

DS3 System Services Tariffs

Consultation Document

16 September 2022



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Executive Summary

The DS3 System Services arrangements have been designed to facilitate new and existing technologies and participants to provide services required to maintain a resilient power system when up to 75% of demand is met by non-synchronous technologies. It is an essential and critical pillar of the DS3 programme. DS3 System Services expenditure has a cap¹ of €235M as set by the Regulatory Authorities (RAs) through SEM-17-80² (with an additional €20M in a high-wind year). This cap is designed to include expenditure related to the DS3 Qualification Trial Process, DS3 Volume Uncapped Arrangements (including market to physical) and the DS3 Volume Capped competition.

EirGrid and SONI (“the TSOs”) are required under SEM Committee Decision SEM-17-080 to review actual and forecast expenditure on DS3 System Services. This includes calculating under/over expenditure, examining the reasons for the expenditure and reporting trends in expenditure that need addressing by the RAs. In line with these requirements, the TSOs have outlined increases in expenditure arising due to high volumes of fast acting technologies with high availability providing system services³. The SEM Committee Decision SEM-17-080 outlines the measures to be taken should annual forecast spend exceed the €235 million cap, therefore at the request of the RAs, the TSOs published a consultation paper⁴ in May 2021 proposing options to address this expenditure risk and stay within the expenditure cap. The consultation paper showed the significant increase in DS3 System Services expenditure forecast. As requested by the RAs, the consultation paper outlined options for reducing DS3 System Services expenditure to ensure that it stayed within the regulatory cap. Following receipt of 23 consultation responses, a recommendations paper⁵ was submitted to the RAs on 9 August 2021, in which the TSOs showed in order to stay within the RA approved cap, a reduction in Regulated Arrangements (Volume Uncapped) tariff rates for FFR, POR, SOR, TOR1 and TOR2 of 10% for every additional 100MW of fast acting technology providing system services at future procurement gates was required. On 23 September 2021, the SEM Committee approved a rates reduction of 10% for FFR-TOR2⁶ but with no additional measures approved to control future spend on DS3 System Services, if expenditure was trending towards breaching the regulatory cap.

The reduction in tariffs for FFR, POR, SOR, TOR1 and TOR2 of 10% as well as the fact that the 2021/2022 tariff year was a very low wind year (lower numbers of intervals for which high Temporal Scarcity Scalar (TSS) values of 4.7 and 6.3 are applied to payments), has allowed spend to stay within

¹ The term cap is used throughout this document in the context of SEM-17-080

² SEM-17-80

<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>

³Expenditure Notes

<https://www.eirgridgroup.com/site-files/library/EirGrid/DS3-System-Services-Expenditure-Note-16092020.pdf>
<https://www.eirgridgroup.com/site-files/library/EirGrid/DS3-System-Services-Expenditure-Note-May-2021.pdf>

⁴ Expenditure Consultation Paper

http://www.eirgridgroup.com/site-files/library/EirGrid/DS3-System-Service-Tariff-Review-Consultation_28-05-2021.pdf

⁵ TSO Recommendation Paper

<http://www.eirgridgroup.com/site-files/library/EirGrid/DS3-System-Services-Expenditure-Recommendation-09-08-2021.pdf>

⁶ SEM Committee Decision

<https://www.semcommittee.com/sites/semc/files/media-files/SEM-21-089%20Correspondence%20-%20SEMC%20to%20TSO%20-%20System%20Services%20Tariff%20Rate%20Review.pdf>

the regulatory cap. It is currently forecast that outturn expenditure for the current tariff year will be in excess of €200M.

In this consultation paper, the TSOs show, in line with requirements under SEM-17-080, that without an increase in the cap for DS3 expenditure or introduction of control measures to reduce expenditure, a breach of the regulatory cap would take place in the 2022/2023 tariff year (even accounting for the additional €20M available in a high wind year). In 2022/2023, there is a significant amount of new fast acting technologies expected to provide system services (approximately 140MW from Gate 7) as well as new technologies providing inertia and reactive power.

In this paper, the TSOs provide the DS3 expenditure forecast associated with future procurement gates under the Regulated (Volume Uncapped) arrangements. In the context that there is no planned increase to the current cap, the TSOs outline a number of mitigation measures to ensure DS3 expenditure remains within the required cap for the next tariff year. It is important to note this starting point for the current consultation. In that context, the proposed options are:

Option 1 is a proposal to reduce tariff rates for FFR, POR, SOR, TOR1 and TOR2 by 35% for all service providers from Q1 2023. In addition, it is proposed that for every 100MW of Fast Acting Services procured at Procurement Gates following Gate 7, that FFR-TOR2 rates be reduced by 10%.

