementary material if desired.

Please send responses in electronic format to DS3@eirgrid.com or DS3@soni.ltd.uk

Respondent Name	<i>Edd Kenney-Herbert</i>
Contact telephone number	<i>+44 (0) 1923 299 276</i>
Respondent Company	<i>RES</i>

Note: It is the TSOs' intention to publish all responses. If your response is confidential, please indicate this by marking the following box with an "x". Please note that, in any event, all responses will be shared with the Regulatory Authorities.

Response

confidential

The closing date for responses is Friday 18th January 2019.

<i>Question</i>	<i>Response</i>
<p><u>Question 1</u>: Do you have any comments on the assessment methodology for these products being amended to align with Ramping Margin assessment methodology?</p>	<p>We are content with the principle of assessing TOR2 independently from TOR1. However we are concerned that the Ramping Margin assessment methodology relies solely on “fail to sync” and does not consider whether the associated loading programme or dispatch instruction is successfully executed.</p> <p>We think that the references in 5.3.1 need to be updated to 5.16.1 to 5.16.2.</p>
<p><u>Question 2</u>: Do you have any comments on the Frequency Event definition being amended to make reference to a Significant Frequency Disturbance, which is now defined as a deviation of 0.30Hz from Nominal Frequency?</p>	<p>We agree in principle with a Significant Frequency Disturbance being defined as a deviation of 0.30Hz from Nominal Frequency.</p>
<p><u>Question 3</u>: Do you have any comments on the application of the Time Zero definition being amended and the removal of the reference to the end of a Frequency Event?</p>	<p>We have no comment on the removal of the reference to the end of a Frequency Event. We suggest that for simplicity the Time Zero definition should be 49.8Hz for all units, rather than having different Time Zero’s for different units.</p>

Question 4: Do you have any comments on the amendment to the methodology for calculating Pre-Event Frequency and Pre-Event Output?

In 5.7.1.2, we are concerned by the ambiguity regarding whether T-1.5 and T-0.5 or T-60 and T-30 are used for the Pre-Event Frequency definition. This seems to be left as a subjective decision, from 5.7.1.2 *“Where there is a significant variation in the Transmission System Frequency during this time...”* – the “significant variation” should be clearly defined so that there is complete clarity for participants.

Question 5: Do you have any comments on the proposal to amend the process for analysing multiple frequency events?

We are in principle content with the proposal.

