

DS3 System Services Interim Tariffs DECISION PAPER

DS3 System Services Implementation Project

24 August 2016



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Executive Summary

Introduction and 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 generators to consumers. We also have a responsibility to enable increased levels of renewable energy 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 was established to meet the challenges of operating the electricity system in a safe, secure and efficient manner while facilitating higher levels of renewable energy.

One of the key work streams in the DS3 Programme is the System Services work stream. The aim of the System Services work stream is to put in place the correct structure, level and type of services in order to ensure that the system can operate securely with higher levels of non-synchronous¹ renewable generation (up to 75% instantaneous penetration).

In December 2014, the SEM Committee published a decision paper on the high-level design for the procurement of DS3 System Services (SEM-14-108)².

The SEM Committee decided that the implementation of the DS3 System Services arrangements would be divided into two phases – interim and enduring. The enduring arrangements will deliver competitive procurement, where appropriate, for the 14 services. A cost-reflective tariff will be applied to services where there is insufficient competition.

During the interim period set to begin on 1 October 2016, we will contract for services with all eligible providers, who will be paid at a rate, approved by the SEM Committee, for the volume of services they are able to deliver in each trading period.

¹ Non-synchronous generators supply power to the electrical grid via power electronics. Power electronics are used to adjust the speed and frequency of the generated energy (typically associated with wind energy) to match the speed and frequency of the transmission network.

² DS3 System Services Procurement Design and Emerging Thinking Decision Paper (SEM-14-108): <http://www.semcommittee.eu/GetAttachment.aspx?id=c0f2659b-5d38-4e45-bac0-dd5d92cda150>

Under both arrangements, potential providers will be required to participate in a procurement exercise. The procurement process for the interim arrangements is currently on-going with contracts set to be awarded to successful tenderers ahead of the scheduled go-live date of 1 October 2016.

Purpose of this Paper

In April 2016, EirGrid and SONI published a consultation paper covering, amongst other items, the proposed tariff payment rate calculation methodology and the resulting proposed tariff rates to be used for the interim arrangements. The consultation paper provided stakeholders with information about our proposals and a guide to the consultation process.

Following consideration of the responses to the consultation we are publishing this decision paper which has been approved by the SEM Committee. The purpose of this paper is to provide stakeholders with information on the various elements of our decision including the tariff calculation methodology and the resulting tariff rates.

The decision on the interim tariff calculation methodology is broadly in line with our proposals in the consultation paper. However, following additional modelling and analysis (using updated assumptions) conducted in the period since publication of the consultation paper, the tariff rates that will apply for the period of the interim arrangements have been increased for many of the services.

Decision on Methodology for Calculating Interim Tariffs

We remain of the view that the calculation methodology set out in the consultation paper is suitable for determination of tariffs in the interim period. However, we agree with stakeholders that there is merit in further consideration and analysis of the inputs to the methodology and in particular the estimate of remuneration volumes.

The methodology described below and illustrated in Figure 1 is the final tariff calculation methodology:

1. We start with a notional total “pot” size. The aim is to adjust this pot size until the total payment for the seven existing Harmonised Ancillary Services (HAS) services is approximately equal to the existing budget for these services when allocated according to the 2016/17 relative weightings;

2. We then calculate the “pots” for each individual service using the relative DS3 2016/17 system service weightings;
3. We then calculate the interim tariff rate for each service by dividing the relative “pots” by the estimated annual DS3 system service remuneration volume for each service;
4. We conduct a check to determine if the total payment for the seven existing services is approximately equal to the existing budget for these services;
5. If the total payments for the seven existing services are less than the existing budget then the pot size is adjusted upwards and steps 1 - 4 are repeated. If the total payments for the seven existing services are greater than the existing budget then the pot size is adjusted downwards and steps 1-4 are repeated.

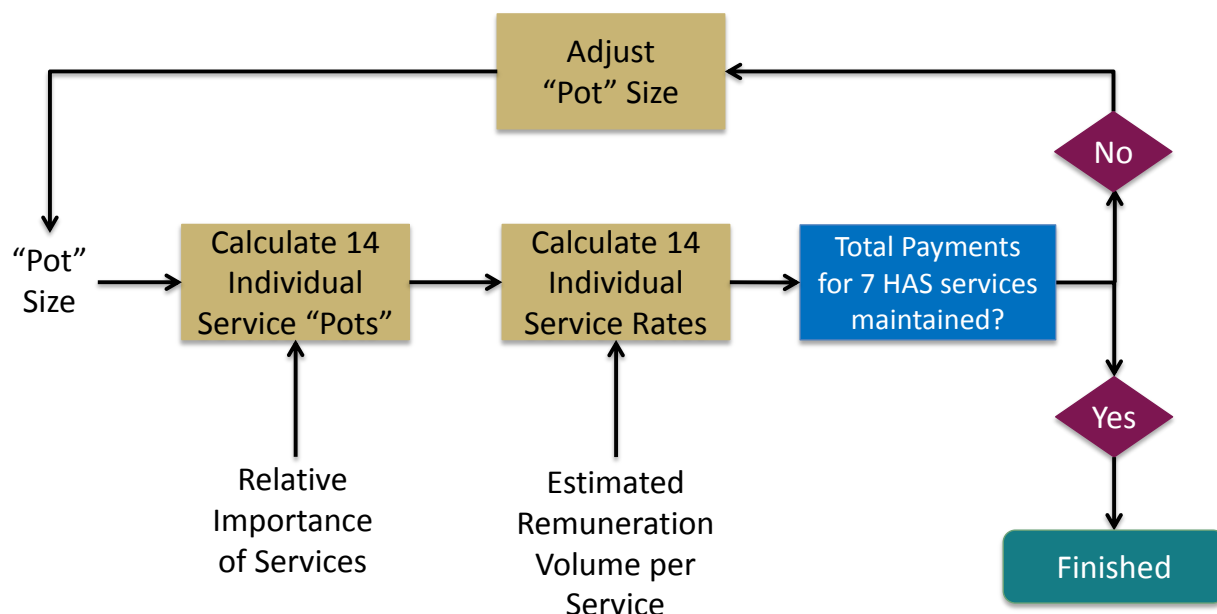


Figure 1: Interim Tariff Calculation Methodology

Decision on Interim Tariff Rates

The calculation methodology set out above was used to calculate the interim tariff rates for 2016 / 2017.

The final interim tariff rates are listed in Table 1.

As can be seen, the rates for many of the services have increased relative to the proposed rates set out in the consultation paper. This is predominantly due to revised estimates of the expected remuneration volumes.

When undertaking the modelling to estimate remuneration volumes, which directly feeds into calculation of the payment rates for the interim period, we had to make a large number of assumptions. With greater clarity on these assumptions starting to become available as the consultation and procurement processes progressed, we have re-run our models with updated assumptions.

As a result of this additional modelling and analysis, we have decided to adjust the rates upwards.

However, the increase in rates does not change the expected total level of payments for system services. As set out in the consultation paper, the expected increase in total payments for system services relative to the HAS arrangements is approximately €20m.

Service Name	Unit of Payment	Tariff Rate in Consultation Paper €	Final Tariff Rate €
Synchronous Inertial Response (SIR)	MWs ² h	0.004	0.0046
Fast Frequency Response (FFR)	MWh	1.96	2.06
Primary Operating Reserve (POR)	MWh	2.47	2.93
Secondary Operating Reserve (SOR)	MWh	1.37	1.78
Tertiary Operating Reserve (TOR1)	MWh	1.19	1.41
Tertiary Operating Reserve (TOR2)	MWh	0.99	1.12
Replacement Reserve - Synchronised (RRS)	MWh	0.13	0.23
Replacement Reserve – Desynchronised (RRD)	MWh	0.64	0.50
Ramping Margin 1 (RM1)	MWh	0.08	0.10
Ramping Margin 3 (RM3)	MWh	0.13	0.16
Ramping Margin 8 (RM8)	MWh	0.10	0.14
Fast Post Fault Active Power Recovery (FPFAPR)	MWh	0.13	0.14
Steady State Reactive Power (SSRP)	MVarh	0.20	0.21
Dynamic Reactive Response (DRR)	MWh	0.03	0.04

Table 1: Interim Tariff Rates for 2016 / 2017

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1 Introduction

1.1 EirGrid and SONI

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 generators to consumers. Electricity is generated from gas, coal, peat and renewable sources (such as wind and hydro power) at sites across the island. Our high voltage transmission network then transports electricity to high demand centres, such as cities, towns and industrial sites.

We have a responsibility to enable increased levels of renewable energy to generate on the power system while continuing to ensure that the system operates securely and efficiently. In 2010, we published the results of the “*Facilitation of Renewables*” studies. Those studies identified a metric called “*System Non-Synchronous Penetration*” (SNSP) as a useful proxy for the capability to operate the power system safely, securely and efficiently with high levels of renewable generation. SNSP is a real-time measure of the percentage of generation that comes from non-synchronous³ sources, such as wind generation, relative to the system demand.

The studies identified 50% as the maximum level of non-synchronous renewable generation allowable on the power system until solutions could be found to the various technical challenges identified. If this limit is not increased, curtailment on installed wind could rise to over 25% per annum.

1.2 The DS3 Programme

Our ‘*Delivering a Secure Sustainable Electricity System (DS3)*’ programme sought to address the challenges of increasing the allowable SNSP up to 75% by 2020 where by the curtailment of wind would be reduced to approximately 5% per annum.

DS3 incorporates mutually reinforcing innovative technical, engineering, economic and regulatory initiatives. It is divided into three pillars:

- System Performance

³ Non-synchronous generators supply power to the electrical grid via power electronics. Power electronics are used to adjust the speed and frequency of the generated energy (typically associated with wind energy) to match the speed and frequency of the transmission network.

- System Policies
- System Tools

DS3 is not only making the necessary operational changes to manage more renewable generation, it is also about the evolution of the wider electricity industry and implementing changes that benefit the end consumer. From the onset, the integration of wind generation presented a range of challenges previously unseen in the power sector. Through collaboration with the Regulatory Authorities and the wider electricity industry, DS3 has developed a number of innovative and progressive solutions.

The results of the programme are now beginning to deliver benefits to the consumer. In recent months the allowable SNSP level has been increased to 55% following the successful conclusion of a 55% SNSP operational trial. It is expected that similar trials will be conducted in the coming years with a view to achieving the overall goal of 75% SNSP by 2020 in a controlled manner.

