

DS3 System Services Market Ruleset RECOMMENDATIONS PAPER

DS3 System Services Implementation Project

31st May 2018

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Synopsis

Introduction

In 2011, we established our 'Delivering a Secure Sustainable Electricity System (DS3)' programme. The objective of the DS3 Programme, of which System Services is a part, is to meet the challenges of operating the electricity system in a safe, secure and efficient manner while facilitating higher levels of renewable energy.

The SEM Committee 14-108 decision on the DS3 System Services procurement design decided that providers with a System Services contract should be paid for the volume of the service that has actually provided or made available in that trading period to the TSOs regardless of requirement for that service, with the subsequent DS3 System Services Tariffs and Scalars SEM Committee Decision Paper SEM-17-080 noting that complexities exist with respect to this decision. As such, it was requested that the Regulatory Authorities work with the TSOs to provide further clarity to industry on a ruleset for applying this principle to ensure sensible outcomes are achieved.

Consultation on Market Ruleset

The application of the approach to payment of market or physical position, as well as associated market rules, was consulted on in March 2018. This consultation outlined a ruleset which would be applied with respect to the remuneration of service availability, including consideration of various I-SEM interactions. The main proposal in this consultation was that the higher of market versus physical will only be paid for providers and for services for which such an approach is implementable and appropriate, and that these rules will be monitored on an ongoing basis with changes to the rules possible as needed. We received 10 responses to this consultation.

In this paper, we set out our recommendations in relation to the Market Ruleset to apply from I-SEM go-live. It has been submitted to the SEM Committee to inform their decision on the various elements of the remuneration of providers. In that context, the SEM Committee's decision paper will set out the final decisions on the ruleset to be implemented by the TSOs. The SEM Committee decision on certain elements of the ruleset may differ in parts to our recommendation.

The TSOs will assess the final SEM Committee decision and develop a plan to implement the ruleset. The TSOs will track and collate all relevant information needed to implement the ruleset.

Given the time required to deliver the IT Project necessary to facilitate settlement under the new rules, the TSOs propose to conduct a re-settlement exercise subsequent to I-SEM go-live. This is expected to occur no later than June 2019. Evaluation of the ongoing suitability of the ruleset recommended will also take place during this time period.

TSOs' Recommendations

Based on our analysis and our review of stakeholder responses, we have developed a recommended ruleset that we believe can meet the outlined challenges and constraints and which accounts for a range of considerations in a balanced manner.

It should be noted that this Market Ruleset will become effective from the date of I-SEM go-live, with resettlement back to this date taking place no later than June 2019. In advance of I-SEM go-live, all contracted DS3 System Services parties from the 1st May 2018 will be remunerated based on their physical dispatch position only.

Our recommendations can be summarised as follows:

Basis of Remuneration

Remuneration will be applied on a per System Service basis and per trading period basis.

Treatment of Providing Units and Services

We recommend that contracted system service providers will be remunerated for the higher of market position or physical dispatch where it is feasible and appropriate to do so. For all other providers their physical dispatch position will be remunerated only.

For those providers who will be remunerated based on the higher of market position or physical dispatch position, this will only apply for the System Services for which it is appropriate.

Table 1 below provides an overview of the different categories of service providers and services, and the remuneration rules for each.

	Reserve Services (FFR, POR, SOR, TOR1, TOR2, RRs, RRD)	Ramping Margin (RM1, RM3, RM8)	Synchronous Internal Response (SIR) and Steady State Reactive Power (SSRP)	Fast Post Fault Active Power Recovery (FPFAPR) and Dynamic Reactive Response (DRR)*
I-SEM registered synchronous generators and battery storage providers	Higher of Market or Physical Dispatch Position Paid	Physical dispatch position paid	Higher of Market or Physical Dispatch Position Paid	Physical dispatch position paid
I-SEM registered wind, solar, DSUs, I/Cs and Synchronous Compensators	Physical dispatch position paid	Physical dispatch position paid	Physical dispatch position paid	Physical dispatch position paid
Units not registered in I-SEM	Physical dispatch position paid	Physical dispatch position paid	Physical dispatch position paid	Physical dispatch position paid

Table 1: Remuneration ruleset dependent on type of service provider and type of service

Scalar Framework

In the DS3 System Services Tariffs and Scalars SEM Committee Decision Paper SEM-17-080 a specific concern relating to application of the temporal scarcity scalar to units that are constrained on by the TSOs, or whose ability to provide a service is increased by a TSO instruction, was highlighted, with the SEM Committee agreeing “in principle that the temporal scarcity scalar should not apply to units that are constrained on. However, it is noted that there may be practical implications which would need to be considered prior to implementation”.

The consultation on the Market Ruleset outlined two options: to not apply the temporal scarcity scalar for constrained on¹ plant (as per the SEM Committee decision), or to apply it. The consultation outlined the rationale behind the SEM Committee decision, but provided justification for the provision of the second option.

On consideration of industry feedback, the TSOs recommend that the temporal scarcity scalar should apply to all service volumes, regardless of whether or not that volume came from a unit's market position or physical dispatch. It is our view that this provides the most transparent basis on which remuneration will take place, reduces complexity, and ensures processes are implementable.

Forced Outages

The TSOs recommend that units which are ‘forced out’ will be remunerated in line with the proposals laid out in this recommendation paper and that no specific arrangements will be put in place. For the sake of clarity, by ‘forced out’ we mean circumstances in which the providing unit themselves experience an issue with their apparatus such that they can no longer fulfil their position. It should be noted that in all cases, units will be expected to declare themselves ‘forced out’ immediately and to change their market position to reflect this as soon as possible.

Ongoing Monitoring

The TSOs recommend that the ongoing effectiveness of the ruleset will be monitored, in part, by the expenditure monitoring which will be undertaken in order to manage DS3 System Services expenditure at large. This will primarily include the ongoing monitoring of System Services spend by the TSO, and can include continuing assessment regarding the impact of the proposed market ruleset as well.