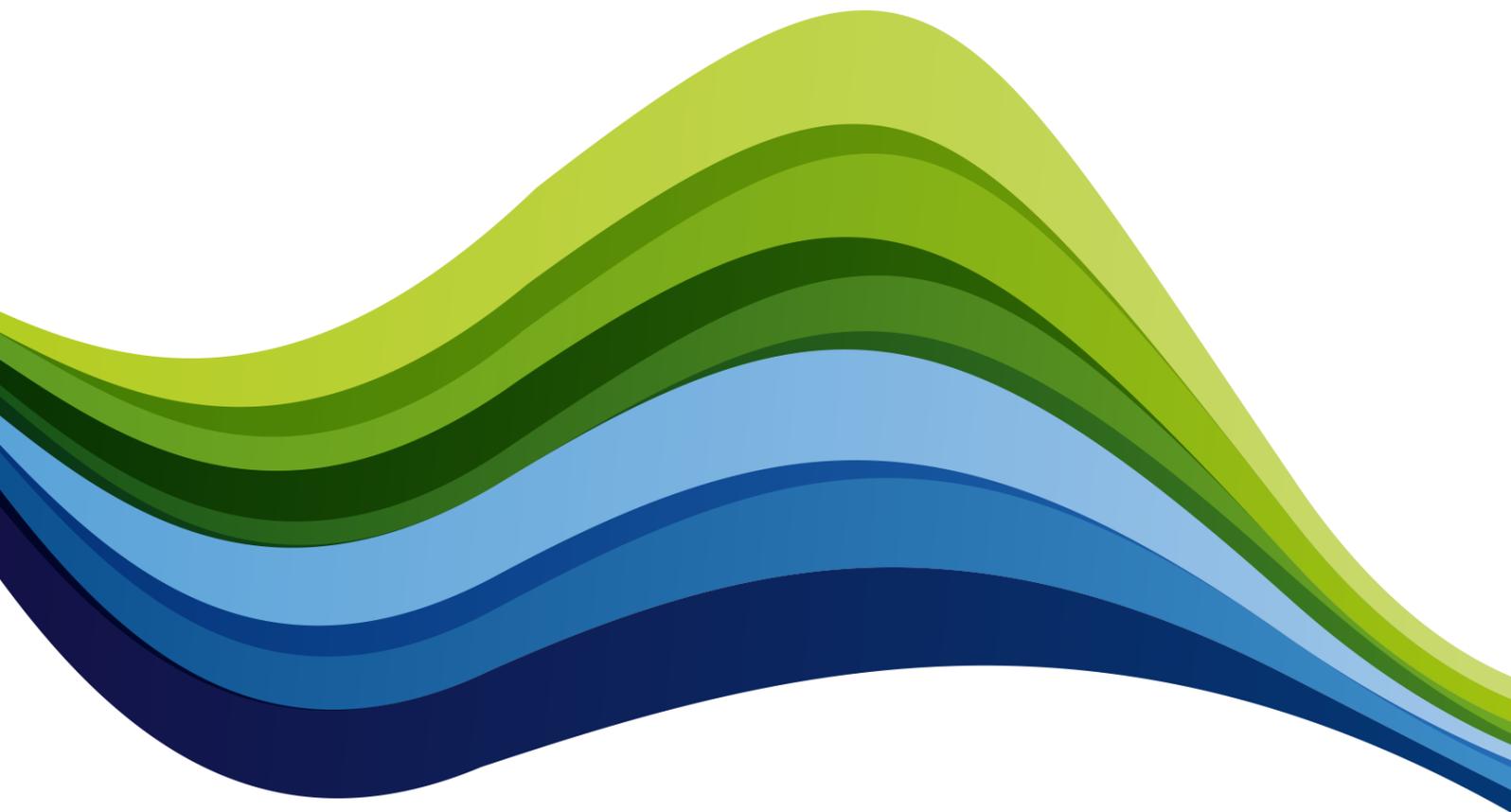
Question 6: Do you have any comments on the proposed inclusion relating to Availability Performance Monitoring for providers under the Fixed Contracts arrangements?

As per our response to the DS3 System Services Fixed Contracts consultation, we think that the Monthly Weighting should taper more dramatically. This is because if a project has one month of poor performance it does not seem fair to penalise it identically for the next two months (ie the proposed M=1 and M=2 have the same Monthly Weighting of 0.120). We propose that the following table should be used:

M – (Months preceding Scalar Assessment Month)	Monthly Weighting
1	0.250
2	0.118
3	0.096
4	0.088
5	0.080
6	0.072
7	0.064
8	0.056
9	0.048
10	0.048
11	0.040
12	0.040

EIRGRID DS3 SYSTEM SERVICES PROCOTOL

Consultation



Introduction

SSE welcomes the opportunity to respond to EirGrid's proposed changes to the DS3 Protocol document. The Protocol document provides an accessible and flexible document for DS3 contracted participants operating within the market. We have engaged with the EAI and understand that they will have submitted an industry response to this consultation. We are supportive of the views expressed in that submission. Our response below, focusses on specific consultation proposals.

Our response

We welcome the intention for EirGrid to acknowledge the changing profile of DS3 contracted parties. Our main concern is that existing units may require modification in order to meet the new requirements. Perhaps a useful approach may be to develop two sets of protocols; those for existing service providers, and updated protocols that are more suitable to the new types of service providers entering the market.

Section 5

TOR2 assessments (5.5.1)

"TSOs propose to amend the assessment of both services to a methodology aligned with that carried out for ramping margin services. In the first instance, the Response Factors for both TOR2 and RRS will be set equal to the Performance Incident Response Factor calculated for RM1."

We acknowledge the intention underpinning this proposal. However, we wish to point out that volume uncapped units will not be providing RM1 but providing TOR2. If TOR2 is based on RM1, as proposed, despite the fact these units cannot provide this, this would present a conflict.