1.3 DS3 System Services Process

One of the key work streams in the DS3 Programme is the System Services work stream. The aim of the System Services work stream is to put in place the correct structure, level and type of services in order to ensure that the system can operate securely with higher levels of non-synchronous renewable generation (up to 75% instantaneous penetration). Operating in this manner will reduce the level of curtailment for wind (and solar) farms and should deliver significant savings to consumers through lower wholesale energy prices.

In December 2014, the SEM Committee published a decision paper on the high-level design for the procurement of DS3 System Services (SEM-14-108)⁴.

The SEM Committee's decision framework aims to achieve the following:

- Provide a framework for the introduction of a competitive mechanism for procurement of system services;

⁴ DS3 System Services Procurement Design and Emerging Thinking Decision Paper (SEM-14-108): <http://www.semcommittee.eu/GetAttachment.aspx?id=c0f2659b-5d38-4e45-bac0-dd5d92cda150>

- Provide certainty for the renewables industry that the regulatory structures and regulatory decisions are in place to secure the procurement of the required volumes of system services;
- Provide certainty to new providers of system services that the procurement framework provides a mechanism against which significant investments can be financed;
- Provide clarity to existing providers of system services that they will receive appropriate remuneration for the services which they provide;
- Provide clarity to the TSOs that the required system services can be procured from 2016 onwards in order to maintain the secure operation of the system as the level of wind increases;
- Provide clarity to the Governments in Ireland and Northern Ireland (and indeed the European Commission) that appropriate structures are in place to assist in the delivery of the 2020 renewables targets;
- Ensure that Article 16 of Directive 2009/EC/28 is being effectively implemented (duty to minimise curtailment of renewable electricity);
- Provide assurance to consumers that savings in the cost of wholesale electricity which can be delivered through higher levels of wind on the electricity system, can be harnessed for the benefit of consumers;
- Provide assurance to consumers that they will not pay more through system services than the benefit in terms of System Marginal Price (SMP) savings which higher levels of wind can deliver⁵.

1.4 Interim and Enduring Arrangements

The SEM Committee decided that the implementation of the DS3 System Services arrangements would be divided into two phases – interim and enduring. The enduring

⁵ Note: the composition of the price that will be paid by end consumers for wholesale electricity will change significantly following the introduction of the I-SEM trading arrangements. The savings delivered by DS3 will be split across the imbalance settlement, balancing costs, the price in the ex-ante markets and the Capacity Remuneration Mechanism.

arrangements will deliver competitive procurement, where appropriate, for the 14 services. A cost-reflective tariff will be applied to services where there is insufficient competition.

During the interim period (2016/17), the TSOs will contract for services with all eligible providers, who will be paid at a rate, approved by the RAs, for the volume of services they are able to deliver in each trading period.

The TSOs consulted on an Enduring Tariff methodology in late 2015 and are currently drafting final decisions on this, which will be subject to SEM Committee approval.

Under both interim and enduring arrangements, potential providers will be required to participate in a procurement exercise. The Interim Contractual arrangements are based on framework agreements between the TSOs and individual providing units for provision of system services. The procurement process for the interim arrangements is currently on-going with contracts set to be awarded to successful tenderers ahead of the scheduled go-live date for the interim arrangements of 1 October 2016.

The Regulatory Authorities held a consultation on the Enduring DS3 System Services Qualification Process and Contract Design, which outlined options and proposals related to the procurement process for the enduring arrangements (Auction and Tariff based). The TSOs will start developing detailed Enduring Qualification Processes and Contracts once a final decision paper is issued by the SEM Committee on these issues.

1.5 Aims of Interim Arrangements

The interim arrangements aim to:

- provide for the needed services to maintain a secure, reliable power system in 2016/2017;
- transition from the existing Harmonised Ancillary Services (HAS) arrangements to the DS3 System Services enduring arrangements while:
 - validating the capability of service providers to deliver the DS3 system services in a robust and reliable manner;
 - proving the capability, and establishing the measurability, of relevant new technologies to provide a limited subset of DS3 system services. This will

prudently increase the competitive forces prevalent in the enduring DS3 System Services arrangements;

- establish the processes and procedures that will provide the backbone of the enduring arrangements;
- provide cost-effective payments consistent with the transition from HAS to the enduring arrangements, which will ultimately lead to efficient investment in the capability required on the all-island transmission system;
- deliver direct cost savings to end users arising as a result of lower capacity payments and potential increases in operational SNSP.

Figure 2 provides a high-level summary of these objectives.

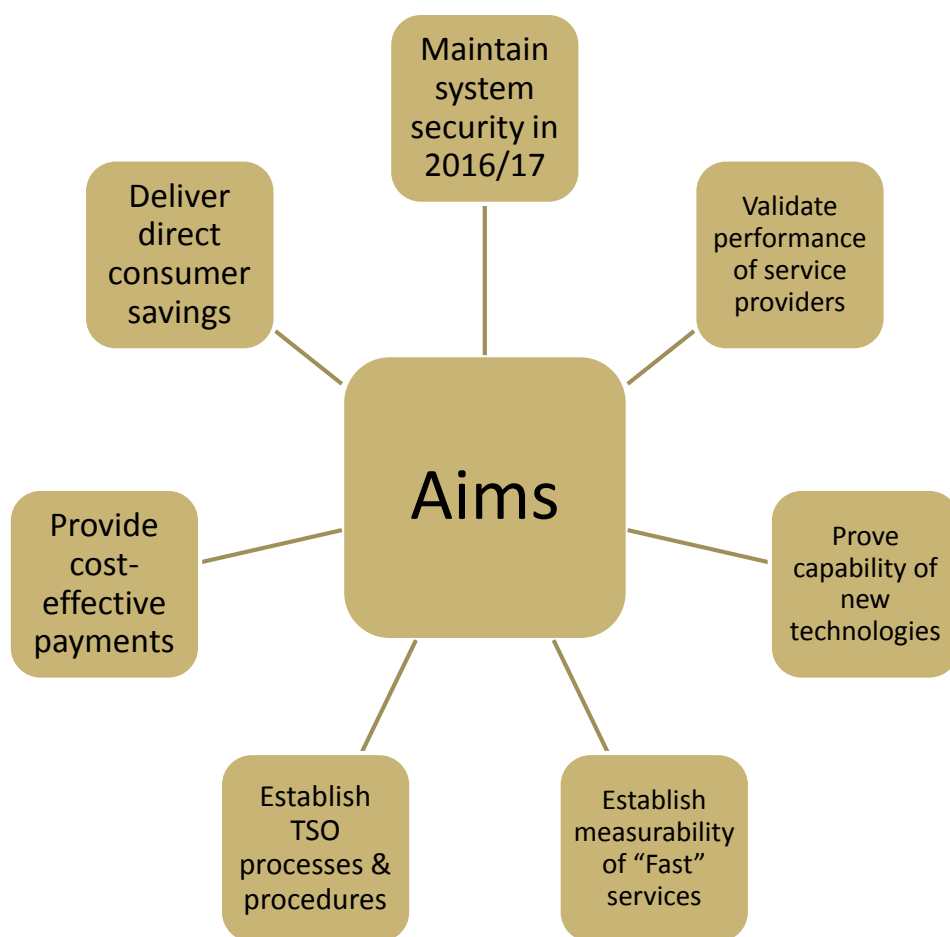


Figure 2: High-level summary of the aims of the Interim Arrangements

The interim arrangements will also provide other learning benefits to the TSOs and service providers that will deliver indirect benefits for customers in the future. The benefits of the Interim Arrangements are discussed further in Section 5.

1.6 Consultation on Interim Tariff Rates

In April 2016, EirGrid and SONI published a consultation paper covering, amongst other items, the proposed tariff payment rate calculation methodology and the resulting proposed tariff rates to be used for the interim arrangements. The consultation paper provided stakeholders with information about our proposals and a guide to the consultation process.

The consultation paper also posed the following consultation questions to structure responses around:

Question 1: Should we take any other factors into account when determining the relative importance of each service during the interim period?

Question 2: Have you any comments on the methodology used to calculate the rates?

Question 3: Are there any other benefits from the interim arrangements that should be considered?

Question 4: Have we set out the relevant impacts on service providers over this interim period?

To facilitate stakeholder engagement we will also hosted an industry workshop during the consultation period. This workshop, held on 11 April 2016 in Dundalk, provided opportunity for discussion on the details of the consultation paper and stakeholder feedback.

1.7 Purpose of this Paper

Following consideration of the responses to the consultation we are publishing this decision paper which has been approved by the SEM Committee. The purpose of this paper is to provide stakeholders with information on the various elements of our decision including the tariff calculation methodology and the resulting tariff rates.

The decision on the interim tariff calculation methodology is broadly in line with our proposals in the consultation paper. However, following additional modelling and analysis (using updated assumptions) conducted in the period since publication of the consultation paper, the tariff rates that will apply for the period of the interim arrangements have been increased for many of the services.

1.8 Structure of this 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 decision on the core items of the interim tariff calculation methodology and the tariff rates for 2016/17.

Section 2 provides information on the number and type of responses received.

Section 3 begins by providing an overview of the interim tariff calculation methodology proposed in the consultation paper. General stakeholder comments on the methodology are then presented followed by more specific stakeholder comments on the various key inputs to the methodology and other detailed methodology-related issues and matters.

The final interim tariff rates are then presented in Section 4.

In Section 5, the benefits that can be obtained from the interim arrangements, when compared to remaining with the current seven system services until the enduring procurement exercise takes place are discussed. In particular, the views of stakeholders on these benefits have been set out in detail.

In the consultation paper, we asked stakeholders to set out the relevant impacts on service providers over the interim period. Section 6 provides a summary of the main impacts identified by stakeholders.

Finally, Section 7 provides a brief summary of the key decisions relating to the tariff calculation methodology as well as the final resulting interim tariff rates.

2 Responses to Interim Tariffs Consultation

There were nineteen responses to the consultation on Interim Tariffs. Of these, two responses were marked confidential. The seventeen non-confidential responses were received from:

- AES
- Bord Gáis Energy
- Bord na Móna
- Electric Ireland
- Energia
- ESB GWM
- Gaelectric Holdings Plc.
- IWEA
- Power NI PPB
- Renewable Energy Systems Ltd.
- EirGrid Interconnector Ltd
- SSE
- Tynagh Energy Ltd.
- Aughinish Alumina Ltd.
- Electricity Association of Ireland
- Moyle Interconnector Ltd.
- Schwungrad Energie.