It is important to note that ongoing monitoring will also look at expanding and improving the ruleset recommended in this document. This will include consideration of the rules in place for different services and types of technology, reviewing the complexities that have been set out in this consultation in support of the recommended ruleset, and whether any changes are necessary or possible. An initial review will take place during the implementation period.

¹ “Constrained on” here means where a TSO instruction outside of the market has allowed a unit to increase its availability for a particular service.

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1. Introduction and Background

1.1 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, whereby the curtailment of wind would be reduced to approximately 5% per annum.

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 overall goal of a maximum 75% SNSP limit.

The System Services workstream is a key component of the DS3 programme. The aim of this workstream 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.

A general principle for these arrangements is that service providers will be paid on an availability basis, and that tariffs are put in place to incentivise providers to provide this service availability. The SEM Committee 14-108 decision² on the DS3 System Services procurement design provided the following direction with regard to determining the amount that a service provider should be paid in any given trading period: “The SEM Committee has decided that a provider with a System Services contract will be paid for the volume of the service that has actually provided or made available in that trading period to the TSOs regardless of the TSOs’ real-time requirement for that service. The higher of a unit’s market position or physical dispatch will be used to determine the available volume”. It should also be highlighted that at the Regulatory Authorities’ DS3 Project Board meeting on 4 July 2016, the TSOs’ proposal to use the Final Physical Notification (FPN) as the appropriate market position in calculating a unit’s System Service availability, was approved.

² ‘DS3 System Services Procurement Design and Emerging Thinking decision paper’
<https://www.semcommittee.com/sites/semcommittee.com/files/media-files/SEM-14-108%20DS3%20System%20Services%20Decision%20Paper.pdf>

In the subsequent DS3 System Services Tariffs and Scalars SEM Committee Decision Paper SEM-17-080³ several complexities were noted with respect to the decision to pay the higher of Market or Physical Position, particularly “in relation to the development of principles of availability for technology that are not explicitly energy market linked”. A specific concern relating to application of the temporal scarcity scalar to units that are constrained on¹ by the TSOs was also highlighted.

As such, the SEM Committee noted their wish to see the market versus physical dispatch decision implemented “as soon as is practical and requests that the Regulatory Authorities work with the TSOs to provide further clarity to industry on the appropriate ruleset that needs to be applied to achieve sensible outcomes in this regard”.

1.2 Purpose of the Paper

On 15 March 2015 EirGrid and SONI published a [consultation paper](#) on the DS3 System Services Market Ruleset. This consultation represented the results of the further work requested by the SEM Committee, and proposed ahead of I-SEM a ruleset which will be used for settlement, including with respect to market versus physical dispatch position (including related topics such as the application of the temporal scarcity scalar).

The aim of the ruleset is to respect the general principles for remuneration of System Services in a way which is fair, robust and implementable. Proposals were also included regarding the ongoing monitoring and evolution of this ruleset.

Following consideration of the responses to the consultation we are publishing this recommendations paper for consideration by the SEM Committee.

1.3 Structure of the Paper

This paper provides a high level overview of the stakeholder responses to the consultation on the various key elements. It also sets out our response to the issues raised by stakeholders and our final recommendation on the Market Ruleset to apply from I-SEM go-live.

The remainder of the paper is structured as follows:

- Section 2 provides information on the number and type of responses received to the consultation.
- Section 3 sets out the consultation proposal and background for each topic, stakeholder views and provides TSOs’ recommendations on all of the key aspects of the Market Ruleset.

³ DS3 System Services Tariffs and Scalars SEM Committee Decision <https://www.semcommittee.com/sites/semcommittee.com/files/media-files/SEM-17-080%20DS3%20SS%20SEMC%20Decision%20Paper%20Regulated%20Arrangements%20Tariffs%20and%20Scalars%20Final%20version.pdf>

- Section 4 describes the next steps in terms of application and implementation of the ruleset, including resettlement post I-SEM go live, as well as the monitoring and evaluation of its ongoing appropriateness.

2. Responses to the Consultation

In total, 10 responses to the consultation were received from the stakeholders listed below (all responses were submitted as non-confidential).

- AES UK & Ireland
- Bord Gáis Energy
- Bord na Móna
- Element Power
- Energia
- ESB GWM
- IWEA
- PowerNI PPB
- Renewable Energy Systems (RES)
- Tynagh Energy Ltd

In keeping with previous DS3 System Services consultation papers, all non-confidential responses have been published alongside this recommendations paper. In addition, all responses were shared with the Regulatory Authorities to inform their decision on the market ruleset.

3. TSOs' Recommendation

3.1 Overview

The DS3 System Services Market Ruleset covered a range of proposals, predominantly concerning the application of the remuneration of market or physical dispatch position (as outlined in Section 1.1). At a high level, this ruleset can be broadly grouped into the following categories:

- Basis of Remuneration – the granularity with regard to services and time periods over which availability, and as such, remuneration, will be assessed.
- Treatment of Providing Units and Services – the application of the remuneration of market or physical dispatch position with respect to different types of technology and the 14 System Services.
- Scalar Framework – the correct application and calculation of scalars with respect to interactions with market versus physical dispatch considerations.
- Forced Outages – the arrangement for circumstances where the providing unit themselves experience an issue with their apparatus such that they can no longer fulfil their position.
- Ongoing Monitoring – the format of ongoing monitoring of this ruleset and the evaluation and evolution of it in the future.

In the following section, further background and the consultation proposal are outlined, stakeholders' views are summarised, and the TSOs' key recommendations are presented.

3.2 Basis of Remuneration

Whilst the overarching principle of paying the higher of market or physical dispatch was provided by the SEM Committee decision, one area the ruleset clarifies is the resolution over which this principle is applied: both in time and across service portfolio.