Option 2 is a proposal to reduce tariff rates for all services by 25% from Q1 2023. In addition, it is proposed that for every 100MW of Fast Acting Services procured at Procurement Gates following Gate 7, that all rates be reduced by 7%.

Option 3 is a proposal to reduce TSS values for all services from 6.3 to 2.5 when SNSP exceeds 70% and from 4.7 to 1.5 when SNSP is between 60% and 70% from Q1 2023.

Option 4 is a combination of Option 1 and Option 3. It is a proposal to reduce tariff rates for FFR- TOR2 by 10% and to reduce TSS values for all services from 6.3 to 3.5 when SNSP exceeds 70% and from 4.7 to 2.5 when SNSP is between 60% and 70% from Q1 2023

Feedback on the questions and any other general comments are welcome. It is the intention of the TSOs to publish all responses and hence please mark your response as confidential if you do not wish your response to be published. Given that implementation of the proposed option would be required to take place by Q1 2023, the consultation deadline is 14 October 2022. This is to ensure the TSOs have sufficient time to submit a recommendations paper to the SEM Committee prior to the November SEM Committee.

The TSOs intend to hold a workshop with the RAs and will advise industry stakeholders of the details in due course.

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1. Outline of Consultation Paper

This consultation paper contains four key sections.

In section 2 of this paper we discuss the price regulation mechanism used for the current arrangements and provide an overview of contracted volumes for individual services. We also outline the difficulties associated with determining specific volume requirements on a trading period basis for certain services. Section 2 of the previous consultation paper published in May 2021 contained a detailed background of the basis for the current expenditure cap, the regulatory framework relating to DS3 expenditure as well as background on the DS3 Programme itself.

Section 3 of this paper describes the analysis that has been undertaken by the TSOs to identify the main drivers of the future system service expenditure and when it is likely to exceed the €235M cap.

Section 4 outlines options that the TSOs consider could be undertaken to remain within the €235M cap.

Section 5 includes additional questions for which we welcome views from industry participants. While in the final section, section 6, Next Steps are outlined.

Scope of Consultation

This consultation applies to the DS3 System Services Regulated (Volume Uncapped) Arrangements. For the avoidance of doubt, the DS3 System Services Fixed Contracts (Volume Capped) Arrangements are not in scope for this consultation.

2 Background and System Services Volumes

Regulatory Framework

In its SEM-17-80 decision paper⁷, the SEM Committee approved an expenditure cap for DS3 System Services of €235m/annum by 2020, to be achieved by following an annual cap “glide path”. The decision noted that this represents an allowance and does not guarantee that these monies will be spent. In the same decision it was noted that the expenditure cap for DS3 System Services Expenditure will remain at €235m/annum post 2020 until decided otherwise by the SEMC following public consultation.

It is further stated in SEM-17-80 that the TSOs submit regular reports to the Regulatory Authorities in relation to System Services expenditure to identify any potential need to revise tariffs. Should such a need arise, a review process would then follow to determine and consult upon the revised tariffs. It was envisaged that this process would likely take at least 18 weeks from initial identification of scenarios warranting tariff review to issuing a decision and notification of tariff changes. This process was initially instigated in 2020 and resulted in a consultation being published by the TSOs in May 2021 at the request of the RAs. Following a recommendations paper submitted to the RAs in August 2021⁵, the SEM Committee made the decision⁶ to reduce tariffs by 10% for FFR, POR, SOR, TOR1 and TOR2 from January 2022. As part of the monthly reporting process to the RAs, the TSO forecast a breach of the current allowance in the 2022/23 tariff year should further measures for reducing expenditure not be imposed.

The current System Services procurement tariff mechanism is based on price regulation, whereby service providers are tested to prove their service provision capability and are subsequently paid based on their real time availability to provide a given service in each trading period⁸. In that regard, there is currently no competition for individual services or TSO specified volumes required and the remuneration volumes per trading period are based on real time availability volumes. While this tariff-based approach has been successful in providing a transparent and stable framework signalling future system requirements necessary for the renewable transition to 2020 and has successfully delivered SNSP operational levels of 75%, the extension of the current arrangements to 30 April 2024, has led to significant investment in certain services (in particular by fast acting technologies).

Table 1 below shows the system services procured to date by technology type following Gate 6 for which contracts became effective on 01 April 2022. It is evident that based on Loss of Largest Single Infeed (LSI) on the island where LSI can vary from 121 MW to 508 MW for individual trading periods throughout the year that there is sufficient reserve contracted.