The views of respondents have been summarised and addressed in this paper. A number of respondents provided very specific replies, often reflecting the respondents' particular circumstances. In keeping with previous DS3 System Services consultation papers, all responses that were not marked as confidential have been published alongside this decision paper. In addition, all responses were shared with the

Regulatory Authorities to inform their approval of the final payment rates set out in this paper.

A number of respondents replied with comments outside the scope of this consultation. These have been or will be dealt with, as appropriate, in other consultations. They include:

- Specific details of the Qualification Trial Process;
- The SEM Committee decision on the payment basis for DS3 System Services i.e. payment on an availability basis;
- The technical definition of certain DS3 System Services;
- Treatment of blackstart provision in Ireland and Northern Ireland.

3 Interim Tariff Methodology

3.1 Overview of Methodology proposed in Consultation Paper

The consultation paper set out the methodology proposed for calculation of the payment rates as well as the proposed rates resulting from implementation of the methodology. The methodology was underpinned by the principles / considerations set out in Figure 3.

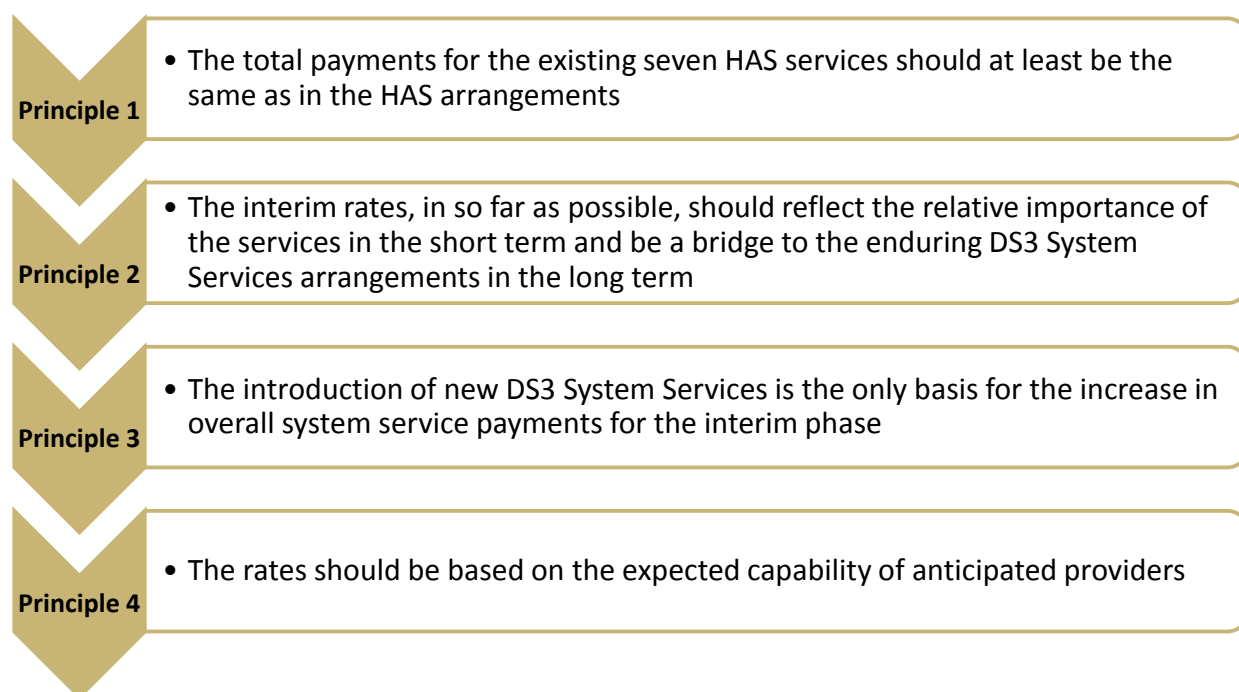


Figure 3: Principles underpinning Interim Tariffs Methodology

Based on these principles, we developed a calculation methodology that requires a number of key inputs. These key inputs, illustrated graphically in Figure 4, are as follows:

- Relative Importance of Services: This is the 2016/17 relative weighting for the 14 services for the interim period, as determined by the TSOs;
- “Notional” Pot Size: This is sized to ensure that the total payment for the seven existing HAS services is approximately equal to the existing budget for these services when allocated according to the 2016/17 relative weighting;
- Remuneration Volumes: This is our estimate of the annual DS3 System Services remuneration volumes.

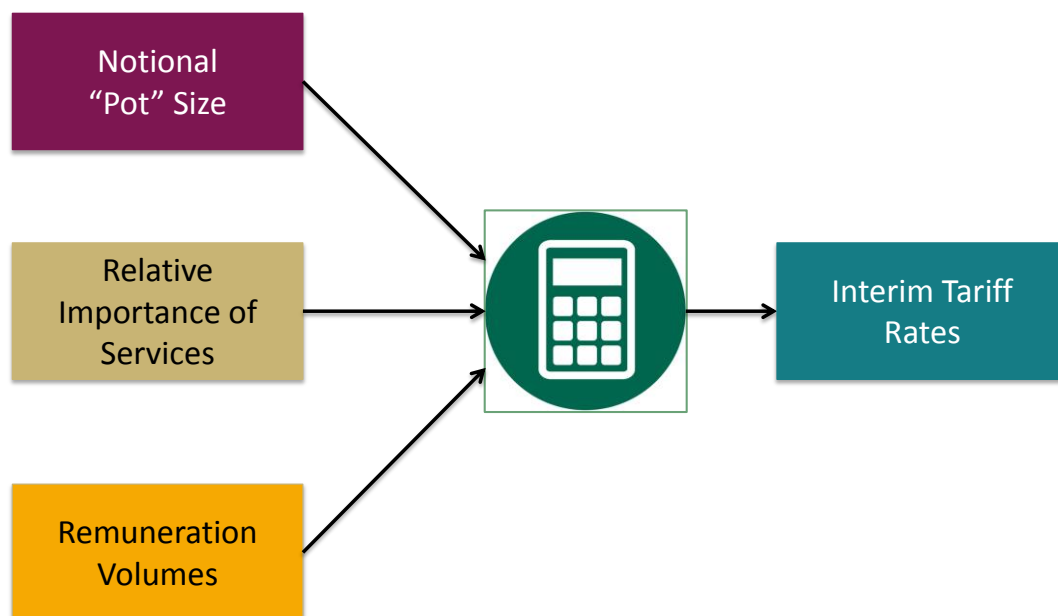


Figure 4: Key inputs to Interim Tariff Calculation Methodology

These inputs were then used to determine the rates for each of the 14 system services using the methodology described below and illustrated in Figure 5:

1. We start with a notional total “pot” size. The aim is to adjust this pot size until the total payment for the seven existing HAS services is approximately equal to the existing budget for these services when allocated according to the 2016/17 relative weightings;
2. We then calculate the “pots” for each individual service using the relative DS3 2016/17 system service weightings;
3. We then calculate the interim tariff rate for each service by dividing the relative “pots” by the estimated annual DS3 service remuneration volume for each service;
4. We conduct a check to determine if the total payment for the seven existing services is approximately equal to the existing budget for these services;
5. If the total payments for the seven existing services are less than the existing budget then the pot size is adjusted upwards and steps 1 - 4 are repeated. If the total payments for the seven existing services are greater than the existing budget then the pot size is adjusted downwards and steps 1-4 are repeated.

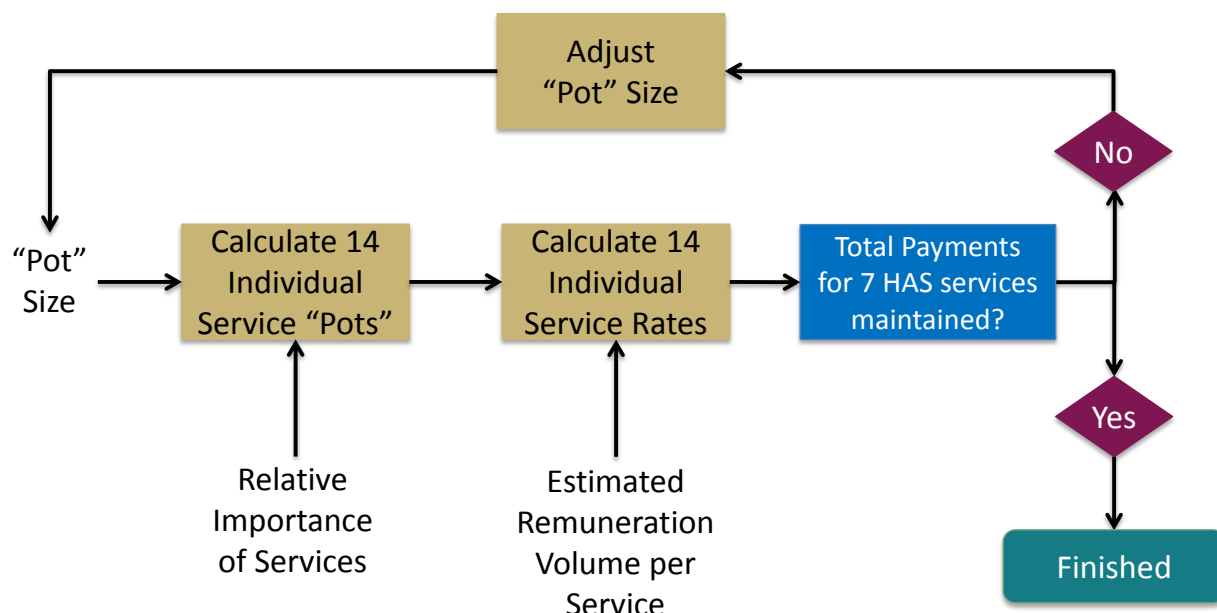


Figure 5: Interim Tariff Calculation Methodology

Respondents submitted comments on this proposed methodology and each of the three key inputs described above, as well as on the proposed rates resulting from the application of the methodology.

Comments were also received on other aspects of the proposed arrangements such as the exchange rate methodology and the scalar assumptions employed in the calculation of the rates.

The following sections present an overview of the comments received and our response.

3.2 Stakeholder Comments on Interim Tariff Methodology

The increasing importance of the DS3 System Services revenue stream was highlighted by several respondents particularly in the context of on-going changes to the energy and capacity markets and the associated revenue uncertainty. Against that background, the majority of respondents welcomed the commitment to maintain total payments for the existing seven services at levels at least equivalent to those in the HAS arrangements.

However, many respondents expressed concerns that the actual payment rates set out in the consultation paper would result in a significant reduction in payments for the existing services.