Consultation Paper Background and Proposal

In the consultation we proposed that applying the remuneration rules over any time resolution other than on a trading period basis would add significant complexity and uncertainty and as such, we considered this the only viable option at present. Applying remuneration rules on a trading period basis also better aligns with the energy market at large. We also proposed that the principle should be applied to each individual service in isolation, given System Services will be settled on a per service basis, with the relevant tariff rates and scalars applied on a per service basis also.

Stakeholder Comments on Basis of Remuneration

The following question was asked in the consultation:

“Do you have any views in relation to the basis on which system service availability will be remunerated?”

Out of the 10 respondents, 9 were supportive of the TSOs’ proposal to calculate remuneration based on a trading period basis and on a service by service basis, whilst 1 respondent did not provide comment.

Where given, the reasoning for agreement was that the proposal was logical and in line with other market arrangements (i.e. the energy market).

Whilst agreeing with the proposal, 1 respondent did indicate that they saw “some rational for scalars enhancing the groupings of services on a more aggregated basis”. In this response it was indicated that they would expect any change of this nature to be subject to consultation.

TSOs’ Recommendation for Market Ruleset

The TSOs recommend that remuneration will be applied on a per System Service basis and per trading period basis. This aligns with current settlement methodologies, which are based on settlement of System Services on a per service basis and for a given trading period. This also aligns with stakeholder feedback on this proposal, which was predominantly in agreement with the TSOs’ proposal. We consider that applying the remuneration rules over any other time resolution would add significant complexity and uncertainty. By applying remuneration rules on a trading period basis, this also better aligns with the energy market at large.

TSOs’ Recommendation: Market versus physical dispatch approach will be applied on a per System Service basis and per trading period basis.

3.3 Treatment of Providing Units and Services

The ruleset will provide clarity regarding the approach to remuneration, specifically with respect to the principle of paying the higher of market or physical dispatch position, for various types of potential service providers as well as for the 14 System Services themselves.

3.3.1 Treatment of Providing Units

Consultation Paper Background and Proposal

In the Market Ruleset consultation the potential complexities with regard to remuneration and the application of paying the higher of market or physical dispatch position were examined for a number of technology types. Rules were recommended for various types of provider to take into account these complexities and consider the most appropriate application of the principle

above. It was noted that these rules were recommended for I-SEM go-live and that the ruleset could be modified in due course should the need and possibility to do so be identified.

General Stakeholder Comments on Treatment of Providing Units

For the different types of technology provider below, the same question was asked:

“What are your views on the remuneration of market versus physical dispatch position for each type of service provider? Please provide rationale/additional information.”

Responses varied depending on the Providing Unit of the responder. Many responses supported the TSOs’ proposal for some types of providers, whilst not supporting in other instances. Specific feedback for each type of provider will be outlined in the sections below.

In addition to this, several respondents provided general comments covering the proposals at large.

Three respondents reiterated support for a technology neutral approach, with one of the “view that the same remuneration rules for System Services based on the higher of their market or physical dispatch position should apply to all types of service providers, so long as they were fully registered in the I-SEM market”.

One of these respondents viewed the concept of the TSOs proposing different rules for different technologies as, in their view, looking to “essentially reverse a decision that was taken...by the SEM Committee”, which they viewed as not in the interests of good market governance. The same respondent did acknowledge the challenges in implementing settlement changes during I-SEM implementation, but that any “simplified” solution should be short term only.

In contrast, three respondents provided statements of agreement with the TSOs proposed approach to remunerate I-SEM registered Synchronous Generation only based on the higher of market or physical dispatch. The rationale provided was in relation to the lack of market position for non-synchronous generation, with one respondent noting that synchronous generation provides the “flexibility to accommodate the other types of technology”

TSOs’ Recommendation for Market Ruleset

The specific recommendation for each type of technology will be provided in the sections below. In summary however, the TSOs are of the view that the principle as decided by the SEM Committee was to implement the decision to pay the higher or physical dispatch “as soon as practical” and for the TSOs and Regulatory Authorities to work together to “achieve sensible outcomes in this regard”. In the DS3 System Services Tariffs and Scalars SEM Committee Decision Paper SEM-17-0805 the SEM Committee recognised that “there are complexities with this particularly in relation to the development of principles of availability for technology that are not explicitly energy market linked”.

The TSOs agree with respondents that the DS3 System Services should be as technology neutral as possible and has sought to implement the SEM Committee decision to the extent which is practical and ‘sensible’, whilst taking into account the complexities highlighted in the consultation and below. Specific rules for each type of provider therefore will be provided.

Recommendations for both ongoing monitoring and the evaluation of further implementation of the SEM Committee decision are included in Section 3.6.

Units not registered in I-SEM Energy Market

Consultation Paper Background and Proposal

In the consultation it was noted that the market versus physical dispatch decision and the subsequent TSOs' implementation recommendation is predicated on a unit having a market position in I-SEM and an associated Final Physical Notification (FPN). Without this market participation and associated FPN, it is not possible to remunerate for System Services based on a provider's availability related to their market position. Therefore, the TSOs' proposal was that for units which are not registered in the market, remuneration will be based on their physical dispatch position only.

Stakeholder Comments on Basis of Remuneration

Nine out of ten respondents agreed with the proposal for remuneration of units not registered in the I-SEM Energy market. Where explicitly provided, rationale for this agreement was in line with the TSOs' reasoning, i.e. that the remuneration based on market position was predicated on being a market participant and therefore, non-registered units could be remunerated on physical dispatch position only.

TSOs' Recommendation for Market Ruleset

As highlighted in Section 1.1, the remuneration of the higher of market versus physical dispatch is predicated on a unit having a market position in I-SEM and an associated Final Physical Notification (FPN). Without this market participation and associated FPN, it is not possible to remunerate for System Services based on their availability related to their market position. As such, the TSOs recommend that for providing units which are not registered in I-SEM, the physical dispatch position only is used to determine remuneration for System Services.