⁷ ‘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>

⁸ Section 2 of the original consultation paper published in May 2021 provides an overview of the DS3 programme as well as detail on its regulatory framework

Service	FFR	POR	SOR	TOR1	TOR2	RRS	RRD	SSRP	SIR	RM1	RM3	RM8
Unit	MW	MW	MW	MW	MW	MW	MW	MVAR	MWS2	MW	MW	MW
DSU	148	169	174	233	225	0	377	0	0	612	47	45
Wind	123	242	257	252	0	0	0	1,484	0	0	0	0
Conventional	375	771	1,167	1,373	1,939	4,484	2,361	5,908	676,114	6,592	7,872	8,459
Battery	463	473	473	473	452	0	8	356	0	0	0	0
Interconnector	200	200	200	200	200	0	0	350	0	0	0	0
AGU	0	0	0	61	74	10	88	0	0	88	88	88
Hybrid	2	2	2	2	2	0	0	0	0	0	0	0
Total	1,311	1,856	2,273	2,594	2,892	4,494	2,834	8,098	676,114	7,293	8,007	8,592

Table 1: Contracted Volumes of System Services Procured to Date

As part of the monthly expenditure monitoring process in which the TSOs provide expenditure reports to the RAs, the TSOs provide a breakdown of DS3 expenditure by technology type and provide volumes upon which payments have been made, these are largely based on availability. For volume requirements, the TSOs provide an approximation of reserve requirements for reserve services based upon LSI values extracted from a forecast model.

For certain services, there is no system requirement value available at a trading period level, rather there are a number of constraints that drive the need for these services e.g. minimum number of generation units required to be running in a jurisdiction, specific units that need to be on for reactive power in areas of the island based on system demand scenarios etc. The latest Operational Constraints can be found on the SEMO website⁹. This is updated regularly.

For determining volume requirements for ramping services on a trading interval basis, an enduring ramping tool has been developed as a Control Centre decision support tool but currently there is no functionality to routinely publish reports on ramping requirements. This added functionality would likely require a change request with the software vendor, development of a solution and deployment. This work would be best considered as part of the detailed design and implementation of the Future Arrangements.

For the Steady State Reactive Power (SSRP) and Synchronous Inertial Response (SIR) services, these are linked to voltage and inertia constraints respectively as referred to in the Operational Constraints documentation referenced above (e.g. minimum number of synchronised units). For Replacement Reserves, while a minimum amount per jurisdiction is set out in the Operational Constraints documentation, they are modelled as maximum MW output constraints on certain units where this constraint level may or may not change with different availabilities of those units depending on the operational situation, and therefore this service does not strictly have a quantified required volume.

⁹ http://www.eirgridgroup.com/site-files/library/EirGrid/OperationalConstraintsUpdate_29-April_2021.pdf

3 Tariff Rate Analysis

In this section, we outline the significant increase in DS3 expenditure that we anticipate could materialise in the next tariff year, 2022/2023, should mitigation measures that would prevent breach of the regulatory cap not be implemented.