The majority of the comments received focused on the proposed tariff rates resulting from our application of the tariff methodology rather than the merits of the methodology itself. There was however a considerable level of commentary on the following three key inputs to the methodology:

- Relative Importance of Services;
- “Notional” Pot Size;
- Remuneration Volumes.

The respondents’ comments and our decisions on these key inputs are covered in Sections 3.2.1 – 3.2.3.

In relation to the proposed tariff rates, the following provides a high-level summary of the comments received:

- One respondent requested that the proposals be revised to ensure that existing rates be retained for existing services;
- The premise that the level of payment for the seven existing services in 2016/17 at least equals the existing budget for these services was welcomed by one respondent. However, the respondent believes that the proposed rates are too low with estimates that total remuneration to service providers under DS3 would, very optimistically, be lower by between c. 18% and 20% relative to 2015/16;
- Another respondent estimated that, if these tariffs were implemented, overall payments for the existing services would reduce by €8.7m (18%) compared to 2014/15, before taking account of inflation.
- One respondent requested that the existing HAS rates should be carried through into the Interim phase as overall there is over a 17% drop in the proposed rates when averaged across the seven existing products.

- Another respondent stated that the tariffs for SOR, TOR1, RRS and SSRP have been reduced significantly compared to the HAS rates and this should be explained and justified before such material changes are made.
- One respondent expressed concerns about the significant reduction in existing system service tariffs compared to 2015/16 HAS rates. The respondent stated that their analysis shows that overall revenues for generators are actually decreasing, contrary to the suggestions of the consultation.
- One respondent stated that the relative values and the existing services together yield good interim rates. However, they cautioned that care must be taken to ensure that the interim rates do not preclude technology classes which are required to perform the DS3 System Services and the rates need to be at a supportive level for the required asset classes.

More generally, several respondents queried the volumes assumptions underpinning the tariff rate calculation (more on this in Section 3.2.3). Respondents also stressed the importance of setting appropriate interim tariff rates in order to send out the correct market and investment signals to participants and potential investors as we move towards 2020.

One respondent felt that the reduction of the HAS rates combined with other aspects of the interim arrangements would place downward pressure on system services revenue and represents a disincentive to invest in the provision of new services.

Finally, one respondent felt that the regulated tariff methodology proposed for use in the enduring arrangements should be used to calculate the tariffs for the new services in the interim arrangements with the existing HAS rates retained for the existing services.

TSOs' Decision

We remain of the view that the calculation methodology set out in the consultation paper is suitable for determination of tariffs in the interim period. However, we agree that there is merit in further consideration and analysis of the inputs to the methodology and in particular the estimate of remuneration volumes.

When undertaking the modelling to estimate remuneration volumes, which directly feeds into calculation of the payment rates for the interim period, we had to make a large

number of assumptions. The following are some examples of assumptions that affect the rate calculation:

- Outcome of the procurement process: With the “availability” payment basis, the number and types of plant anticipated to qualify to provide System Services directly affects the estimated remuneration volumes;
- Outcome of the Interim Contract consultation: In addition to standard contractual clauses, this consultation also covered the scalar design for the interim arrangements;
 - Product Scalar: Assumptions were made on which plant might qualify for dynamic response payments versus static response payments;
 - Performance Scalar: Performance scalars of 1 were assumed;

The tariff rates included in the consultation paper reflect the high level of uncertainty with respect to some of these assumptions used in the remuneration volumes modelling at the time. With greater clarity on some of these items starting to become available as the consultation and procurement processes progressed, we have re-run our models with updated assumptions.

As a result of this additional modelling and analysis, we have decided to adjust the rates upwards for the existing seven services. This does not impact on the overall expected expenditure level for all DS3 System Services referenced in our consultation paper.

Further details on the proposed new rates are included in Section 4 while sections 3.2.1 – 3.2.5 cover the key inputs as well as other aspects of the methodology such as the exchange rate methodology to be employed.

Interaction with Capacity Payment Mechanism

Several respondents highlighted the interaction with the Capacity Payment Mechanism (CPM) as being a significant source of concern, for example:

- One respondent stated that the relationship with the CPM pot needs to be carefully considered. The respondent commented that if the CPM pot is reduced

by more than the €20m estimated payments for new system services then existing generators will be in a worse overall revenue position.

- Another respondent suggested that the proposal to supplement the increase in the system services “pot” with a reduction in the SEM capacity pot is inequitable as it would effectively require the service providers to provide the system services at a cost without extra payment. Moreover, the respondent highlighted that the Capacity Payment BNE calculation is based on a peaking unit that will be able to provide RM1, 3 and 8 when offline (the vast majority of the time). The respondent commented that while the increase in DS3 System Services revenue (for the virtual peaking plant) would lead to a matching reduction in the capacity payment for that plant, the reduction in capacity payments would lead to a disproportionate reduction for every other generator in the market.

Conversely, another respondent in the electricity supply business commented that there would be a risk of increased supplier charges if the CPM capacity pot is not sufficiently reduced as indicated. The respondent commented that in this case customers would not see a direct benefit through increases in the value provided by generators for similar total costs, as proposed.

TSOs’ Response

The CPM is a fixed revenue mechanism which collects a pre-determined amount of money from suppliers. This “pot” of money is then paid to available capacity in accordance with rules set out in the SEM Trading and Settlement Code.

In our consultation paper, we set out at a high-level our view on the possible impact of the proposed system services payments on the CPM “pot”. However, it is the SEM Committee rather than the TSOs that is responsible for determining the appropriate value of the CPM “pot”. In May 2016, the SEM Committee held a consultation on the “Fixed Cost of a Best New Entrant Peaking Plant, Capacity Requirement and Annual Capacity Payment Sum For Trading Year 2017”⁶. The associated SEM Committee

⁶ CPM Consultation Paper - https://www.semcommittee.com/sites/semcommittee.com/files/media-files/SEM-16-026%20ACPS%202017%20Consultation%20Paper%20for%20Publication_0.pdf

decision paper will set out the impact of the final DS3 System Services tariff rates on the CPM “pot”.

3.2.1 Relative Importance of Services

General Comments

Many of the respondents agreed that the tariffs for DS3 System Services should reflect the relative value of each service in allowing the TSOs to operate a secure, economic and efficient transmission system. Some respondents commented that the factors listed by the TSOs were reasonable while others felt that additional factors need not be taken into account unless the interim phase were to be extended.

One respondent stated that the relative importance of services should be re-evaluated to recognise that three of the services will only be procured via Qualification Trials for the 2016/17 interim period.

One respondent supported the process of adjusting the 2020 relative importance weightings for each service for the interim period so that the SNSP can be increased in the short term. Another respondent stated that the relative contribution towards grid stability for a 60% SNSP model case would be the ideal way to determine the relative values of each service.

Many respondents expressed concerns about the impact the proposed weightings had on the resulting tariff rates for the existing seven HAS services. There were also numerous comments on the proposed weightings for the seven new services, particularly for the “fast-acting” FFR, FPFAPR and DRR services. These views are summarised in the following sections. A selection of other related issues are also summarised and included below.

Existing HAS Services

Several respondents stated that they want the existing rates for the seven HAS services to be maintained for various reasons:

- One respondent stated that the proposed tariffs would result in a significant reduction in the revenue for existing service providers and that the value of existing products should not be lessened given that these remain essential for system security.
- A number of respondents stated that they didn't believe it to be appropriate to rely on the results of analysis conducted in 2013 for the tariff determination exercise. They stated that this may serve to undermine investor confidence and may have unintended consequences in relation to investment and added regulatory risk.
- One respondent stated that the methodology proposed appears to place a higher importance on system services that will increase the SNSP level. The respondent stated that the importance of system services to system security must be taken into account when determining the importance of each service during the interim period.

One respondent questioned the value in reassigning the relative worth of existing services for the interim period, when the intention is to replace the interim methodology with an enduring methodology in the future. Another respondent stated that the current HAS rates should be retained as the proposed rates could result in a significant reduction in the revenue for existing service providers.

New Services

The bulk of the commentary from respondents relating to the new services focused on the “fast-acting” services FFR, FPFAPR, and DRR.

One respondent questioned why the 2016/17 weightings for “fast acting services” are given lower weightings relative to those previously identified for 2020 and suggested that this does not provide any signal for investment. Another respondent suggested that the interim tariffs for these new services may be better set to reflect that future value now, thus stimulating investment in these important new services, albeit for a limited volume of service providers selected for the technology trials. A different respondent expressed surprise that only 11 of the services will be remunerated under the interim tariffs and the uncertainty surrounding the procurement and payment structure for the

remaining three “fast acting” services seems at odds with the original concept of incentivising new “fast acting” services. Another respondent questioned the basis for the dramatically increased value of FPFAPR and DRR in 2020.

With regards to the FFR service in particular, one respondent queried why the FFR payment is proposed to be 20% lower than the payment for POR. The respondent stated that because the FFR service requires a faster response than the existing POR service and will therefore have a higher cost of provision, and with providers of such a service also being scarcer, that it would follow that the FFR rate should be higher than the POR rate.

Aside from the “fast-acting” services, there was little relatively little commentary on the relative value of services. However, one respondent stated that it seems counterintuitive that the relative value of SIR reduces so dramatically (6% to 2% from 2016 to 2020) as inertia becomes increasingly scarce and necessary to maintain system integrity. It was stated that investors will be reluctant to invest in a service where the TSOs suggest the relative value of this service will reduce by two thirds even though the need for inertia is growing.

Other Issues

A number of respondents commented on the investability of the tariffs. While acknowledging that there is a need to control expenditure for certain services, it was stated that the required investability should be reflected in the tariffs and that it was important to send out correct market signals to support investment in the medium to long term.

TSOs' Decision

As set out in the SEM-14-108 SEM Committee decision paper, the regulated tariffs for the enduring arrangements will be based on detailed analysis to ensure that they are cost reflective for the consumer and within the overall value that they bring. We have

consulted on a proposed enduring regulated tariff calculation methodology⁷ that aligns with the SEM Committee's vision for cost-reflective tariffs. We are currently working through stakeholder responses to that consultation ahead of developing a decision paper and undertaking the analysis required to determine the enduring rates.

It is important for stakeholders to consider that the interim tariff rates proposed in this paper, and indeed our view on the relative value of services in both the short and long term used to develop these rates, may not be reflected in the enduring rates given the different calculation methodologies to be employed for the two sets of arrangements.