Synchronous Compensators

Consultation Paper Background and Proposal

Synchronous compensators are service providers which are synchronised with the transmission network, operating as free spinning motors, with the potential to provide a range of DS3 System Services as non-synchronous generation levels increase. It is not anticipated that these units will have a market position in the traditional sense, as the technology itself is unlikely to be compatible with participation in the energy market. The TSOs therefore proposed that these units are treated in line with those which are not registered in the I-SEM energy market, in that they will be remunerated based on a physical dispatch position.

Stakeholder Comments on Synchronous Compensators

In addition to the general comments (where a number of stakeholders indicated support or opposition to the proposals at large), two respondents explicitly agreed with the proposal for remuneration of Synchronous Compensators, with no other respondents indicating specific objections. One respondent indicated that they saw "some merit" in simplifying the process for

Synchronous Compensators despite general disagreement with the TSOs' proposed approach of applying rules based on type of provider.

For those respondents who explicitly stated their agreement with the proposals, one caveated this that such agreement was on the basis that such providers were operating as System Service providers only. Another indicated their agreement that Synchronous Compensators are treated, effectively, as a unit outside the energy market, but provided additional comments on application of the temporal scarcity scalar (which will be addressed in Section 3.4).

TSOs' Recommendation for Market Ruleset

The TSOs do not view it as necessary or sensible to remunerate Synchronous Compensators based on a 'market position', and therefore recommend that these providers are remunerated based on their availability at physical dispatch only. This is in line with the majority of feedback from stakeholders.

Demand Side Units

Consultation Paper Background and Proposal

For Demand Side Units (DSUs) which are registered in I-SEM, their market position does not automatically provide the TSOs with information which correlates to DS3 System Service availability. This is due to the nature of demand services, with availability for service provision depending on demand load at a given time. DSUs do not provide the TSOs with declarations of specific service availability for a given trading period, with service availability supplied in real time only.

Given this, the TSOs proposed in the consultation that remuneration should only take place based on the physical dispatch position.

Stakeholder Comments on Demand Side Units

In addition to the general comments, three respondents provided specific comments in relation to the proposed treatment of demand side units.

These comments, in general, questioned whether the TSOs' justification for paying based on physical dispatch only was robust, and suggested measures which could be used to fully implement the SEM Committee decision for this type of provider.

One respondent suggested that processes should be changed to "oblige DSUs to communicate their availability in a timely manner to the TSOs". Similarly, another respondent viewed complexity as insufficient grounds in support of the TSOs' proposal and that "they should be asked to assist the TSOs' scheduling by providing accurate forecast of their DS3 capabilities". Another respondent highlighted I-SEM requirements for DSUs by 2020, which will "raise the prospect of Demand Side Units trading in Ex-Ante ISEM energy markets". As such, they did not support the TSOs' proposal.

TSOs' Recommendation for Market Ruleset

The TSOs recognise the comments received in relation to improvement of processes, as well as the increasing participation of DSUs in energy markets. We do see these as potential long term

improvements, which, should they be implemented with sufficient robustness, could in the future allow the higher of market or physical to be paid for this type of provider.

At present, for the reasons outlined in the consultation, we view the appropriate and sensible approach is to remunerate DSUs based on physical dispatch position only. With stakeholders' feedback in mind, the TSOs view it as appropriate that the potential evolution of remuneration for DSUs is specifically considered as part of the ongoing monitoring and evaluation which is recommended in Section 3.6 of this paper

Battery Storage Units

Consultation Paper Background and Proposal

It was highlighted in the consultation that given the nature of battery storage units, it is anticipated that these providers will position themselves to provide maximum availability for System Services. The TSOs therefore viewed it likely that there would be minimal (if any) difference between a battery storage unit's market and physical dispatch position. Given that basing remuneration on physical dispatch position would have minimal impact on payments, the TSOs proposed that remuneration should take place based on the physical dispatch position only.

Stakeholder Comments on Battery Storage Units

Notwithstanding the general comments in favour or opposed to the TSOs' proposal at large, four respondents expressed explicit disagreement with the proposed ruleset in relation to battery storage units. These respondents viewed the proposals as having insufficient justification, with respondents querying why these units should be treated differently to synchronous generation.

One respondent sought clarification on what 'physical dispatch' would mean in the context of batteries. Should this mean circumstances where a battery would only be remunerated in receipt of a physical dispatch notification, "this would make it impossible for investors to assess revenue for a project".

Another respondent felt that given that battery storage units are "not yet a feature of the market", they did not consider it appropriate for the TSOs to "seek to forecast or even determine how these units will operate".

TSOs' Recommendation for Market Ruleset

The TSOs agree that Battery Storage Providers are not yet a significant feature of the energy market in Ireland and Northern Ireland. By including them within this ruleset we intended to provide some clarity as to how they will be remunerated in the future. We do not preclude the potential for the TSOs and all stakeholders to develop their understanding with regard to battery storage providers, and reassess the recommended ruleset in the future as necessary.

The TSOs proposal was based on consideration of the material impact that remunerating based on physical dispatch only would have, namely, that it was negligible. For the sake of clarity, this does not only include circumstances where a battery storage unit is given a dispatch instruction from the TSOs, as queried by one respondent. Indeed, we anticipate that a Battery Storage may often be at a 0 MW position to maximise service availability.

The TSOs' expectation is that remunerating based on physical dispatch only would have negligible effect. How this will work in practice will be further understood as deployment of battery storage increases. However, in consideration of stakeholder feedback and in respect of the SEM Committee decision, the TSOs recommend that I-SEM registered Battery Storage Providers are treated in line with the proposals for I-SEM Synchronous Generation i.e. they will be remunerated based on the higher of market or physical dispatch position.

Wind Power

Consultation Paper Background and Proposal

In I-SEM, the Final Physical Notification of wind generation is reflective of their outturn availability as defined in the Trading & Settlement Code (TSC)⁴, with an FPN which is calculated ex-post (as opposed to submitted at market closure). As such, the TSOs recommended wind power units should be remunerated based on physical dispatch only, given the absence of a prior market position.