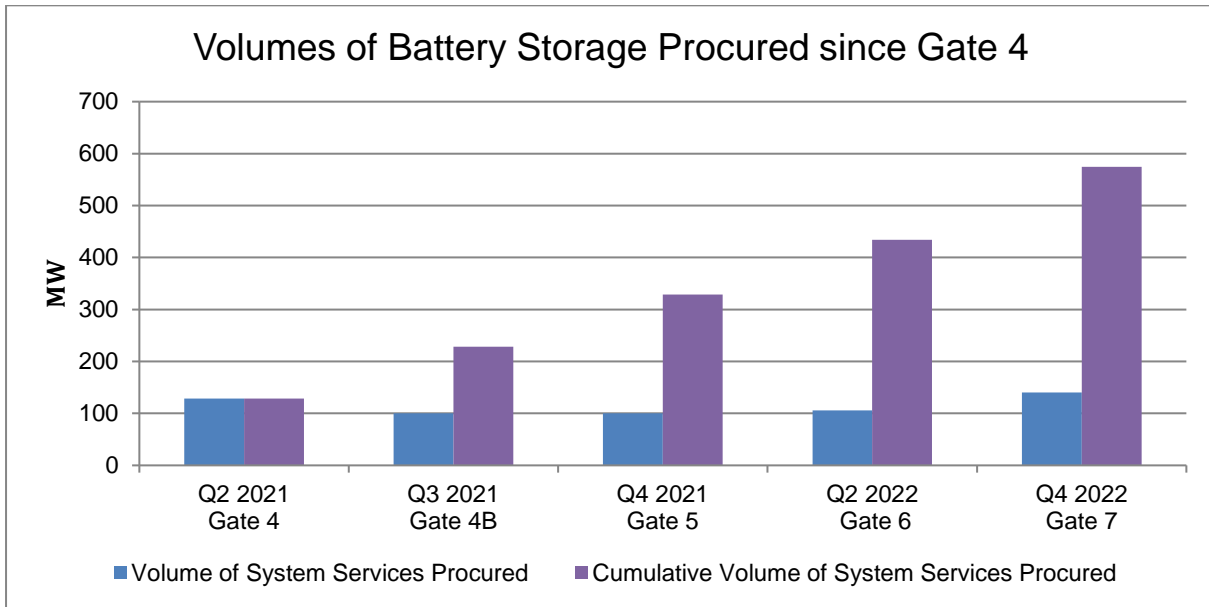


Figure 1 below shows the volumes of system services procured from fast acting storage technologies since Gate 4 (for which contracts took effect in April 2021) as well as a those to be contracted for Gate 7. There is a cumulative volume in excess of 550 MW of fast acting storage technology procured from Gates 4 through to 7. There is also potential for in the region of 50 MW of fast acting storage technology in Gate 8.

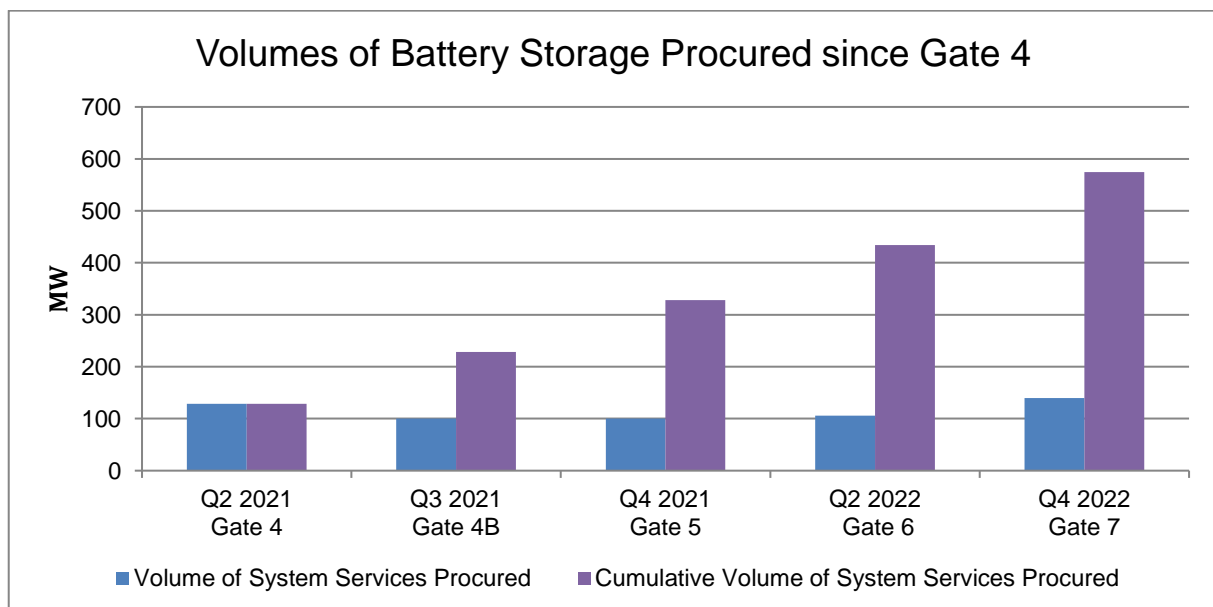


Figure 1: Volumes of Fast Acting Technologies Procured from Gates 4 - 7

The expenditure associated with such technologies is very high. As outlined in detail in section 3 of the previous consultation paper, some technologies have greater potential to increase the System Services expenditure than others. Where technologies are providing high value fast frequency services and have good availability the impact is significant. Batteries and some DSUs generally have these characteristics. In the current tariff year, fast acting storage technologies represent a significant portion of DS3 expenditure. For the current tariff year so far, from October 2021 - June 2022, there is an overall expenditure of approximately €165M, with just under €50M attributed to fast acting technologies. This is shown in Figure 2 below. Actual expenditure is shown from Q4 2021 to Q2 2022. Actual expenditure is especially high in Q1 2022 due to very high wind levels in February 2022. From the end of Q2 2022, there is DS3 expenditure associated with the volume capped arrangements.