Separately, as set out both in this consultation and in the Scalar Design consultation⁸, the “availability” payment basis to be applied for all services means that there is likely to be a need to examine the application of system scarcity scalars for some services to ensure that payments reflect the actual system needs.

Work on the enduring scalar design is still progressing taking into account the responses received to that consultation. Therefore, for the interim period, we have decided to set the payment rates based on consideration of the following:

1. A forecast of the relative value of the services in 2020;
2. The immediate importance of each service when making the next step change in SNSP.

With regard to the relative value of the services in the longer term, we have decided to use the relative values as set out in the DS3 System Services TSO Recommendations Paper⁹ published in May 2013. This was based on extensive modelling by the TSOs, which received broad support from stakeholders at the time. The methodology used to calculate the relative value of the services consisted of a series of Plexos studies of the system in which each of the services was removed. The outcome of the studies was the relative impacts on total system production cost, which was then used to weight the allocation of the system service “pot” between the various services. As set out in the consultation paper, this information is the best available to us at the current time.

⁷ DS3 System Services Regulated Tariffs Consultation Paper – see [here](#)

⁸ DS3 System Services Scalar Design Consultation Paper – see [here](#)

⁹ DS3 System Services TSO Recommendations Paper – see [here](#)

While we will not procure the FFR, FPFAPR and DRR services in the Central Procurement Process during the interim period, we nevertheless feel that it is important to include these services in the analysis so that realistic rates for them can be determined and used to inform the payment rates in the Qualification Trials.

The weightings selected for the 2016/17 tariff year remain unchanged relative to the consultation paper as they reflect the contribution each service will make to the step to 60% SNSP, the immediate needs of the system, and the transitional nature of the arrangements. Table 2 sets out our decision on the relative value of the services for 2016/17 and provides a summary of the reason each weighting was selected.

Service Name	Unit of Payment	Current Payments	2020 System Needs	2016 System Needs	Commentary
Synchronous Inertial Response (SIR)	MWs ² h		2%	6%	2020 values assume that changes to the RoCoF standard have been implemented. This service may be of higher importance in the short term.
Fast Frequency Response (FFR)	MWh		12%	6%	The importance of this service directly relates to the outcome of the RoCoF project. Until the outcomes are known, we propose balancing payments between SIR and FFR.
Primary Operating Reserve (POR)	MWh	15%	11%	13%	POR, SOR and TOR remain important in the short term, with actual payments approximately equivalent between years. Lower total percentage reflects larger total payments across all services.
Secondary Operating Reserve (SOR)	MWh	18%	7%	11%	
Tertiary Operating Reserve 1 (TOR1)	MWh	21%	8%	10%	
Tertiary Operating Reserve 2 (TOR2)	MWh	12%	8%	10%	
Replacement Reserve – Synchronised (RRS)	MWh	13%	1%	2%	
Replacement Reserve – Desynchronised (RRD)	MWh		1%	7%	
Ramping Margin 1 (RM1)	MWh		3%	3%	More valuable with increased presence of wind, solar and demand side units.
Ramping Margin 3 (RM3)	MWh		5%	5%	
Ramping Margin 8 (RM8)	MWh		5%	5%	
Fast Post Fault Active Power Recovery (FPFAPR)	MWh		17%	5%	A scarcity scalar is required to control the scale of payments. This is not implementable in the timeline for the interim arrangements.
Steady State Reactive Power (SSRP)	MVarh	21%	11%	15%	
Dynamic Reactive Response (DRR)	MWh		10%	2%	A scarcity scalar is required to control the scale of payments. This is not implementable in the timeline for the interim arrangements.

Table 2: Relative importance of DS3 System Services

3.2.2 “Pot” Size

In the consultation paper, we estimated that based on the methodology proposed, the total payments for system services would potentially increase by approximately €20m. A considerable number of respondents commented on the scale of this increase.

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

- One respondent cited the €355m benefit of DS3 System Services published in the 2013 TSO Recommendations Paper and stated that with €170m of consumer benefits this leaves €235m available for service providers by 2020. The respondent stated that with €20m available for the provision of the new services in the interim period that providers are effectively funding the new system services provision themselves due to the corresponding reduction in the capacity pot.
- Another respondent compared the proposed interim tariffs for the new DS3 System Services with the value-based tariffs published previously (based on the total benefit of €355m per year by 2020 from the procurement of DS3 System Services). The respondent commented that the proposed tariffs do not instil confidence in the investability of the new services given the additional risks associated with service commitment and the Performance Scalars.
- One respondent commented that their own volume calculations show that existing providers are only likely to receive a €10-15m increase from the existing system service arrangements.
- One respondent stated that a small increase in existing system service revenues might not be enough to justify testing and demonstration of any additional flexibility at existing units, particularly assuming an aggressive performance scalar of 1.
- One respondent commented that while the relative importance weighting ensures a degree of value-reflectivity, the starting point is the existing “pot” size rather than a full evaluation of the value of the services. The respondent stated that this is a compromise and that the approach would not be appropriate other than for a short-term, interim arrangement.

- One respondent stated that they understand the logic behind the limited €20m increase in payments but that the rates would need to be increased substantially for new technologies providing system services to be economically viable. The respondent suggested that the investment signal provided by the proposed interim tariffs is very negative and that the transition from a total of €70-80m to the €235m allowed by SEM Committee in 2020 needs to be made clear.
- Another respondent commented that the approximate €20m increase is only a small portion of the estimated saving that the consumer will expect to see by 2020 and that it is essential to ensure that the incentive is sufficient for services to be provided to deliver the benefits to the consumer.
- One respondent stated that it is important that the budget for system services grows – not just with the introduction of the new services – but even for the existing services during the interim period as there is wide expectation in the existing industry and the wider investment community that payments will increase.
- Two respondents commented that the interim tariffs should set a direction of intent for the industry and that strong consideration should be given to supporting a positive programme vision for DS3 System Services by materially increasing the budget beyond what is spent today as this would be an appropriate investment signal to the market.

TSOs' Decision

As set out above, the regulated tariffs for the enduring arrangements will be based on detailed analysis to ensure that they are cost reflective for the consumer and within the overall value that they bring. Separately, the “availability” payment basis to be applied for all services means that there is likely to be a need to examine the application of system scarcity scalars for some services in the enduring arrangements to ensure that payments reflect the actual system needs. Work on the enduring scalar design is still progressing taking into account the responses received to that consultation to ensure a sustainable and cost-effective transition to the enduring arrangements.

Therefore, we remain of the view that the calculation methodology set out in the consultation paper is suitable for determination of tariffs in the interim period. In that

context, to determine the rates, we started with a notional total “pot” size which was designed to ensure that the total payment for the seven existing services in 2016/17 at least equals the existing budget for these services when the “pot” is allocated according to the final selected 2016/17 relative weightings. Based on this approach, the rates will potentially increase the total payments for system services by approximately €20m.

This expected increase in total payments of approximately €20m should be viewed as the first step along a “glide path” of increased payments and as a bridge to the enduring DS3 System Services arrangements.

3.2.3 Remuneration Volumes

The assumed remuneration volumes for 2016/17 are an important input to the tariff calculation methodology. The introduction of new services for which there is limited historical data, the application of new product and performance scalar arrangements to all services, the new payment rules, and the potential for new service providers to get contracts through the on-going DS3 System Services procurement process makes the estimation of remuneration volumes more challenging than in the past.

Several respondents specifically commented on remuneration volumes:

- One respondent commented that, based on their analysis of the system services “pot” revenues and the corresponding rates, it would seem that contracted volumes are significantly changing for each system service, which in turn is causing significant changes to the tariffs.
- One respondent stated that while contracted volumes may increase through the current procurement process, the real-time service volumes (on which payments will be based) would not be expected to materially change under the existing market arrangements in 2016/17. The respondent stated that actual service volumes over the previous 12 months should therefore be used as a forecast for real-time service volumes in 2016/17 rather than those derived from a model.
- Three respondents queried the volumes used by the TSOs in the analysis and commented that forecast volumes from the modelling are too high. The respondents suggested that these should be validated against actual outturn

volumes from the past and stated that the volumes in the first 5 months of 2015/16 compared to the same period in 2014/15 are very stable for all but reactive power.

TSOs' Decision

Since publication of the consultation paper, greater clarity has emerged on some of the key drivers of the outturn remuneration volumes. In turn, we have updated and re-run our models using the most up-to-date assumptions. We have also analysed in detail the historical outturn volume information for the period from October 2014 through April 2016. We have placed greater weighting on this historical volume information than we did in our original analysis.

The process for estimating remuneration volumes is described in greater detail in Section 4.2.

3.3 Performance Scalar

The proposal for how the Performance Scalar would work during the interim period was set out in the DS3 System Services Interim Contracts consultation. For the purposes of setting tariff rates, we indicated that we intended to assume a Performance Scalar of 1 for all service providers for all services.

A small number of respondents commented on our proposal to assume Performance Scalars of 1.

These respondents argued that tariffs should be adjusted to take account of the effect of the Performance Scalars. In particular, the respondents suggested that tariffs should be adjusted upwards where the industry average Performance Scalar is forecast to be less than 1 i.e. the tariff rates should be divided by the availability-weighted average of the Performance Scalars. The respondents argued that without increasing overall costs, such an approach would reward those providers with performance above the industry average, and penalise those below, thus creating a balanced incentive for all participants to improve their reliability over time.

TSOs' Decision

As a result of feedback received from stakeholders we have changed our assumption

on the performance scalar.

The performance scalar used in the tariff setting exercise has been adjusted to take account of the industry average performance. To calculate the performance scalar to apply for each service, we took the latest information available on the industry average performance in percentage terms and added 10% to reflect our view that units would be expected to improve their performance over the year.

As a simple example, let's assume the industry average performance for a particular service was calculated to be 85%. We then added 10% to this figure giving a performance level of 95% and a resultant performance scalar of 1. This was repeated for each of the 11 system services. The performance scalars were then used in the tariff calculation process.

3.4 Exchange Rate Methodology

The proposed Interim Tariff payment rates have been initially calculated in Euros. In determining the associated sterling rates, we proposed to apply the same methodology for the interim arrangements as has been used for the HAS arrangements. This methodology is consistent with that applied under the Trading and Settlement Code for the calculation of the annual capacity exchange rate i.e. the average of the forwards rates for the forthcoming year as taken over a period of 5 days prior to tariff and payment setting.

A small number of comments were received with all respondents that did comment agreeing with our proposal.

TSOs' Decision

The TSOs will maintain the same approach to determining sterling rates as currently used for the HAS arrangements.