Frequency Event Definition (5.7)

SSE understand that the change in frequency event definition does not impact the providing unit's response. However, it will result in more opportunities for performance assessment. All providing units should provide their contracted response to all events and therefore SSE do not object to this proposal.

Frequency Event Time Zero (5.7.1.1) modifications

In relation to these proposals, we note the intended changes to the Frequency Event End Time. We consider that these changes will pose no issue for new build service providers. However, if applied retrospectively, and also for existing service providers, this would pose an issue. We have concerns that this represents a change in existing controller/governor logic, upon which existing service providers have been configured. We are still assessing the overall impact to our specific units, but we would welcome clarity as to the justification for this change, and any analysis provided to ensure that this change is feasible.

Response to Successive Events (5.7.1.3)

We note that this change may also require modification to the controller/governor logic configuration for existing providers.

Pre-Event Output (5.7.1.2) modifications

We note that this proposal recommends a change to the Pre-Event Output and Pre-Event Frequency measurement, to shorten it.

The proposed timescale (T-1.5s to T-0.5s) is unsuitable for measurement of pre-event output at synchronous units since it may fall after the initiating event has occurred, and therefore coincident with the peak event RoCoF values, and delivery of inertial response. For example, please consider the recent low frequency event which occurred on 17/09/2018 15:01, with RoCoF values of ~ 0.14 Hz/s in the period T-2s to T-0s.

Secondly, we note that within this shortened time-frame, a mean value will no longer be possible. This is because only one data point will be provided by units within the shortened time-frame (1 Hz data provision). Therefore, with a single data point, a mean value cannot be calculated.

Thirdly, we note that the equivalent definition is defined in the Grid Code as below. We would therefore have concerns of a conflict between the Grid Code and changes to the equivalent definition under the DS3 Protocol.

Pre-Incident Frequency	The value is the average Transmission System Frequency between 60 and 30 seconds prior to the occurrence of a significant Frequency disturbance.
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Fourthly, we note that the proposal for this change indicates that EirGrid reserves the right to adopt an alternative:

“The TSOs acknowledges that on certain occasions (where there is significant variation in the Transmission System Frequency during the T-1.5 – T-0.5 seconds) issues may arise when determining both parameters. In such circumstances we propose to revert to the original timeframe (T-30 to T-60 seconds) for analysing both parameters.”

This intention is vague. Specific criteria for this approach should be defined, to ensure that providing units can be configured to provide response in real-time, according to the same criteria on which their performance will be assessed. A single criterion for assessment is preferred, to reduce control logic complexity.

Whilst we can understand why EirGrid may wish to assess certain service providers using the -1.5 to -0.5s horizon. For example, when assessing Windfarm response to events where the output between 60 and 30 seconds prior to the frequency event, could be completely different to the output in the moments before the grid event. In this instance, the proposed change (using -1.5 to -0.5s), would result in a more accurate performance assessment. Perhaps EirGrid should split out these different performance assessment criteria depending on the technology type. As outlined above, conventional units are set-up to provide response based on the -60 to -30s pre-incident level, whereas windfarms could be assessed on this newer assessment without the need for changes at site.

Finally, we note that this change may also require modification to the control/governor logic configuration for existing providers.

We would like to reiterate the conflict that exists with the Grid Code definition, which would require a Grid Code modification.

Threshold crossings constituting significant discrete change (5.7.1.3b)

