Consultation on Regulated Tariff Calculation Methodology

DS3 System Services Implementation Project

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EIRGRID SONI

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1 Introduction and Background

The objective of the DS3 Programme, of which System Services is a part, is to meet the challenges of operating the electricity system in a safe, secure and efficient manner while facilitating higher levels of renewable energy.

One of the key work streams in the DS3 Programme is the System Services (or Ancillary Services) work stream. The aim of the System Services work stream is to put in place the correct structure, level and type of service in order to ensure that the system can operate securely with higher levels of non-synchronous generation such as intermittent wind penetration (up to 75% instantaneous penetration). This will reduce the level of curtailment for wind 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) ('the Decision Paper')[1].

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;
- 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;

[1] 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 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 levels of wind increase;
- 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 deliver.

The SEM Committee decision outlines a high level design for the procurement of DS3 System Services. It envisages auctions as the primary procurement and pricing mechanism for all system services that are deemed competitive. For all other services, providers will be paid through regulated tariffs.

One of the central work streams included in the DS3 System Services Project Plan is WS1 – Regulated Tariffs. The objective of this work stream is to:

- Develop tariffs for each DS3 System Service for the Interim Arrangements i.e. for the year commencing 1st October 2016;
- Develop the methodology for determining the base tariff level for each DS3 System Service under the Enduring Arrangements;
- Use the final approved Enduring Arrangements methodology to determine annual base tariffs for the 5 year period starting 1st October 2017.

During summer 2015, we engaged external professional assistance to assist with development of the principles and methodologies for certain technical design aspects of the DS3 System Service arrangements including the Regulated Tariff methodology. The accompanying report presents the work conducted by Pöyry on this topic, describes Pöyry's proposed methodology, and highlights some important issues for consideration.

This paper provides an introductory summary of some of the main issues outlined in Pöyry's detailed examination of proposed tariff determination methodologies for the 14 DS3 System Services. The Pöyry report illustrates in detail the proposed variations in methodologies to be applied to different groups of services. Respondents are therefore asked to read the Pöyry report in advance of developing their responses or views to the questions posed in this paper.

In this consultation, we are focusing on the proposed methodology for determining the Regulated Tariffs for each DS3 System Service under the Enduring Arrangements. The tariffs to be used for the Interim Arrangements will be developed separately using a methodology appropriate to a one year set of arrangements. A separate consultation will be held in Q1 2016 on the tariffs proposed for the Interim Arrangements.

2 Objectives of Regulated Tariff Methodology

In its 2014 Decision Paper, the SEM Committee set out the high-level framework for determination of Regulated Tariffs and directed that the tariffs be based on a "Best New Entrant (BNE) methodology (or similar)". Elsewhere in the Decision Paper the SEM Committee also clearly expressed a preference for tariffs to be cost-based allowing for a regulated return.

Pöyry has developed the regulated tariff methodology in line with this objective while also being cognisant of the wider aims of the tariff arrangements i.e. regulated tariffs should in so far as possible:

- reflect the value of each service, and in particular place greater value where there is scarcity;
- incentivise the appropriate level of System Services that are needed by the TSOs;
- promote investment in both enhancement of existing assets and new entry when needed;
- facilitate the cost-effective delivery of wider public policy objectives;
- to the greatest extent possible, treat all technologies equitably;
- ensure consumers' interests are protected; and
- be underpinned by a simple and transparent methodology.

3 Overview of Proposed Methodology

The Pöyry paper proposes a varied approach to determining tariffs for particular System Services or groups of System Services, because of the different nature of the services. The methodology uses seven "building blocks" that each describes key elements of the tariff calculation approach. These building blocks and the possible associated options for selection for each system service are shown in Table 1.

Building blocks	Options
Fixed Cost Recovery	Recover all capital and annual fixed costs OR incremental costs for additional System Service(s) capability
Include opportunity / variable costs	Include OR exclude
Granularity of Tariffs	High (hourly / half-hourly) OR Low (annual)
Commodity Price Indexation	Indexation OR no indexation
Inflation Indexation	Adjusted for inflation OR no inflation adjustment
Market-wide vs. Targeted Tariffs	Market-wide OR Targeted Tariffs
Cost Attribution	Singular OR joint

Table 1: Building blocks of the regulated tariff methodology

Pöyry proposes that some building blocks, in particular the approaches to tariff granularity, inflation indexation and fixed cost recovery, should be common to all 14 System Services.

The granularity of all tariffs is proposed to be annual in line with the SEM Committee decision. However the potential for the introduction of shorter term pricing is being considered separately in the Scalars design work.