Given the similarities between wind power units and solar power units, the TSOs also recommended that the same principle will be applied for any future solar power service providers.

Stakeholder Comments on Wind Power

Two respondents explicitly agreed with the “the principal of paying wind power based on physical position”. In addition, one respondent agreed with the proposal though sought more clarity on interactions and impact on the forecast availability component of the performance scalar. Another respondent queried the benefit to the TSOs on remunerating wind providers based on dispatch position, and questioned whether the TSOs could differentiate between the FPN and the wind resource available (i.e. service availability).

TSOs' Recommendation for Market Ruleset

Given the nature of wind and the calculation of FPN, the TSOs recommend that these providers are remunerated based on physical dispatch only at this time. We do not view this as negatively impacting the affected stakeholders, with feedback from stakeholders supporting this view.

We recognise the need to further investigate the calculation of the forecast availability component of the performance scalar, and committed as part of the consultation to do this as part of the introduction of this component. As such, no recommendation on its treatment will be made as part of this paper.

Interconnectors

Consultation Paper Background and Proposal

As noted in the consultation, the market position of interconnectors is an implicit outcome of the Day-ahead and Intraday Market scheduling platforms. Their market position is not within the

⁴ The latest TSC can be found at <http://www.sem-o.com/MarketDevelopment/Pages/MarketRules.aspx>

control of either the TSOs or the interconnector themselves and as such, cannot be incentivised in a certain way to provide System Services. In most circumstances, the market position of an interconnector will match its physical dispatch position. However, the connecting TSOs (at either end) may counter-trade across the interconnector in either direction, which may increase or decrease service availability.

Given the above, as well as the potential for system conditions in other jurisdictions to alter interconnector flows and potentially reduce service availability, the TSOs' proposal was that physical dispatch position only should form the basis on which these units are remunerated.

Stakeholder Comments on Interconnectors

No specific feedback in relation to remuneration of interconnectors was received. We therefore consider the general feedback received, as outlined at the start of this section (with a number of stakeholders being in agreement with the TSOs' proposal and a number opposed).

TSOs' Recommendation for Market Ruleset

The TSOs view that the proposal to remunerate interconnectors based on physical position only is appropriate given the specific characteristics of this type of provider. The ongoing applicability of this will be managed in line with the ongoing monitoring proposed in this recommendation.

Synchronous Generation

Consultation Paper Background and Proposal

As outlined in the introductory sections to the Market Ruleset consultation, the logic behind remunerating based on the higher of market or physical dispatch can be more readily outlined for a typical synchronous generator, and the interactions between the energy and services market for such a unit.

For all synchronous units in the I-SEM energy market, an FPN must be provided. A synchronous unit may then be moved up or down to a new physical dispatch position. Such conditions align with the context in which the market versus physical dispatch decision was primarily formed. The provision of an FPN and the nature of synchronous generation (in that their capability to deliver services is based on their technical parameters) means that it is possible to calculate a service availability based on market position.

The TSOs' proposal therefore was that synchronous generation will be remunerated based on the higher availability coming from either of market or physical dispatch position. In the consultation the TSOs' did note that such a ruleset would need monitoring to mitigate potential "risk of service availability excess and over-expenditure".

Stakeholder Comments on Synchronous Generators

As well as the general comments provided, three respondents indicated explicit support for the proposals with respect to Synchronous Generators.

In addition, two respondents noted that they agreed with the concerns raised by the TSOs with regard to risk of excess availability and over-expenditure, and that they believed "this risk requires close monitoring".

TSOs' Recommendation for Market Ruleset

As outlined in the consultation, the TSOs view it as feasible to remunerate based on the higher of market or physical dispatch position in the case of synchronous generation. In respect of the SEM Committee decision, we therefore propose this approach. In response to the concerns on over-expenditure raised by two respondents and as outlined in the consultation, the TSOs share the view that this risk must be closely monitored and has recommended measures in line with this (Section 3.6).

3.3.2 Treatment of Services

Consultation Paper Background and Proposal

In the consultation, the TSOs proposed rules with regard to application of the market versus physical dispatch remuneration for the 14 different System Services. These proposed rules were based on specific opportunities and challenges for the various categories of System Services. The potential impact on management of over-expenditure was also considered.

On assessment of these considerations, the TSOs proposed the following rules with respect to the different categories of services.

Reserve Products (FFR, POR, SOR, TOR1, TOR2, RRS, and RRD)

As outlined in the consultation, for reserve System Services, there is a trade-off between the level of energy provision and the level of reserve provided by some service providers (e.g. synchronous generators). This is the conventional behaviour on which the concept of market versus physical dispatch was based (as outlined in the Market Ruleset consultation).

As such, the TSOs proposed that the higher volume of market position or physical dispatch position will be paid for FFR, POR, SOR, TOR1, TOR2, RRS, and RRD (as appropriate for the type of service provider).

Ramping Margin (RM1, RM3 and RM8)

The ability for a unit to provide the Ramping Margin System Services is dependent on a number of factors with the settlement for these services the most complex to calculate. This includes the heat states of the unit, as well as the subsequent market positions and availability for future trading periods (given the timescale of the product).

In the consultation paper we stated our view that it would not be possible at this time to implement remuneration based on availability at market position, and therefore recommended that these services should be based on physical dispatch position only.

Synchronous Inertial Response (SIR) and Steady State Reactive Power (SSRP)

As outlined in the consultation, these services do not necessitate trade-offs between market position and service availability. These services are provided by a unit once it is synchronised i.e. it is provided whether operating at 20% output or 100% output. A TSO dispatching a SIR/SSRP-receiving unit up or down will have no impact on its payments. It was noted however, that if market position is not taken into account, in a scenario where a providing unit is dispatched on in the market but is subsequently moved to 0 MW output by the TSO, this unit will not receive payments.