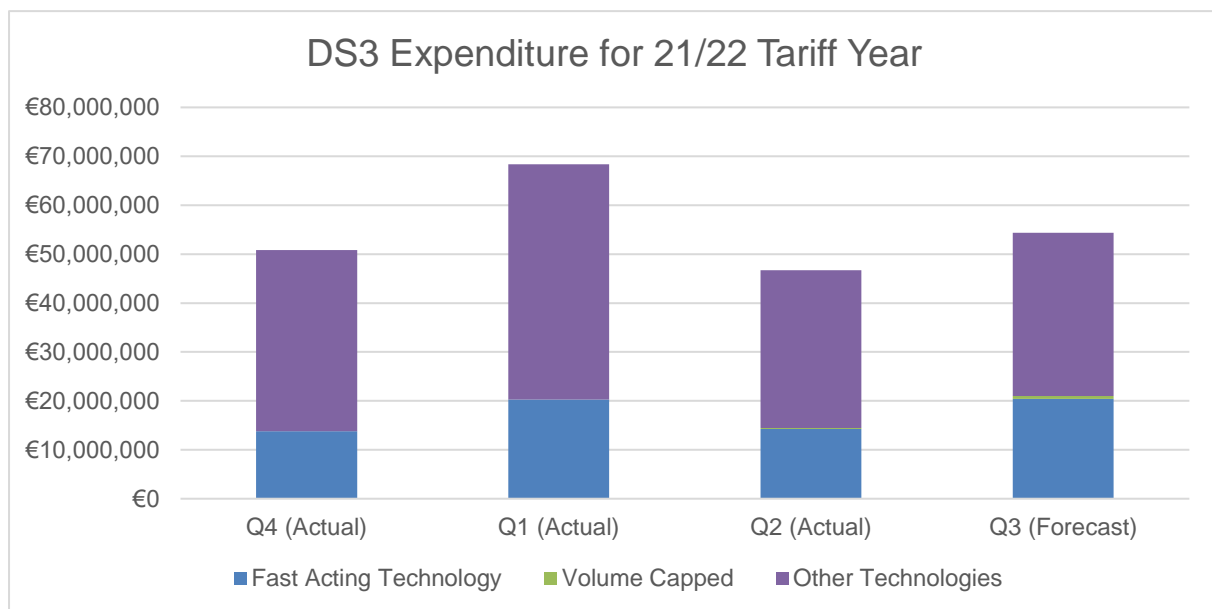


Figure 2: DS3 Expenditure for Current Tariff Year

By the end of the current tariff year, it is anticipated that spend associated with fast acting technologies could be €70M, representing in the region of 30% of the anticipated spend. This trend in expenditure is set to continue further following Gate 7 where approximately an additional 140 MW of new fast acting technologies will be providing system services. In addition, it is expected that new technologies will be providing SIR and SSRP.

Expenditure Correlation with SNSP Levels

When System Non-Synchronous Penetration (SNSP) levels are between 60% and 70%, DS3 payments to system services providers are multiplied by a Temporal Scarcity Scalar (TSS) of 4.7, this increases to 6.3 when SNSP exceeds 70%. In April 2022, following a successful trial, the SNSP limit was raised from 70% to 75%, this results in more trading periods where the higher TSS value of 6.3 applies. Figure 3 below illustrates the strong correlation between the number of intervals of high SNSP and overall DS3 expenditure from April 2021 to June 2022.