It is proposed that all tariffs would be determined in real money terms, and adjusted for inflation in subsequent years. Pöyry proposes to reduce the inflation risk by adopting a similar approach as that used today in the Harmonised Ancillary Services (HAS) arrangements i.e. tariffs are fixed year ahead and account for forecast inflation.

With regard to fixed cost recovery, Pöyry proposes that only incremental investment costs associated with the provision of System Services should be directed to the System Services regulated tariffs. Moreover incremental investment costs should only be used for determining the tariff for a particular system service where specific incremental costs can be identified which are directly attributable to increasing capability of that specific service. Otherwise, Pöyry proposes that tariff calculations would be based on opportunity / variable costs derived from production cost modelling. The difference between these approaches to cost estimation is discussed further in Sections 3.1 and 3.2 of this paper.

Question 1: What is your view on the high-level methodology outlined by Pöyry in its paper?

Question 2: Do you agree with Pöyry's proposed approach to managing inflation risk?

3.1 Incremental Investment Cost Estimation

For certain services such as Fast Post-Fault Active Power Recovery it is possible to identify specific targeted investments, the costs of which would only be recoverable via system service payments i.e. the investment would result in no net change in energy or capacity revenues. As a result, this cost could be apportioned directly to system services tariffs.

Pöyry proposes that the base annual tariff would be set by calculating a payment level that would allow recovery of the investment cost over the lifetime of the BNE plant while accounting for a regulated Rate of Return. The process would require specific inputs on the magnitude of the investment costs, the appropriate economic lifetime for the plant, and the Weighted Average Cost of Capital. If we were to

develop these inputs we would likely need expert assistance. We would suggest that the final values should be subject to approval by the Regulatory Authorities.

Question 3: Do you agree that investment costs can be identified specifically for increasing Fast Post-Fault Active Power Recovery, Dynamic Reactive Response, Steady-State Reactive Power and the Ramping Margin services capability? If not, please explain your reason.

Question 4: Do you agree that the TSOs should develop the necessary inputs to the calculations and that the Regulatory Authorities should approve them? If not, who do you propose should develop and approve them, and why?

3.2 Operational (Opportunity) Cost Estimation based on Production Cost Modelling

For some services such as reserve, the volume and cost of supplying the service (for some providers) is dependent on dispatch decisions. Under the I-SEM arrangements, there would be an opportunity cost in the form of lost Infra-Marginal Rents associated with provision of reserve. Therefore the cost is not necessarily linked to a specific investment.

Pöyry proposes that production cost modelling using the Plexos tool be conducted and that the tariffs for these services be informed by the marginal cost of provision of each service. This is analogous to the calculation of System Marginal Price (SMP) for energy. Given that multiple services can typically be provided by partially loaded plant, for example Primary Operating Reserve, Secondary Operating Reserve etc., the opportunity cost would need to be shared appropriately between different services. Pöyry proposes that this could be informed by calculation of the relative value to the system of each service as determined in the Plexos modelling.

Clearly, the choice of study years and portfolio scenarios for this analysis would be important. We will develop portfolio scenarios for the purpose of calculating volumes of services required. These scenarios will include assumptions on demand, generation capacity, interconnection, and system services capability, and are

outlined in detail in section 3 of the Volume Calculation Methodology and Portfolio Scenarios consultation paper[2]. We would propose to use these same portfolio scenarios for the regulated tariff calculation process. As these portfolios would now be used to set tariffs, the operating cost inputs will be important as they will have a direct bearing on the tariff results.

Similar to our approach to volume calculations, we propose to study the 2017/18 and 2019/20 tariff years and to derive the tariffs for the other years within the five year period for which tariffs are to be set from these results.

Question 5: Do you agree that investment costs for increasing individual service capability only cannot be identified for the Synchronous Inertial Response, Fast Frequency Response and the reserve services?

Question 6: Do you agree with Pöyry's proposal by which the tariffs for these services will be informed by the marginal cost of provision of each service?

Question 7: Do you agree with the proposal to use the same portfolio scenarios (and the same study years) for the volume calculation and regulated tariff calculation processes?

3.3 Managing Expenditure

The proposed methodology has never before been used to determine tariff levels. Therefore the TSOs do not know the likely scale and distribution of outcomes across the 14 DS3 System Services that would result from implementation of the methodology.

The TSOs have a duty to manage the overall scale of payments, and ensure value to consumers from the deployment of DS3 System Services. The base tariff levels resulting from the calculation and modelling processes outlined above may therefore need to be adjusted to ensure that the overall scale of payments is both sufficient to

[2] Volume Calculation Methodology and Portfolio Scenarios consultation paper: http://www.eirgridgroup.com/site-files/library/EirGrid/DS3-System-Services-Consultation-on-Volume-Calculation-Methodology-and-Portfolio-Scenarios.pdf

incentivise efficient performance and investment where needed, and appropriate to the level of regulated revenue allowance. Pöyry has outlined several options for how DS3 System Services expenditure could be managed.