3.5 Other comments

A number of respondents replied with comments outside of the scope of this consultation. These have been or will be dealt with, as appropriate, in other

consultations or fora. This section is intended to provide a high-level summary of the other relevant key issues raised and how/where they are being dealt with.

Qualification Trial Process

The first year of the Interim Arrangements consists of a Central Procurement Process for 11 of the 14 System Services where “Proven” and “Measurable” service providers can tender for the large-scale provision of System Services. The three remaining System Services, which are not covered by the Interim Arrangements, will form a part of the initial Qualification Trial Process.

The initial Qualification Trials will be operational from Q1 2017, following the commencement of the Interim Arrangements in Q4 2016. These initial Qualification Trials will provide a mechanism for both existing and new Service Providers to prove the technical capability (from a service provision and performance monitoring perspective) of technologies or technology classes for a subset of System Services. It is anticipated that the Qualification Trial Process will ultimately facilitate participation of an enhanced suite of technologies and portfolio of service providers in the provision of DS3 System Services, while ensuring the integrity and security of the power systems of Ireland and Northern Ireland are maintained

There was a considerable level of commentary and queries on the Qualification Trial Process. The concept of the Qualification Trials was welcomed by several respondents but more information was requested on the qualification, tendering and remuneration processes for potential projects and the requirement for early engagement on the processes particularly for the three “fast-acting” services was emphasised.

Other items referenced were as follows:

- The requirement for greater clarity on the data requirements and performance standards required for the new fast-acting system services;
- The lack of detail on the Qualification Trial Process in the Interim Tariffs consultation paper;
- The risk that the Qualification Trials will not be completed in time for providers to compete for contracts in the Enduring Arrangements;

- The expected level of expenditure on the Qualification Trials;

TSOs' Response

Since the publication of the Interim Tariffs consultation paper, we have held a consultation specifically focused on the Qualification Trial Process¹⁰. We are currently reviewing the stakeholder responses received to that consultation and will provide further information on the process in the coming weeks.

Distribution-Connected DS3 System Services Providers

A small number of respondents commented on the eligibility of distribution-connected providers to provide system services during the interim arrangements.

One respondent suggested that it appeared that it would not be possible for distribution-connected service providers to contract for any services during the interim period.

Another respondent commented specifically on the eligibility of windfarms connected to the distribution network to qualify for Steady-State Reactive Power contracts during the interim period. The respondent requested that urgency be placed on delivering a trial for Type-B connected windfarms so that a greater number of distribution-connected windfarms would become eligible to contract for services in the near future.

TSOs' Response

The procurement process for the interim period is on-going. For each system service, specific mandatory technical requirements which are common to all potential service providers, whether transmission or distribution-connected, have been set out in the Interim Arrangements tender documents. In addition to the specific mandatory technical requirements, formal notification from the relevant DSO/DNO confirming appropriate operational protocols are in place is required for DSO/DNO-connected Providing Units.

With regard to the trial for Steady-State Reactive Power delivery by Type-B connected windfarms, EirGrid are actively working with ESB Networks to progress this project.

¹⁰ Qualification Trial Process Consultation Paper:

<http://www.eirgridgroup.com/site-files/library/EirGrid/Final-Qualification-Trials>

Payment Basis for DS3 System Services

One respondent referenced the SEM Committee decision that “*The higher of a unit’s market position or physical dispatch will be used to determine the available volume*” and stated that there is nothing in the decision paper to suggest a different payment basis for the Interim period. The respondent questioned the intention to pay purely on a dispatch basis for the interim period and stated that this adds further doubt to an investment case.

TSOs’ Response

We would like to clarify that there has been no change in policy with regard to the enduring arrangements where, as the respondent has correctly pointed out, Available Volume will be determined from the higher of a unit’s market position or physical dispatch, as stated in SEM-14-108.

This decision is designed to align with I-SEM, in which Providing Units will have the ability to position themselves in the market to provide these DS3 System Services. As DS3 System Services will go live on October 1st 2016 and I-SEM will not go live until October 1st 2017, the interim arrangements do not account for a Providing Unit’s market position in determining the Available Volume. This has been agreed with the Regulatory Authorities and is in line with the design of the settlement system for the interim arrangements.

4 Interim Tariff Rates

In this section, the final interim tariff rates resulting from application of the interim tariff calculation methodology are set out.

4.1 Volumes analysis

As discussed in Section 3.2.3, as greater clarity has emerged on some of the key drivers of the outturn remuneration volumes, we have updated and re-run our models using the most up-to-date assumptions.

We have analysed in detail the historical outturn volume information for the period from October 2014 through April 2016. We have placed greater weighting on the historical volume information than we did in our original analysis.

In addition, we have used the 2016/17 Dispatch Balancing Costs (DBC) Plexos model that we use for constraint forecasting (with updated assumptions included e.g. fuel prices, service provider characteristics and interconnector flows) in addition to the 2015/16 equivalent model used previously. We have, in so far as possible, also used the latest information garnered from the on-going DS3 System Services procurement process and the parallel Interim Contracts consultation.

We ran the Plexos models for the full year (8760 hours) and used the results to estimate an approximate volume of each DS3 system service provided by providers that we anticipate will be eligible for payment under the new interim arrangements. These volumes were calculated based on the “availability” payment rules, as set out by the SEM Committee.

The volumes arising from the Plexos models were assessed in conjunction with the historical volume information, which has been adjusted based on the likely changes to the service provider portfolio and the effect of scalars.

The main inputs to the remuneration volumes estimation process are shown at a high level in Figure 6.

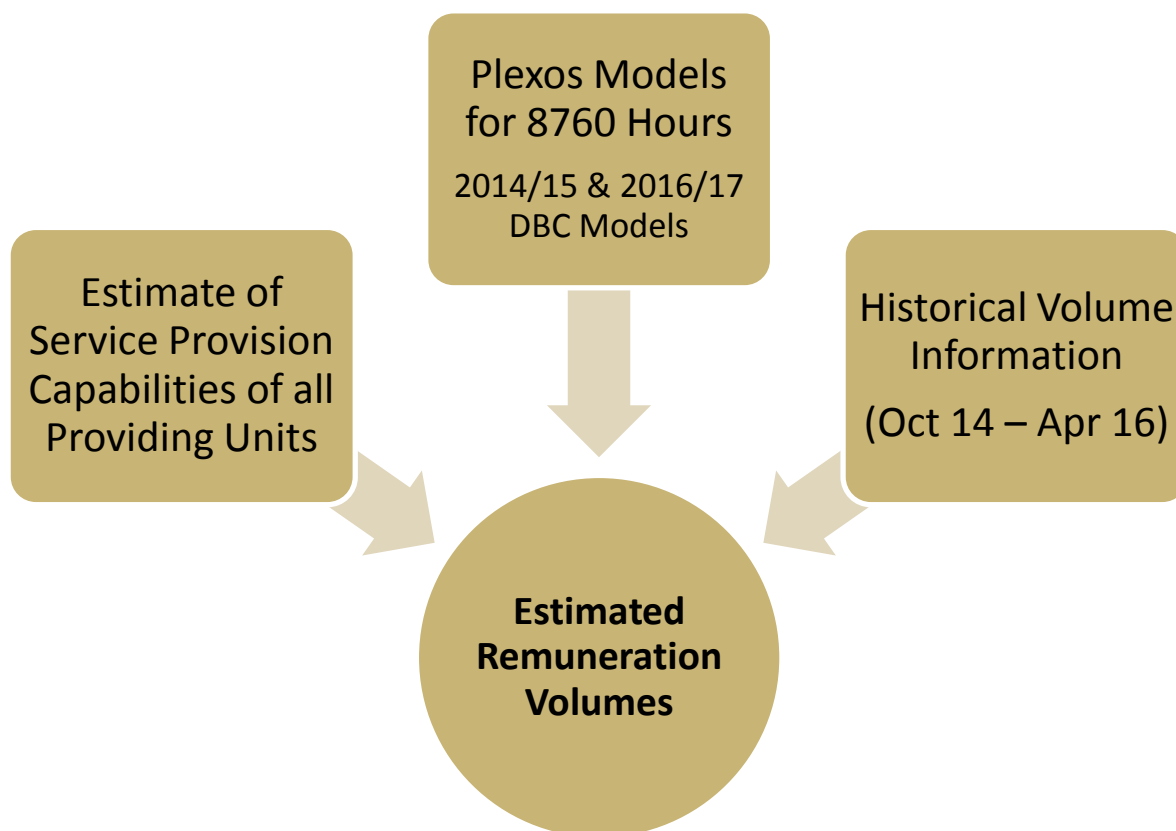


Figure 6: Estimation of potential remuneration volumes

4.2 Scalars

Figure 7 illustrates at a high level how we will calculate trading period payments for system service providers.

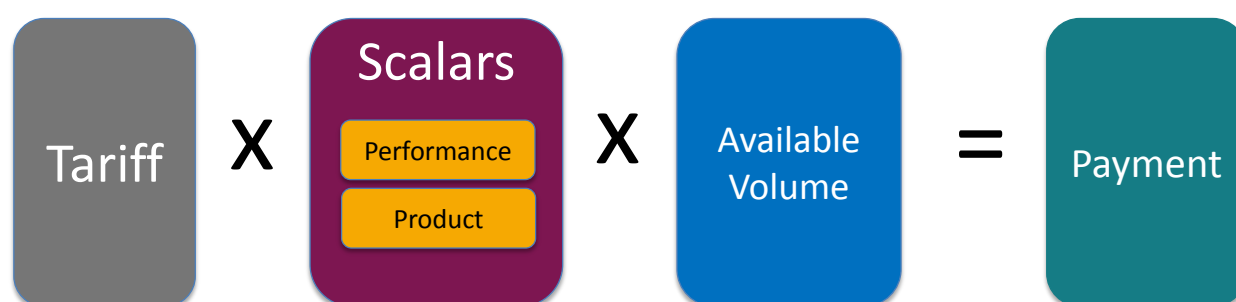


Figure 7: Calculation of trading period payments

As can be seen, the application of scalars will play an important role in determining service provider payments. For the interim arrangements, only performance and product scalars will be used. Scarcity scalars and volume scalar, the other two scalar types

proposed in the DS3 System Services Scalar Design consultation¹¹, will only apply for the enduring arrangements.

As described in Section 3.3, we have changed our assumption on the performance scalar based on feedback received from stakeholders.