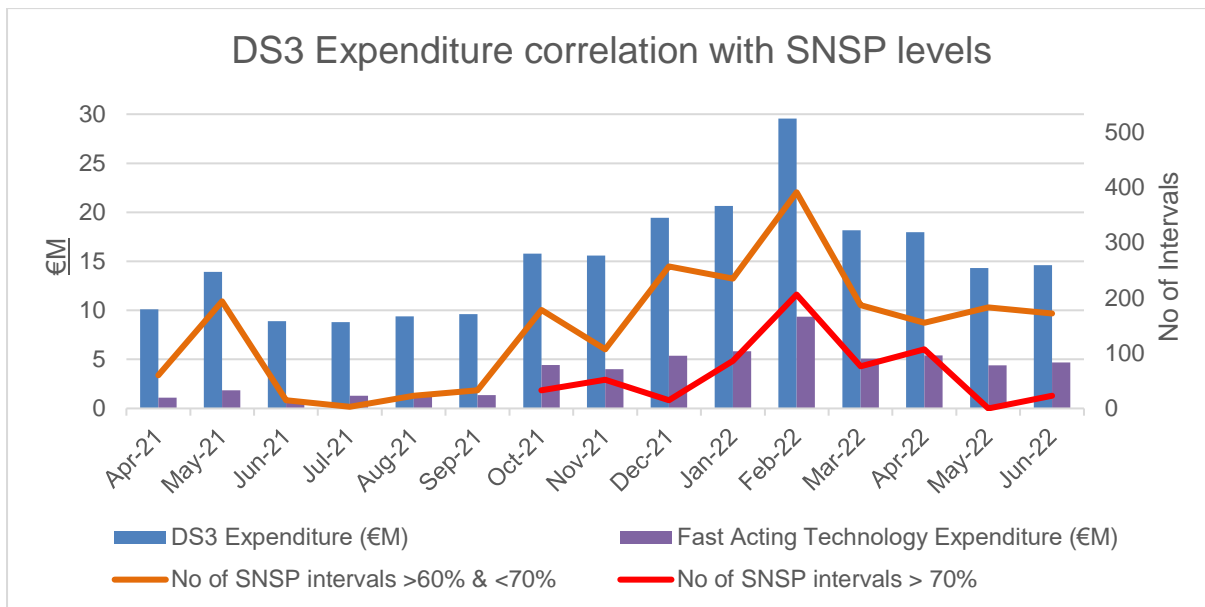


Figure 3: DS3 Expenditure Correlation with SNSP Levels

It is evident that for months with very high SNSP levels that there is a corresponding increase in DS3 System Services expenditure. DS3 expenditure is almost €30M in February 2022, where there were 206 intervals where SNSP is above 70% and 391 intervals where SNSP is between 60% and 70%. It is also shown that expenditure relating to fast acting technologies is increasing significantly, this is due to increased system service provision by these units following recent procurement gates.

DS3 Expenditure for 2022/23 tariff year

For the 2022/23 tariff year, there will be a significant increase in DS3 expenditure with breach of the regulatory cap unless appropriate measures are put in place or if the funding itself is increased. Without any intervention, DS3 expenditure could reach levels as high as €300M as shown in Figure 4 below, this assumes 140 MW of fast acting technologies has been procured at Gate 7, it is also anticipated that approximately 50 MW of fast acting technology could be procured following Gate 8. There is also an increase in expenditure relating to new technologies providing SIR and SSRP. It is also evident that fast acting technologies make up a very significant amount of expenditure, this is approximately €120M or in the region of 40% of the overall forecast expenditure (without any control measures in place).

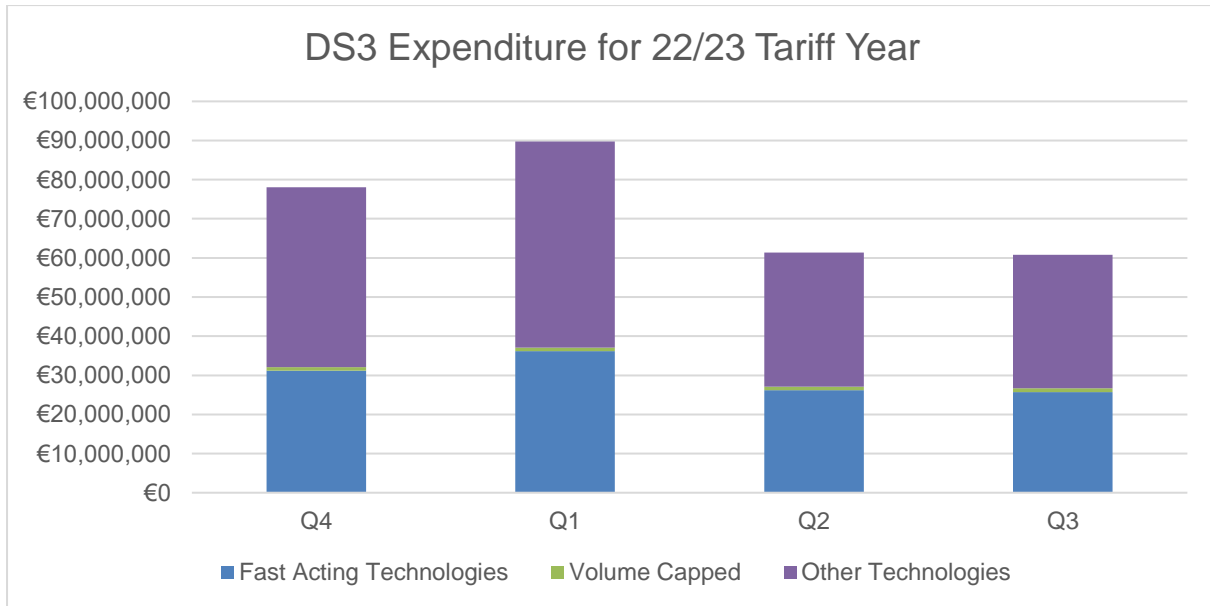


Figure 4: DS3 Expenditure Forecast for 2022/23 Tariff Year

4 Proposed Options for Reducing DS3 Expenditure

While it is evident that the main driver for significant increases in expenditure is driven by the additional volumes associated with fast acting services, it should be noted that reducing tariffs solely for fast acting units is not a feasible option. Per the rules of a Qualification System (the system that is in place to enable interested parties to submit a Response and subsequently qualify for award of Contract for provision of DS3 System Services) which is in keeping with United Kingdom and wider European policy for meeting renewable energy targets, the TSOs adopt a technology neutral position, a reduction in rates for only one technology type would be discriminatory and is therefore not presented as an option.