Question 8: Do you agree with the TSOs' view that it may be necessary to adjust tariff levels post-calculation to manage the scale of payments?

Question 9: What are your views on the options proposed by Pöyry for managing expenditure?

3.4 Other Issues

Pöyry has raised a number of specific issues in the paper that we believe are worth highlighting here.

The Dynamic Reactive Response and Fast Post-Fault Active Power Recovery services are required during and after system faults to ensure the system remains stable. These services are automatically provided by synchronous generation, but many non-synchronous generation plant do not currently provide them. For the Dynamic Reactive Response and Fast Post-Fault Active Power Recovery services, Pöyry suggests that payments should be targeted using a scarcity scalar to periods when the services are most needed, in essence when non-synchronous generation levels are high, to avoid overpayment of this service. Pöyry outlines an alternative approach to targeting payments only to non-synchronous plant, but acknowledges that such an approach would not result in equitable treatment of all technologies.

Question 10: Do you agree with Pöyry's view that payments for Dynamic Reactive Response and Fast Post-Fault Active Power Recovery should be targeted? Do you agree that they should be targeted at times of greatest need? What are your views on targeting payments to specific types of technologies?

Steady State Reactive Power is an existing product aimed at remunerating reactive power provision. It has been re-defined with the aim of promoting reactive power delivery over a wider active power range. Pöyry's proposed regulated tariff

methodology relies on maintaining the base rate for procuring Steady State Reactive Power at the current levels. Should reactive power needs increase to a level which is insufficiently procured using this base rate, Pöyry suggests that the tariff could be increased with the revised rate informed by the cost of a dedicated network solution.

Question 11: What is your view on the proposed approach to determination of the Steady State Reactive Power tariff?

The Ramping Margin services (RM1, RM3 and RM8) are being introduced to ensure there is sufficient flexibility on the system to respond to demand and weather-variable generation forecast errors and plant outages. Where there is a gap in ramping capability in the existing portfolio, Pöyry's proposed tariff determination methodology seeks to ensure that only incremental fixed costs relating to improving ramping capability from conventional generating units are included in tariff structures.

Pöyry suggests that this could be the required equipment for keeping a Combined Cycle Gas Turbine ('CCGT') installation 'warm' as CCGTs are currently the most widely spread technology in the All-Island system. This should benefit other providers to the extent they can offer similar ramping capability at lower cost.

In the future, Pöyry suggests that the TSOs should have sufficient flexibility to adjust either tariffs or the requirement accordingly, as short-term energy markets and the new Capacity Remuneration Mechanism arrangements are developed and could act as sufficient incentives for investment in flexible capability.

Question 12: What is your view on the proposed approach to determination of the tariffs for Ramping Margin services? Do you agree with the suggestion to use the cost of the required equipment for keeping a CCGT 'warm' to inform the tariff level?

Pöyry recommends Commodity Price Indexation for Synchronous Inertial Response, Fast Frequency Response and reserve services i.e. those services for which tariffs are calculated using Plexos production cost modelling. For these, the indexation is

driven by changes in fuel costs, and its inclusion would provide for greater accuracy in the tariff calculations closer to real time. On the other hand, inclusion of indexation could be seen to have a disproportionate impact on plant with high capital costs and lower variable costs. It could also be argued that it leads to less investment certainty.

Question 13: What is your view on the proposed inclusion of commodity price indexation?

4 Responding to this Consultation

4.1 Consultation Process

We value the input of stakeholders on all aspects of DS3 and as part of the System Services detailed design and implementation project we will consult with industry across a variety of topics.

In this consultation process we are seeking industry views on the methodologies that Pöyry has proposed for the calculation of Regulated Tariffs under the Enduring Arrangements. To facilitate stakeholder engagement we will host an industry workshop during the consultation period. This workshop, which is scheduled for November 12th in Dundalk, will provide an opportunity for discussion on the details of the consultation paper. We are aiming to cover a number of consultation papers at the one workshop for efficiency.

4.2 Responding to the Consultation

Views and comments are invited on all aspects of this document. Responses to the consultation should be sent to:

DS3@eirgrid.com or DS3@soni.ltd.uk by December 18th 2015

Responses should be provided using the associated questionnaire template. It would be helpful if answers to the questions include justification and explanation. If there are issues pertinent to System Services that are not addressed in the questionnaire, these can be addressed at the end of the response.

It would be helpful if responses are not confidential. If you require your response to remain confidential, you should clearly state this on the coversheet of the response. We intend to publish all non-confidential responses. Please note that, in any event, all responses will be shared with the Regulatory Authorities.