In the consultation, the TSOs' view was that for such services where payment is based on an on/off status only, this does not align with the traditional market versus physical dispatch context. We considered this as adding significant expenditure risk to remunerate these services based on market position, which could result in significant payments for services which are unnecessary from providers who are fully constrained off. As such, in the consultation paper the TSOs proposed that these two services would be remunerated based on physical dispatch position only.

Fast Post Fault Active Power Recovery (FPFAPR) and Dynamic Reactive Response (DRR)

Similar to SIR and SSRP, these services do not necessitate trade-offs between market position and System Service availability. It was also noted that in the case of FPFAPR and DRR these System Services are not required at levels of SNSP below 70% and will not be procured as part of the regulated arrangements initiated in 2018.

In the consultation paper, we proposed that physical dispatch position should be remunerated only, in line with the other non-reserve type services. Given these services will not be procured during 2018, it was noted in the proposal that we will have the opportunity to monitor the ruleset from I-SEM go-live and consider at a further point in time this recommendation for FPFAPR and DRR, as part of the ongoing monitoring proposed.

Stakeholder Comments on Treatment of Services

The following question was asked in the consultation with respect to treatment of services:

“What are your views on the proposed approach for remuneration with respect to the 14 System Services?”

In general, two respondents agreed with the proposals for treatment of the different categories of service in full. All respondents were in agreement with the proposed remuneration for reserve-like products (FFR, POR, SOR, TOR1, TOR2, RRS, and RRD). The majority did not agree with the proposal to apply alternative rules for the other services however.

For Ramping Margin, five respondents explicitly disagreed with the proposals, and viewed that these services should be treated “in an identical fashion” to the reserve-like services. Additionally, one respondent noted that, whilst understanding that such remuneration not be technically possible at present, they would expect these services to be paid the higher of market or physical position at a point in time where it is “reasonably technically possibly...to do so”.

Respondents who disagreed with the proposals for Ramping Margin provided broadly similar reasons for this, with many noting that the complexity of implementation outlined by the TSOs was not, in their view, “sufficient reason to adopt a different approach than with Reserve Products”. Respondents outlined the similarity to reserve-like services and that “the dynamics of these services for a majority of service providers are similar to Reserve Products”, and that these services are “affected by TSOs dispatch in a similar manner to the other reserve products”. It was therefore the view of the majority of respondents that the Ramping Margin should be remunerated based on the higher of market or physical dispatch position.

In response to the proposals for SIR and SSRP, five respondents disagreed with the TSOs' proposal to remunerate these services based on physical dispatch position only. These respondents saw the proposals as allowing the TSOs to significantly alter remuneration, with

“constrained-off plant...disproportionality impacted”. One respondent viewed that for these services, the proposal could “remove the incentive to provide these System Services”.

In contrast, one respondent noted specific support for the TSOs’ proposal in relation to SIR and SSRP. This respondent noted their agreement was with a view to the “ability of a unit who had established a position in the Ex-Ante markets to reflect the DS3 revenue foregone constrained in the BM in its BMCOP compliant bids”.

With respect to FPFAPR and DRR, three respondents disagreed with the TSOs proposal to remunerate these services based on physical dispatch position only. In these instances, justification was broadly in line with reasoning given for SIR and SSRP, in that these respondents wished to see the approach consistent for all services and that such an approach may remove the incentive to provide these services.

One respondent supported the TSOs’ proposal in relation to FPFAPR and DRR, on the provision that “this position be subject to review in advance of the introduction of these services as SNSP increases to 70%”.

TSOs’ Recommendation for Market Ruleset

The TSOs note the broad agreement in relation to the TSOs’ proposal to remunerate the ‘reserve-like’ services based on the higher of market or physical dispatch position. The TSOs’ recommendation is to remunerate in line with this proposal i.e. that the higher of market or physical dispatch position will be paid for the ‘reserve-like’ products, FFR, POR, SOR, TOR1, TOR2, RRS, and RRD.

In relation to Ramping Margin, the TSOs’ note that the majority of respondents viewed these as being similar to the ‘reserve-like’ products, and as such they should be treated similarly. A number of characteristics with respect to these services however cause additional challenges to the remuneration of these services based on higher of market or physical dispatch position, as outlined in the consultation (including the heat states of the unit, as well as the subsequent market positions and availability for future trading periods).

The TSOs remain of the view that the most sensible approach at present is to remunerate for these services based on physical dispatch position only. The TSOs not only consider the feasibility implications of implementing remuneration via another approach, but also view this complexity as leading to uncertainty on the TSOs behalf as to whether market behaviour could lead to overspend in these system service categories. With this additional risk to the consumer in mind, the TSO recommendation is to remunerate these services based on physical dispatch only. As outlined in Section 3.6, as sufficient I-SEM data becomes available the TSOs will carry out a review of this recommendation.

For the services SIR and SSRP, one of the significant reasons behind the TSOs’ proposal to remunerate based on physical dispatch position only was the risk of over-expenditure. Remuneration based on market position “could result in significant payments for services which are unnecessary from providers who are fully constrained off”. The TSOs remain of the view that this represents a significant risk. However, we do note that the majority of respondents were of the view that these services should be remunerated in lined with the reserve-like services. The responses indicated that, given the binary nature of the payments, the proposal could have a significant negative impact on providers, and could remove the incentive to provide

these services. It should also be noted that remuneration based on market position for these services does not carry the same feasibility concerns outlined with respect to the Ramping Margin services.

In light of this, the TSOs recommend that for these two services, the higher of market or physical dispatch position will be paid. The impact on expenditure of this approach must be closely monitored to mitigate the risk highlighted by the TSOs as part of the consultation.

Finally, in relation to FPFAPR and DRR, as noted these System Services are not required at levels of SNSP below 70% and therefore payment will be zero until the system reaches 70% SNSP levels. The TSOs therefore have further time to consider the most appropriate approach with respect to FPFAPR and DRR, ahead of these two services being procured. At present we recommend that physical dispatch position should be remunerated only, and that the opportunity to remunerate the higher of market or physical position is evaluated ahead of service go-live, including analysis of data subsequent to I-SEM go-live.