In the absence of RA approval to increase the cap on DS3 System Services expenditure, there are various options to manage the cap and the TSOs present the following options for consideration:

1. a reduction in tariff rates for certain services (FFR- TOR2);
2. a reduction in tariff rates for all services;
3. a reduction in Temporal Scarcity Scalar (TSS) values for all services; or
4. a hybrid approach using both tariff rates for FFR – TOR2 and TSS values for all services.

Note that reduction of fast acting scalars is not presented as an option, this is because these scalars are agreed contractual parameters within existing DS3 System Services agreements. Similarly, it is not an option to introduce any new additional scalars, as this would require an amendment to existing DS3 System Services agreements.

Further details on the options above are provided in this section. The TSOs welcome responses to the questions and any other general comments as part of this consultation. The TSOs ask if any response can indicate if it is confidential as it is the intention of the TSOs to publish all responses.

1. Reduce Tariffs for FFR, POR, SOR, TOR1 and TOR2 across all System Service Providers

Option 1 is a proposal to reduce tariff rates for FFR, POR, SOR, TOR1 and TOR2 by 35% for all service providers from Q1 2023 with a 10% reduction imposed on FFR-TOR2 for every 100MW of fast acting technology procured following Gate 7.

It is estimated based on expenditure models, that a 35% reduction in FFR, POR, SOR, TOR1 and TOR2 would reduce expenditure sufficiently such that the current regulatory cap would not be breached in 2022/2023. This option has the benefit of reducing expenditure on services for which there is no shortage i.e. the reserve services, without impacting other services.

From Figure 3, it is shown that DS3 expenditure is highest from October to March as this correlates with months of high wind and subsequently a high number of intervals where high TSS values apply. Should implementation of a reduction in tariffs take place at a later date than Q1 2023, a more significant reduction in rates would be required.

The TSOs also propose that a control measure should be put in place negating the need for an industry consultation following future procurement gates. In the previous consultation paper and recommendations paper to the RAs, the TSOs proposed a 10% reduction in rates for FFR-TOR2 for every 100 MW of additional Fast Acting Technologies procured thereafter. The TSOs propose again that this control measure be available to the TSOs but that from January 2023 that a higher reduction of 35% would be required (approximately 340 MW of fast acting technologies are likely to be procured in total between Gates 5 -7) with a 10% reduction being sufficient for subsequent gates. Based on experience with Gates 5-7, a 10% reduction for every 100MW of fast acting technology procured is a close approximation to the reductions in FFR – TOR2 tariffs required to prevent a breach of the regulatory cap for DS3 expenditure.

DS3 System Services tariffs are outlined in the Statement of Payments¹⁰. Should this option be implemented, the TSOs will publish a revised Statement of Payments.

¹⁰ EirGrid

<https://www.eirgridgroup.com/site-files/library/EirGrid/EirGrid-DS3-System-Services-Statement-of-Payments-December-2021.pdf>

SONI

<https://www.soni.ltd.uk/media/documents/SONI-DS3-SS-Statement-of-Payments-2021-22.pdf>

2. Reduce Tariffs for all Services across all System Service Providers

Option 2 is a proposal to reduce tariff rates for all services by 25% from Q1 2023. In addition, it is proposed that for every 100MW of Fast Acting Services procured at Procurement Gates following Gate 7, that all rates be reduced by 7%. This figure has proved adequate based on TSO models.

3. Reduce Temporal Scarcity Scalars for all System Service Providers

Option 3 is a proposal to reduce TSS values from 6.3 to 2.5 when SNSP exceeds 70% and from 4.7 to 1.5 when SNSP is between 60% and 70% for all services.

Temporal Scarcity Scalars (TSS) were originally introduced to incentivise system service providers to be available at times of high levels of generation from renewable sources when system services are most scarce. This mechanism also results in lower payments at periods of low renewable generation when provision of system services is of less value to the system.

Should this option be the preferred option, the TSS values could be amended via the DS3 System Services Protocol document which is supplementary to the DS3 System Services Framework Agreement. At present version 311 of the Protocol document is in effect, with version 4 to take effect from Q4 2022. Should an option to reduce TSS values be the outcome of this consultation, it will be implemented in a new version of the Protocol that would take effect from January 2023.