The performance scalar used in the tariff setting exercise has been adjusted to take account of the industry average performance. To calculate the performance scalar to apply for each service, we took the latest information available on the industry average performance in percentage terms and added 10% to reflect our view that units would be expected to improve their performance over the year.

As a simple example, let's assume the industry average performance for a particular service was calculated to be 85%. We then added 10% to this figure giving a performance level of 95% and a resultant performance scalar of 1. This was repeated for each of the 11 system services. The performance scalars were then used in the tariff calculation process.

The definitions of product scalars used in the tariff calculation analysis were assumed to align with the definitions included in the DS3 System Services Interim Contracts consultation¹². The procurement process for DS3 System Services started in April 2016 with potential service providers having submitted tenders in the period since publication of the consultation paper. The relevant information in those tenders has been assessed and assumptions made on the likely product scalars to apply to individual service providers or to classes of service provider.

There was a greater level of certainty on the likely product scalars to apply to service providers for the final tariff calculation process relative to that used to set the initial proposed tariff rates included in the Interim Tariffs consultation paper.

The impact of both the performance and product scalars has been included in the calculation of the final interim tariff rates set out in Section 4.3.

¹¹ DS3 System Services Scalar Design Consultation Paper – see [here](#)

¹² DS3 System Services Interim Contracts Consultation – see [here](#)

4.3 Final Interim Tariff Rates

The relative value of services and the calculation methodology set out in Section 3 were used to calculate the interim tariff rates for 2016 / 2017.

The final interim tariff rates are listed in Table 3.

As can be seen, the rates for many of the services have increased relative to the proposed rates set out in the consultation paper. This is predominantly due to revised estimates of the expected remuneration volumes, which directly feeds into calculation of the payment rates. However, the increase in rates does not change the expected total level of payments for system services. As set out in the consultation paper, the expected increase in total payments for system services relative to the HAS arrangements is approximately €20m.

Service Name	Unit of Payment	Tariff Rate in Consultation Paper €	Final Tariff Rate €
Synchronous Inertial Response (SIR)	MWs ² h	0.004	0.0046
Fast Frequency Response (FFR)	MWh	1.96	2.06
Primary Operating Reserve (POR)	MWh	2.47	2.93
Secondary Operating Reserve (SOR)	MWh	1.37	1.78
Tertiary Operating Reserve (TOR1)	MWh	1.19	1.41
Tertiary Operating Reserve (TOR2)	MWh	0.99	1.12
Replacement Reserve - Synchronised (RRS)	MWh	0.13	0.23
Replacement Reserve – Desynchronised (RRD)	MWh	0.64	0.50
Ramping Margin 1 (RM1)	MWh	0.08	0.10
Ramping Margin 3 (RM3)	MWh	0.13	0.16
Ramping Margin 8 (RM8)	MWh	0.10	0.14
Fast Post Fault Active Power Recovery (FPFAPR)	MWh	0.13	0.14
Steady State Reactive Power (SSRP)	MVArh	0.20	0.21
Dynamic Reactive Response (DRR)	MWh	0.03	0.04

Table 3: Interim Tariff Rates for 2016 / 2017

5 Benefits provided by Interim Phase

In the consultation paper, we set out our view on the benefits that can be obtained from the interim arrangements, when compared to remaining with the current seven system services until the enduring procurement exercise takes place.

The consultation paper also set out the benefits already obtained from DS3 through a higher utilisation of non-synchronous sources of electricity, facilitated by an increase in SNSP, reducing costs for end users. In the longer term, more savings will be made through further increases in SNSP. Savings are also expected to be obtained across a number of areas including the Capacity Remuneration Mechanism, ex-ante trading of wholesale electricity, the imbalance price and in the cost of balancing the system.

Over the interim period, consumers should see a direct benefit through increases in the value provided by generators for similar total costs. The increase in payments for the system services that are of most use to the TSOs has the advantage of rebalancing the allocation of payment towards service providers that provide more useful characteristics. While the magnitude of the Capacity Payment Mechanism “pot”, which rewards all available generation equally, is expected to reduce, the total amounts paid out across all generation should remain broadly similar.

In addition, the higher level of SNSP (55%) recently achieved will be reflected in the constraint forecasts used to calculate the Imperfections Tariff for 2016/17. This will result in a lower tariff than would have otherwise been put in place. Should it be possible to raise the SNSP limit further during the interim period, this would reduce the actual dispatch balancing costs further. Any further reduction in these costs would be passed back to suppliers through reductions in the Imperfections Tariff in subsequent years

Our view on the qualitative benefits of the interim arrangements was also set out in the consultation paper. The summary table is repeated overleaf for convenience.

Area	Aspects	Outcome
Create marketplace for new products	<p>Trigger interest in provision of non-mandatory services</p> <p>Providers tested and capabilities verified in advance of enduring arrangements</p> <p>Developers preparing for participation in enduring auctions (technical studies etc)</p>	Greater competitive pressure applied to bids in the enduring auction process. Benefits for customers seen in the first Year+1 and Year+X auctions.
Learnings for TSO	<p>Development of commercial arrangements that underpin the enduring approach</p> <p>Validation of settlement systems</p> <p>Enable further development of operational policies</p> <p>Testing assumptions on capability of existing plant (baseline)</p> <p>Indication of market interest by potential new providers</p>	<p>Smoother transition to enduring commercial and settlement processes.</p> <p>Potential for earlier increase in SNSP (with associated reduction in system balancing costs charged to customers)</p> <p>Greater confidence in the volumes that can be provided through the auction process</p> <p>Testing of new providers / technologies, increasing competitive pressure in the auction process</p>
Learning for Service Providers	<p>Capabilities verified in advance of participation in auction</p> <p>Reduces risk premia when bidding in auctions in 2017 (including in I-SEM CRM)</p>	More competitive bids into the first Year+1 and Year+X auctions, increasing chance of success

Table 4: Summary of the Qualitative Benefits that can be obtained from the Interim Arrangements as set out by the TSOs in the consultation paper

We asked respondents if there were any other benefits from the interim arrangements that should be considered.

The majority of respondents either agreed with the benefits outlined in the consultation paper and/or mentioned other benefits not explicitly set out in the consultation paper. A small number of respondents questioned either the validity of specific benefits set out by the TSOs or the value of the interim arrangements as a whole.

Additional Benefits

Respondents suggested that the following should be considered when assessing the benefits of the interim arrangements:

- A number of respondents suggested that there would be a benefit from Service Providers helping to deliver renewable targets by reducing wind curtailment with one highlighting the additional benefit of potential reduced fines from Europe;
- One respondent stated that the interim phase will provide an opportunity to determine the requirement for scalars and how they might operate in the enduring arrangements;
- One respondent believes that the interim arrangements provide a valuable signal to the market that DS3 is being implemented, which is important for new system services plant to be built in the coming years;
- One respondent suggests that there is a benefit in terms of Foreign Direct Investment with an increasing number of companies seeking to locate in Ireland with the use of wind energy being a primary driver for the investment, combined with Ireland's reputation for a stable electricity grid. The respondent also stated that the DS3 programme is at the heart of bringing these two aspects together through increased levels of renewable penetration while maintaining system security;
- One respondent highlighted the development of a performance monitoring regime for the new services and the opportunity for new service providers to offer services as being additional benefits of the interim arrangements;
- One respondent highlighted that the interim arrangements would provide an opportunity to refine or modify the service specifications should that be required ahead of the enduring arrangements;

- Another potential benefit highlighted is the move towards more transparent reporting by TSOs to comply with European Network Codes which will mandate additional reporting requirements;
- One respondent stated that the primary purpose of the interim period, as set out in the SEM Committee DS3 System Services Procurement Design and Emerging Thinking Decision Paper (SEM-14-108), was to assess the volumes present in the system, and from that estimate what additional volumes are required. Other benefits mentioned included development of the IT systems needed to track and pay for each of the services.

Other Comments

A number of respondents stated that the departure from HAS rates for the existing seven services combined with a potential reduction in overall payments for these services would undermine investor confidence resulting in the actual benefits realised from the interim arrangements being limited. It was stated that the Interim Arrangements should be an incentive for new providers to see opportunities and so encourage investment for future years but if there were decreasing payments then this is unlikely to be achieved.

Other comments included:

- One respondent stated that there will be a risk of increased supplier charges if the Capacity Payment Mechanism pot is not reduced in the manner indicated in the consultation paper;
- One respondent questioned whether early development of the new system services would occur if the proposed interim tariffs do not encourage investment. The respondent disagreed with the stated benefits that “the learnings from the interim period should result in an earlier increase in SNSP” and that the interim arrangements will “trigger interest in provision of non-mandatory services”;
- One respondent disagreed that much will be learned in terms of assessment of risk premia when bidding into auctions in 2017 following these interim tariffs for a number of reasons including the different tariff methodology to be applied in the

enduring arrangements, the uncertainty regarding measurement criteria for the three new services to be trialled, the different approach to calculation of availability, and the lack of scarcity signals within the tariff rates.

TSOs' Response

We welcome the views of stakeholders as to the benefits that can be obtained from the interim arrangements, when compared to remaining with the current seven system services until the enduring procurement exercise takes place.

As evidenced by the comments above, the vast majority of respondents believe that the interim arrangements will provide extensive benefits as we move towards the design and implementation of the enduring arrangements.

With regard to the comments by some respondents in relation to the changes to the HAS rates as set out in the consultation paper and the associated impact on investor confidence, we have reflected this in the changes that we have made to the final interim tariff rates set out in this paper with the aim of addressing these concerns.

In particular, we have updated and re-ran our models using the most up-to-date assumptions to get a revised estimate of the potential remuneration volumes. We also placed greater weighting on the historical volume information than we did in our original analysis, and used the latest information garnered from the on-going DS3 System Services procurement process and the parallel Interim Contracts consultation. As a result, the rates for many of the services have increased relative to the proposed rates set out in the consultation paper.

We are strongly of the view that the interim arrangements will provide numerous benefits to us as TSOs, to service providers, and to consumers.

6 Impact on Service Providers

In the consultation paper, we set out what we considered to be some of the likely main impacts on service providers during the interim arrangements.

At a high-level, the two main impacts discussed in the paper were as follows:

- Costs - Costs incurred by service providers relating to participation in the procurement process, technical studies to determine ability to provide services, and the provision of the services themselves;
- Performance Monitoring - New performance monitoring arrangements (in particular the introduction of a performance scalar) and the requirement for appropriate performance monitoring equipment at service provider sites.