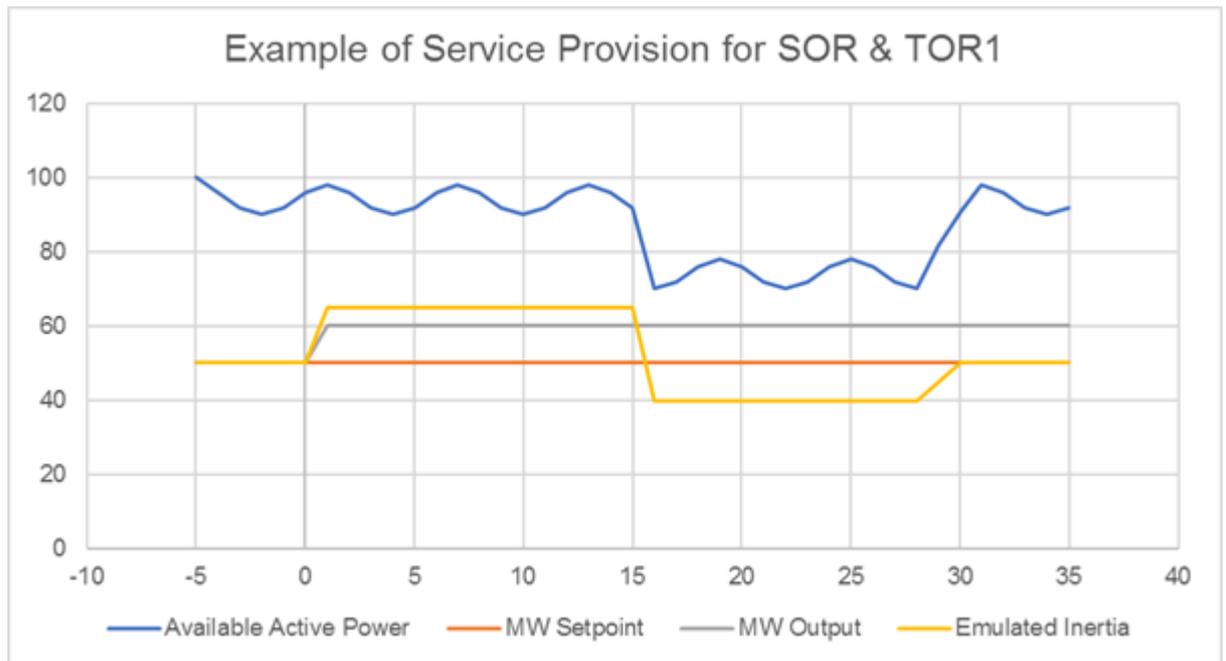
As above, this statement is quite vague. Specific criteria must be defined such that providing units can be configured to provide the correct response in real-time.

Energy Depletion (5.7.1.3d) modifications

Under this proposed modification, we would welcome greater clarity as to how this is intended to work, in a variety of circumstances, e.g. an assessment of those generators that are anticipated to have finite resources. The issue of energy depletion may also affect other non-static providers. For instance, volume capped units with Eirgrid dispatch of TOR1/TOR2.

In addition to the questions set out in this consultation, we have a number of queries or clarifications we would like to highlight:

1. In the first column of Table 2, the data records requirements have been modified to be T-5 to T+60. As this related to TOR1, should this data record not main up to T+300 to account for the full-time horizon of TOR1?
2. Section 3.3.1 indicates that if the providing Unit is contracted to provide certain services through Emulated Inertia, it can only provide those same services through APC Mode. Therefore, the unit would not be able to provide FFR and POR through Emulated Inertia and FFR, POR, SOR and TOR1 through APC. However, in the case where a windfarm is being curtailed, the windfarm is in effect providing two levels of service or volume - One from Active Power Control with Frequency Response, and another from Emulated Inertia on top. Specifically, for the SOR and TOR1 time horizons, whilst the Emulated Inertia service provision would have been exhausted at that stage, there is still the underlying service provision available from the Active Power Control with Frequency Response. Whilst there will be a drop in available volume to account for Emulated Inertia recharge, there will still be available volume to provide SOR and TOR1. This remaining available volume will be dependent on the level of curtailment in the first place.
3. Please refer to graphed example attached. When Emulated inertia has been exhausted, you can see a dip in Available volume to account for the recharge. If there is sufficient volume between the MW Setpoint and the (Available Active Power – Variance of 5%) then the windfarm will provide SOR and TOR1. EirGrid Settlement can easily account for this as all signalling is already being provided.



Finally, in summary, we welcome the opportunity to provide responses to such consultations relating to the DS3 Protocol. We appreciate that a consultation and resulting change, is less cumbersome than code modifications. However, we would expect a greater degree of justification and insight into the rationale for such changes, in order to provide a more detailed comment on these changes. We support the EAI's view that governance of the DS3 protocol, as it becomes more complex, should be seriously considered; in order to ensure that industry participants are adequately involved in the genesis and analysis underpinning future changes.