In addition to the proposed values, the TSOs also consider it prudent that should the scalars need to be adjusted upwards or downwards to ensure that overall expenditure is as close to the regulatory cap as possible, that this could also be implemented under the Governance of the Protocol. The TSOs may propose changes (the most recent proposed change was DS3 Protocol Consultation which was published in March 2022¹²) to the Protocol document no more than once every three (3) months. Proposed changes to the Protocol require the approval of the RAs. Any proposed change to the Protocol document will be subject to industry consultation, the TSO envisage that such consultations would be of short duration.

For this option however from Figure 3, it is evident that the volatility of SNSP levels contribute significant increases in expenditure, which leads to difficulty in both forecasting and controlling DS3 expenditure. It is the TSOs' view that if TSS values were reduced, expenditure would be less volatile and more controllable and allow DS3 expenditure to be closer to the cap. TSSs also impact services such as SIR and SSRP which are very important for reaching 2030 targets.

Modelling conducted by the TSOs indicates that should the higher TSS value of 6.3 (which applies at intervals where SNSP exceeds 70%) be reduced to 2.5, while the TSS value of 4.7 (which applies when

¹¹ DS3 System Services Protocol document
<https://www.eirgridgroup.com/site-files/library/EirGrid/DS3-SS-Protocol-v3.0.pdf>

¹² DS3 Protocol Consultation
<https://www.eirgridgroup.com/site-files/library/EirGrid/Consultation-paper-Protocol-Final.pdf>

SNSP is between 60% and 70%) be reduced to 1.5, expenditure would be reduced significantly so that the current cap would not be breached.

4. Reduce Temporal Scarcity Scalars for all Services and Reduce Tariffs for FFR, POR, SOR, TOR1 and TOR2 services

Option 4 is a combination of Option 1 and Option 3. It is a proposal to reduce tariff rates for FFR-TOR 2 and reduce TSS values from 6.3 to 3.5 when SNSP exceeds 70% and from 4.7 to 2.5 when SNSP is between 60% and 70% for all services.

For implementation of a hybrid approach, modelling conducted by the TSOs indicates that should the higher TSS value of 6.3 (which applies at intervals where SNSP exceeds 70%) be reduced to 3.5, while the TSS value of 4.7 (which applies when SNSP is between 60% and 70%) be reduced to 2.5, a rates reduction for FFR-TOR2 of approximately 10% is required to prevent a breach of expenditure in excess of €235M.

For options to control spend, adjustment of the TSS values or FFR-TOR2 rates could be implemented as outlined in the previous options.

Transition of System Services Procurement to Future Arrangements

The TSOs shared a draft of this consultation paper with the RAs and received feedback via RA letter on 01 September 2022. The RAs have requested that an option which utilises the Layered Procurement Framework to competitively procure FFR, POR, SOR, TOR1 and TOR 2 going forward also be considered as part of this consultation. The RAs also stated that the frequency of such auctions would be determined as part of this work but could be set weekly or monthly for the period up to the implementation of the System Services Future Arrangements. The RAs consider that this option would enable the TSOs to keep within the cap, while maintaining a route to market for potential new providers of these services. In addition to the options proposed above, the TSOs also welcome comments on competitive procurement of reserves as proposed by the RAs.

5 Consultation Questions

Question 1

From the options presented in this consultation, what is your preferred approach to reducing DS3 Expenditure and why?

Question 2

Do you agree that there should be controls in place that allow the TSOs to manage the DS3 expenditure to be as close to the cap as possible without the need for a consultation proposing a number of mechanisms to reduce DS3 expenditure following procurement of Fast Acting Technologies? For example, this could include a reduction in rates for FFR-TOR 2 when new fast acting technologies are procured or a shorter consultation process for reduction of TSS values.

Question 3

Are there any other comments / observations you wish to make?

Please mark any response as confidential if you do wish them to be published. All responses will be shared with Regulating Authorities.

6 Next Steps

Responses to Questions 1 - 3 are invited from all interested stakeholders. **Responses should be submitted by email to DS3@eirgrid.com or ds3@soni.ltd.uk on or before 14 October 2022.** We request that respondents use the following text in the subject of the email: Response to DS3 System Service Tariff Rate Amendments. Please indicate clearly whether the response is to be considered confidential.

The TSOs will also notify industry stakeholders of the details of a workshop associated with this consultation shortly.

Responses will be collated and reviewed, before a final recommendation is made by the TSOs for to the SEM Committee in November 2022.