We asked stakeholders to set out any other relevant impacts on service providers over the interim period. The following provides a summary of the main impacts identified and our response.

Procurement Process

A few respondents commented on the procurement process for the interim period. In particular, the following issues were raised:

- Two respondents commented on the tender timelines. One respondent stated that there is a significant risk element associated with not completing the tender on time which was not addressed in the consultation. The other respondent commented that a longer tender process should have been provided to enable parties to conduct the relevant technical and commercial analysis needed to complete and sign-off on a robust tender application;
- Another respondent commented on the impact of the entire interim procurement process on new entrants and disagreed with our requirement that any service provider must be in a position to provide services by 1 October 2016.

TSOs' Response

We recognise that the procurement process timelines are challenging for tenderers. However, we have sought to provide as much time as possible for tenderers to prepare

and submit tenders while still achieving go-live of the interim arrangements on 1 October 2016.

With regard to the requirement to be in a position to provide services by 1 October 2016 to be eligible for a contract for the interim period, we decided on this requirement for a number of reasons including budgeting and management of testing / compliance activities. For any potential service provider that will not be in a position to provide services by 1 October 2016, we expect to hold a new procurement process during 2017 for contracts starting on 1 October 2017.

Settlement

Two respondents commented on DS3 System Services settlement-related matters.

One commented that in addition to the impacts described in the paper, services providers, as well as EirGrid, will have to establish all of the systems and processes necessary to measure service provision and conduct settlement activities.

Another respondent stated that Northern Ireland participants will have a huge change in settlement arrangements due to increased timelines and a reduction in data provided by the TSO. The respondent stated that this will produce more disputes and consume additional resources for providers in trying to sort out queries with missing and incorrect data. The respondent also stated that the proposed payment timelines also affect participant cashflows with payment now being made up to nine weeks after the end of each month compared to four weeks under the current HAS arrangements.

TSOs' Response

We are working to establish the settlement systems and processes in time for go-live on 1 October 2016. We previously presented on the settlement calculations for the services being procured as part of the Central Procurement Process at the DS3 System Services workshop on 11 April 2016 held in Dundalk.

With regard to the change to settlement timelines in Northern Ireland, this has been considered in detail in the Interim Contracts consultation and the decision will be set out in the Interim Contracts decision paper to be published in parallel with this paper.

Performance Monitoring

Several respondents commented on the performance monitoring proposals and the impact they will have on service providers. In particular, the following issues were raised:

- Specific elements of the calculation of the performance scalar and its impact on investor confidence;
- The need for transparency in the calculation of performance scalars;
- The need for early specification of performance monitoring equipment;
- One respondent commented that the TSO should also be subject to performance monitoring with regard to system operation and scheduling of services.

TSOs' Response

The details of the performance scalar calculation have been consulted on in the Interim Contracts consultation. Our decision on the performance scalar approach will be set out in the Interim Contracts decision paper to be published in parallel with this paper.

With specific regard to the tariff calculation methodology, our approach to the performance scalar is set out in Sections 3.3 and 4.2.

Costs and Revenue Reduction

Several respondents commented that the greatest impact on service providers related to the revenue reduction arising from the tariff rates set out in the consultation paper for the existing seven HAS services. One respondent also commented that, while not directly associated with DS3 System Services or the interim arrangements, there would be a likely reduction to the CPM “pot” that would have an impact on service providers over the interim period. Finally, one respondent commented that there will be additional maintenance costs for generators as a result of a change in operation.

TSOs' Response

As set out in Sections 3 and 4, following additional modelling and analysis based on more up-to-date assumptions, we have decided to adjust the rates upwards

for the existing seven HAS services with the aim of alleviating the concerns expressed by respondents.

With regard to the CPM “pot”, while we set out at a high-level our view on the possible impact of the proposed system services payments in the consultation paper, it is the SEM Committee rather than the TSOs that is responsible for determining the appropriate value of the “pot”. In May 2016, the SEM Committee held a consultation on the “Fixed Cost of a Best New Entrant Peaking Plant, Capacity Requirement and Annual Capacity Payment Sum For Trading Year 2017”¹³. The associated SEM Committee decision paper will set out the final CPM “pot” and the impact of the final DS3 System Services tariff rates on it.

Access of Distribution-Connected Providers to DS3 System Services

As discussed in Section 3.5, a small number of respondents commented on the eligibility of distribution-connected providers to provide system services during the interim arrangements.

TSOs’ Response

In addition to satisfying the specific mandatory technical requirements for each service that are common to all potential service providers requirements, formal notification from the relevant DSO/DNO confirming appropriate operational protocols are in place is required for DSO/DNO-connected Providing Units to be eligible to be awarded a DS3 System Services contract.

Enduring Arrangements

A small number of respondents raised concerns about the impact of the interim arrangements on investors and new entrants. In particular, one respondent suggested that the final interim tariffs could potentially have a negative bearing on the sentiment of

¹³ https://www.semcommittee.com/sites/semcommittee.com/files/media-files/SEM-16-026%20ACPS%202017%20Consultation%20Paper%20for%20Publication_0.pdf

potential investors while another respondent expressed concerns that elements of the arrangements may, through roll-over of design, accidentally become part of the enduring market design.

TSOs' Response

The interim rates, in so far as possible, have been set to reflect the importance of the services in the short term. The expected increase in total payments of approximately €20m for the interim period should be viewed as the first step along a “glide path” of increased payments and as a bridge to the enduring DS3 System Services arrangements.

In terms of design, the development of the enduring arrangements is progressing in parallel with multiple consultations having been held on various aspects of the enduring design such as Regulated Tariffs, Scalar Design and Auction Design. Moreover, as set out in Section 5, the interim arrangements will provide significant learnings and benefits that should facilitate a more robust enduring design.

7 Summary

Following consideration of the responses to the consultation, we remain of the view that the calculation methodology set out in the consultation paper is suitable for determination of tariffs in the interim period. However, we agree with stakeholders that there is merit in further consideration and analysis of the inputs to the methodology and in particular the estimate of remuneration volumes.

The calculation methodology illustrated in Figure 8 was used to calculate the interim tariff rates for 2016 / 2017.

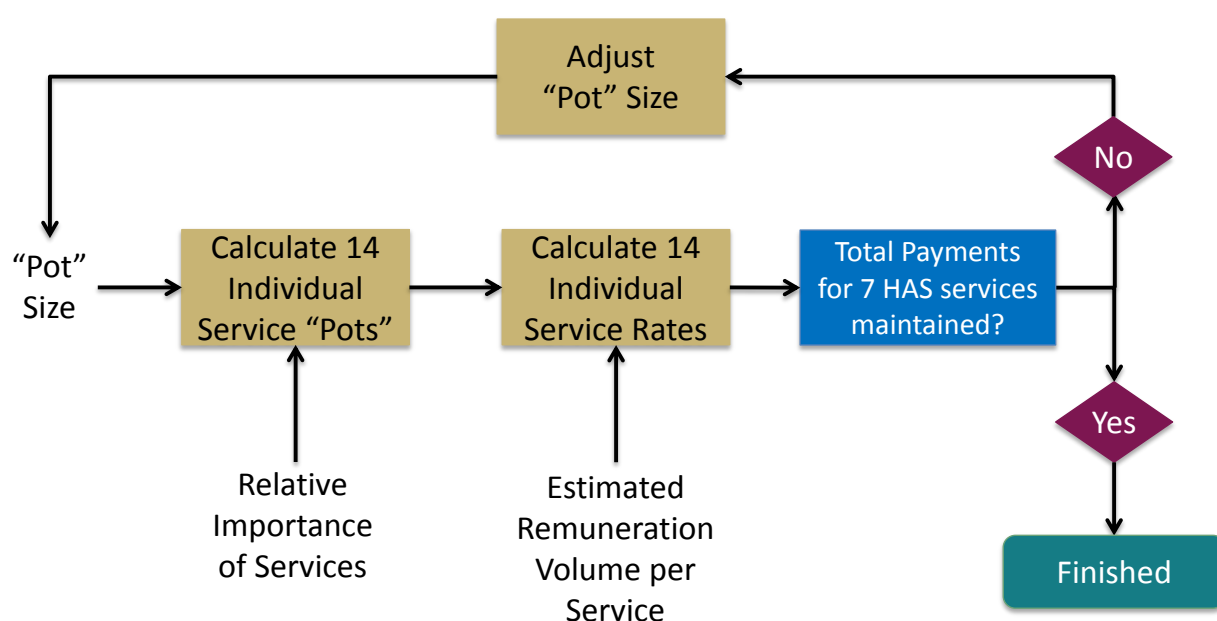


Figure 8: Interim Tariff Calculation Methodology

The final interim tariff rates are listed in Table 5.

As can be seen, the rates for many of the services have increased relative to the proposed rates set out in the consultation paper. This is predominantly due to revised estimates of the expected remuneration volumes.

When undertaking the modelling to estimate remuneration volumes, which directly feeds into calculation of the payment rates for the interim period, we had to make a large number of assumptions. With greater clarity on these assumptions starting to become

available as the consultation and procurement processes progressed, we have re-run our models with updated assumptions.

As a result of this additional modelling and analysis, we have decided to adjust the rates upwards.

However, the increase in rates does not change the expected total level of payments for system services. As set out in the consultation paper, the expected increase in total payments for system services relative to the HAS arrangements is approximately €20m.

Service Name	Unit of Payment	Tariff Rate in Consultation Paper €	Final Tariff Rate €
Synchronous Inertial Response (SIR)	MWs ² h	0.004	0.0046
Fast Frequency Response (FFR)	MWh	1.96	2.06
Primary Operating Reserve (POR)	MWh	2.47	2.93
Secondary Operating Reserve (SOR)	MWh	1.37	1.78
Tertiary Operating Reserve (TOR1)	MWh	1.19	1.41
Tertiary Operating Reserve (TOR2)	MWh	0.99	1.12
Replacement Reserve - Synchronised (RRS)	MWh	0.13	0.23
Replacement Reserve – Desynchronised (RRD)	MWh	0.64	0.50
Ramping Margin 1 (RM1)	MWh	0.08	0.10
Ramping Margin 3 (RM3)	MWh	0.13	0.16
Ramping Margin 8 (RM8)	MWh	0.10	0.14
Fast Post Fault Active Power Recovery (FPFAPR)	MWh	0.13	0.14
Steady State Reactive Power (SSRP)	MVarh	0.20	0.21
Dynamic Reactive Response (DRR)	MWh	0.03	0.04

Table 5: Interim Tariff Rates for 2016 / 2017