3.3.3 Summary of Recommended Ruleset for Providing Units and Services

As outlined above, for reasons of both feasibility and for managing the risk of expenditure, the TSOs recommend that the higher of market or physical dispatch position is paid only for synchronous generators and battery storage providers, and only for the provision of reserve like services (FFR, POR, SOR, TOR1, TOR2, RRS, and RRD) as well as SIR and SSRP. For other types of providers we view it as viable and sensible to remunerate based on physical dispatch position only, whilst for other types of System Services we see remuneration based on market position as not feasible or appropriate at this time.

The TSOs recommend that a review of remuneration approach for FPFAPR and DRR is conducted ahead of these services going live. We also recommend the ruleset at large is evaluated within 1 year of its publication at the latest. Where the approach of paying the higher of market or physical can be applied (and where it is appropriate to do so), we will seek to implement this subsequent to such a decision (notwithstanding the need for appropriate stakeholder engagement and regulatory oversight).

TSOs' Recommendation: System Service providers will be remunerated based on their availability dependent on the type of provider and the category of System Service, in line with Table 2.

	Reserve Services (FFR, POR, SOR, TOR1, TOR2, RRS, RRD)	Ramping Margin (RM1, RM3, RM8)	Synchronous Internal Response (SIR) and Steady State Reactive Power (SSRP)	Fast Post Fault Active Power Recovery (FPFAPR) and Dynamic Reactive Response (DRR)*
I-SEM registered synchronous generators and battery storage providers	Higher of Market or Physical Dispatch Position Paid	Physical dispatch position paid	Higher of Market or Physical Dispatch Position Paid	Physical dispatch position paid
I-SEM registered wind, solar, DSUs, I/Cs and Synchronous Compensators	Physical dispatch position paid	Physical dispatch position paid	Physical dispatch position paid	Physical dispatch position paid
Units not registered in I-SEM	Physical dispatch position paid	Physical dispatch position paid	Physical dispatch position paid	Physical dispatch position paid

**Review to be undertaken ahead of SNSP 70%*

Table 2: Recommended ruleset for types of providers and services

3.4 Scalar Framework

In this section we provide our recommendation on the rules with respect to the interaction between scalars and remuneration (whether based on market or physical dispatch position), including the application of the temporal scarcity scalar for constrained on¹ service providers.

Application of Scarcity Scalar

Consultation Paper Background and Proposal

In the DS3 System Services Tariffs and Scalars SEM Committee Decision Paper SEM-17-080, a specific concern relating to application of the temporal scarcity scalar to units that are constrained on¹ by the TSOs was highlighted. The SEM Committee agreed “in principle that the temporal scarcity scalar should not apply to units that are constrained on. However, it is noted that there may be practical implications which would need to be considered prior to implementation”.

This decision was based on a view that “the arrangements should ensure that participants are incentivised to bid efficiently into the energy market”, i.e. only units providing services due to their market position should be rewarded for service provision in times of high SNSP.

In the consultation, as well as outlining the aim of incentivising participants to bid efficiently into the energy market, it was highlighted that in some instances a unit could receive an instruction from the TSO to adjust its output in order to provide System Services and ensure system security at times of high SNSP. In these circumstances it may be appropriate that these providers should be remunerated in line with other System Service providing units at that time. It was noted that the impact of not applying this scalar for some units would have a significant impact on remuneration received for providers who are providing service availability at the same point in time.

As such, two options were presented in the consultation:

Option 1: Do not apply scarcity scalar to constrained on¹ units

Option 2: Apply to scarcity scalar to constrained on¹ units

A third option was also considered, where the scarcity scalar would be applied only for units which were constrained on for the purposes of System Services. It was the TSOs' view that this did not represent a viable option at present given the extensive complexities represented, with the potential to decrease transparency for providers.

Stakeholder Comments on Application of Scarcity Scalar

The following question was asked as part of the consultation:

“Do you have a preferred option (with rationale) regarding the application of the scarcity scalar for ‘constrained on’ units?”

The majority of respondent (six) indicated a strong preference for Option 2; that the scarcity scalar should apply for constrained on units. Information supplied in support for Option 2 was extensive, with respondents concerned that Option 1 was not “fair or reasonable”, and that units which are constrained on should be treated the same as other providing units, particularly given that flexibility of this kind is “vital for system operation and security and [as such] should be remunerated equally”. One of these respondents noted that although they were in support of Option 2; they would anticipate a review of the original SEM Committee decision “by the SEM Committee itself”.

Two respondents indicated support for Option 1, with one of these respondents indicating they would prefer to have seen the third option (to apply only for units constrained on for the provision of System Services), and that the felt “it should be easy to identify which units have been constrained on for the provision of System Services”. The other respondent outlined a number of reasons as to why they saw Option 1 as preferable; primarily that it would provide the correct incentives for units in the market. For example, they saw Option 1 as having the potential to incentivise units who are not being dispatched to lower their bid prices “to avail of the additional revenue from DS3”.

TSOs' Recommendation for Market Ruleset

On consideration of industry feedback, the TSOs recommend that the temporal Scarcity Scalar should apply to all system service volumes (including those which are due to a unit responding DS3 System Services Market Ruleset Recommendation Paper

to a TSO instruction) i.e. Option 2. It is the TSOs' view that this provides the most transparent basis on which remuneration will take place, whilst ensuring the necessary processes are implementable. We recognise the concerns regarding incentivising participants to bid efficiently into the market and recommend that the impact of this approach is monitored as part of the ongoing monitoring process outlined in this paper. We understand that this recommendation represents a change from the previous SEM Committee decisions on this matter, and that this recommendation would require a new SEM Committee decision.

It should be noted that regardless of whether it is the market or physical dispatch position which forms the basis of scalar application, the SNSP used to determine the application of the temporal scalar will be that of actual physical (operational) SNSP levels only, as approved by the SEM Committee in SEM-17-080.