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Ref: TEL/CJD/19/018

30th January 2019

RE: Protocol Consultation

Dear Sirs,

Tynagh Energy Limited (TEL) welcomes the opportunity to respond to this consultation. Please see the attached completed template for TEL's answers to the specific questions.

TEL would like to support the EAI position in this consultation.

There are two points which we would like to draw particular attention to:

1. One other point that is not specifically addressed in the consultation is the change in the marked-up version of the Protocol Document with the new reference of 5.7.2.4; The 10% tolerance has been removed from the calculation of the incident scaling factor for POR, SOR etc. This change was not detailed in the consultation document. This is a departure from the long-standing approach and no justification for the change has been given. The rational and justification for this change should be explained. We do not support this change.
2. The change regarding Data Poor seems to disadvantage those plants who are deemed Data Poor for no fault of their own. The purpose of the Data Poor condition was not to disadvantage plants when there were no events, but to penalise those plants where the units were not online when events occurred.

Should you have any queries, please do not hesitate to contact me.

Yours sincerely,

Cormac Daly
Risk and Regulatory Manager

<p><u>Question 1:</u> Do you have any comments on the assessment methodology for these products being amended to align with Ramping Margin assessment methodology?</p>	<p>We fundamentally disagree with this approach... starts should only be used to assess services that have a start associated with their delivery. For a CCGT plant this is typically only RM3 and RM8. Furthermore, starts based RM delivery is only a portion of overall RM service.... Ramping is delivered while the plant is online and assessing purely on starts could disproportionately disadvantage a plant with robust on-line delivery but short-term start-up issues. Tynagh have raised this point on numerous occasions and it has been stated that this is only a stopgap solution and the enhanced GPI monitoring will address. It was acknowledged that this was not the ideal solution, but the best Eirgrid could manage at the time. Extending this incorrect methodology to additional products is compounding the issue. Finally utilising starts to assess RRS which by definition cannot have an associated start is completely counterintuitive.</p>
<p><u>Question 2:</u> Do you have any comments on the Frequency Event definition being amended to make reference to a Significant Frequency Disturbance, which is now defined as a deviation of 0.30Hz from Nominal Frequency?</p>	<p>Firstly, this should be seen as a success and a reflection of the excellent performance of the units on the system. Next, we should reflect on the purpose of Data Poor Status – was it to</p> <ol style="list-style-type: none"> 1. Penalise plants if there were no events? or 2. Penalise or force plants to retest if they had low running and were not on line when events occurred? i.e. not proven <p>If recalled correctly from a forum in Dundalk it was the latter. Moving the threshold should reduce the likelihood of High / Mid merit plant being “inappropriately” categorised as data poor but will not necessarily prevent it.</p>

	<p>Bearing in mind testing is not a realistic solution to a data poor status for a CCGT due to the associated costs we suggest the following;</p> <ol style="list-style-type: none"> 1. Data poor assessment period should be extended to at least 2 years 2. Plants that have a significant load factor (market / physical) should not be categorised as data poor. High / Mid merit Plants should not be penalised for being unlucky in respect of the timing of the now rare events, particularly if a plant misses an event due to being constrained off. <p>If a change to the definition is to be made, its introduction on a trial basis to identify any issues or unintended consequences would be our preferred approach.</p>
<p><u>Question 3:</u> Do you have any comments on the application of the Time Zero definition being amended and the removal of the reference to the end of a Frequency Event?</p>	<p>In principle it appears fine. Introduction on a trial basis to identify any issues or unintended consequences would be our preferred approach.</p>
<p><u>Question 4:</u> Do you have any comments on the amendment to the methodology for calculating Pre-Event Frequency and Pre-Event Output?</p>	<p>Agree that ramping and or oscillations could impact the accuracy of the pre-event conditions and a move to a shorter time frame closer to the event is warranted. Introduction on a trial basis to identify any issues or unintended consequences would be our preferred approach.</p>
<p><u>Question 5:</u> Do you have any comments on the proposal to</p>	<p>In principle it appears fine. Introduction on a trial basis to identify any issues or unintended consequences would be our preferred approach.</p>

amend the process for analysing multiple frequency events?	
<u>Question 6:</u> Do you have any comments on the proposed inclusion relating to Availability Performance Monitoring for providers under the Fixed Contracts arrangements?	No comment