TSOs' Recommendation: All relevant service volumes will be remunerated with the temporal Scarcity Scalar applied, including those which are due to a unit's physical dispatch only.

3.5 Forced Outages

Consultation Paper Background and Proposal

The consultation considered whether special rules were needed in relation to units whose market position shows availability but the unit is subsequently 'forced out' for the actual trading period. By 'forced out' we mean circumstances in which the providing unit themselves experience an issue with their apparatus such that they can no longer fulfil their market position. It should be noted that in all cases, units will be expected to declare themselves 'forced out' immediately and to change their market position to reflect this as soon as possible.

Given that it is assumed such instances and time periods will be infrequent, the TSOs' proposal was that it is not necessary to put in place specific rules for these circumstances. This was viewed within the context that specific rules for these circumstances would likely be complex and require ex-post recalculation, which could be seen as inordinate given the relative infrequency and low size of these events.

Stakeholder Comments on Forced Outages

The following question was asked as part of the consultation:

"Do you have any view on the proposed treatment of forced outages?"

Six respondents indicated agreement with the TSOs' proposal, broadly on the same basis as the proposal was made (that such instances will be infrequent and that such units should declare their unavailability as soon as possible).

Two respondents did not agree with the TSOs' proposal, with concerns that this was made "purely because it is an easier design", whilst another respondent was of the view that they would "not describe...as infrequent or low in size" such instances of forced outages.

TSOs' Recommendation for Market Ruleset

The TSOs recognise that the majority of respondents agreed with the proposal. We would reiterate that this proposal is based on the view that such instances will be infrequent and of a low volume, and are predicated on units declaring themselves 'forced out' and immediately changing their market position to reflect this as soon as possible.

However, the frequency of these types of events could be higher than anticipated, and we recommend that this topic should be monitored on an ongoing basis as recommended in Section 3.6.

TSOs' Recommendation: No specific remuneration rules will be put in place for units which are 'forced out'. Such units will be remunerated in line with the proposals laid out in this consultation but will be expected to declare themselves 'forced out' immediately and to change their market position to reflect this as soon as possible.

3.6 Continued Monitoring

Consultation Paper Background and Proposal

The consultation proposed that the ongoing effectiveness of the ruleset will be monitored, in part, by the expenditure monitoring which will be undertaken in order to manage overall DS3 System Services expenditure. This will include the ongoing monitoring of System Services spend by the TSOs for the purposes of highlighting risks of over-expenditure and implementing corrective actions if necessary. The TSOs proposed that this monitoring will include continued assessment regarding the impact of the proposed market ruleset as well.

It was also proposed that the ongoing monitoring will also look at expanding and improving the ruleset proposed in this document, including consideration of the rules in place for different services and types of technology, reviewing the complexities that have been set out in this recommendation paper and consultation in support of the recommended ruleset, and whether any changes are necessary. The TSOs' proposed an initial review will take place, at the latest, ahead of the resettlement which will be conducted in June 2019.

Stakeholder Comments on Ongoing Monitoring

Stakeholders were asked the following question as part of the consultation:

"Do you have any comments in relation to the proposed ongoing monitoring of this ruleset?"

In general, stakeholders agreed with the proposal for ongoing monitoring and evaluation of the ruleset, but with many (six) cautioning that such ongoing monitoring and evolution could lead to uncertainty and could "act to undermine investor confidence", and that confidence was needed for a range of reasons. These respondents highlighted the need for robust process and governance for this ongoing monitoring. One respondent suggested that to improve governance, that "the ruleset should be incorporated into the protocol to simplify governance".

Two respondents indicated particular agreement with the need for expenditure monitoring given the risks highlighted by the TSO. These respondents believe that any subsequent budgetary impact resulting from the monitoring of this ruleset should be “borne only by synchronous generators and not by units which are paid on physical dispatch only”. Conversely, one respondent specifically outlined concerns that the ongoing monitoring was “overly biased towards expenditure control”, and expressed concerns regarding potential impact on DS3 spend.

TSOs’ Recommendation for Market Ruleset

In line with the consultation proposal, the TSOs recommend that monitoring of this ruleset takes place in line with the ongoing requirement for expenditure monitoring for the DS3 System Services programme at large. This expenditure monitoring is key to the DS3 System Services programme and is currently under development with the regulatory authorities, with an industry paper to be published. This process will include robust governance, as well as industry consultation in circumstances where significant change is necessary.

With a view to responses submitted with respect to all aspects of the consultation, and particularly the approach to types of provider and categories of service, the TSOs recommend that a holistic review is conducted, at latest, within the first 12 months of this ruleset, in parallel with the implementation timeframe. This review will not only consider any impact on expenditure (with respect to the risks of over-availability outlined by the TSO), but also look at the possible expansion of the approach of paying the higher of market or physical dispatch for those units and services for which the recommendation at this time is to pay based on physical dispatch only. Specifically, this includes the approach of paying based on physical dispatch only for certain types of technology, as well as for the Ramping Margin products. Evaluation with respect to the recommended approach to remuneration of Fast Post Fault Active Power Recovery (FPFAPR) and Dynamic Reactive Response (DRR) will also be conducted as part of this holistic review, or sooner should the SNSP increase to 70% and procurement timescales necessitate earlier action.

4. Next Steps

This paper provides stakeholders with information on our recommendations in relation to the Market Ruleset to apply from I-SEM go-live. It has been submitted to the SEM Committee to inform their decision on the various elements of the design. In advance of I-SEM go-live, the TSO recommends that all contracted DS3 System Services parties from the 1st May 2018 will be remunerated based on their physical dispatch position only.

The SEM Committee's decision paper (due to be published in parallel with this paper) will set out the final decisions on the design to be implemented by the TSOs. The SEM Committee decision on certain elements of the ruleset may differ in parts to our recommendation.

The TSOs will assess the final SEM Committee decision and develop a plan to implement the various aspects of the arrangements as soon as possible.