Single Electricity Market

(SEM)

Capacity Remuneration Mechanism

Information Paper on T-4 CY2022/23 USPC Application Processes

Information Paper

SEM-19-020

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Contents

1. INTRODUCTION

1.1 BACKGROUND

1.1.1 The I-SEM CRM detailed design and auction process has been developed through a series of consultation and decision papers. These are available on the SEM Committee's website. These decisions were translated into legal drafting of the market rules via an extensive consultative process leading to the publication of the Trading and Settlement Code (TSC) on 12 April 2017 (SEM-17-024)[1] and the Capacity Market Code (CMC) on 2 June 2017 (SEM-17-033)[2].

1.1.2 The CMC describes the process which market participants must follow in relation to participation in a CRM auction. This includes detail in relation to the requirement for market participants to apply for Regulatory Authority (RA) approval for certain exception applications (section E5 of the CMC) and opt-out notification determinations (section E3 of the CMC).

1.1.3 The purpose of the Exception Applications process is to assess applications submitted by a Participant seeking approval for:

- Proposed New Capacity to have a Maximum Capacity Duration of more than one and up to 10 Capacity Years;
- All or a specified part of Existing Capacity to be subject to a Unit Specific Price Cap (USPC) in a Capacity Auction; or
- An Opt-out notification.

1.1.4 Participants seeking approval for the above are required to submit an Exception Application within the timeframes specified in the Capacity Auction Timetable.

1.1.5 The aims of the process, inter alia, are:

- To ensure a fair and equitable process for all applicants;
- To ensure all applicants have equal access to the same information necessary to prepare and advance their exception applications in a timely manner; and
- To take all reasonable precautions that any confidential information generated by the exception application is kept confidential.

1.1.6 In the *CRM Parameters for T-4 2022/23 Capacity Auction Decision Paper* (SEM-18-155) the SEM Committee set out its planned approach to estimating the Net Going Forward Costs (NGFCs) and USPCs for applicants making an Existing Capacity Exception Application. SEM-18-155 stated that as previously set out in the CRM Parameters decision (SEM-17-022):

[1] Trading and Settlement Code - https://www.sem-o.com/rules-and-modifications/balancing-market-modifications/market-rules/

[2] Capacity Market Code - https://www.sem-o.com/rules-and-modifications/capacity-market-modifications/market-rules/

- ***NGFCs:*** *The RAs will calculate the NGFC for a generator based on the following formula:*

  NGFC = Max [(Fixed operating costs – gross infra-marginal rent from the energy and ancillary service revenue + appropriate proportion of unavoidable future investment),0] + Expected Reliability Option difference payments

  Where the appropriate proportion of unavoidable future investment will be determined on a case-by-case basis.

- ***USPC****: Unit Specific Price Caps will be set based upon Net Going Forward Costs (NGFCs) according to the following formula:*

  Max allowed USPC bid = 110% x RAs' NGFC estimate, updated following review of USPC application".

1.1.7 The SEM Committee confirmed their intention was not to make any significant policy changes to the approach used to the setting of USPCs for the CY2022/23 T-4 auction. However, we stated:

- The approach would need to be tailored to a T-4 auction rather than a T-1 auction; and
- The Excel data templates would need to be updated to be appropriate for a T-4 auction.

1.1.8 A briefing note[3], SEM-18-041 CRM *Exception Application and Opt-out Notification Process for the T-4 2022/23 Capacity Auction*, was published on 22 August 2018 setting out the detailed process and timeline for Exception Applications and Opt-Out Notifications, and the format in which applicants should submit the data to support their applications.

1.1.9 This note sets out some further detail on the approach applied by the SEM Committee in relation to the USPC setting process for Capacity Year 2022/23.

1.2 PURPOSE OF THIS PAPER

1.2.1 This paper sets out for information the assessment approaches applied by the Regulatory Authorities (RAs) in assessing the Exception Applications received under paragraph E.5 of the Capacity Market Code.

1.2.2 A number of these assessment approaches have been addressed in various decision papers. However, in this paper we set out some areas of the detailed application of the assessment approaches here for clarity for interested parties.

1.2.3 The RAs in publishing this document have, where considered appropriate and helpful for future applications, set out assessment approaches. This ensures transparency and assurance that a consistent approach is taken to each USPC application received.

[3] https://www.semcommittee.com/sites/semc/files/media-files/SEM-18-041%20CY201920%20Exception%20Application%20Briefing%20Note.pdf

2. ASSESSMENT APPROACH

2.1 OVERVIEW

2.1.1 This section summarises the approach taken in the following areas:

- Infra-marginal Rent (IMR);
- Reliability Option Difference Payments;
- Ancillary services;
- Tolerances; and
- Other.

2.1.2 The RAs position on each of these areas in relation to the Exception Application for Capacity Year 2022/23 is set out below.

2.1.3 During the USPC assessment process the RAs were assisted by engineering advisers who advised on the reasonableness of certain elements of Non-Fuel Operating Costs and the Unavoidable Future Investments.

2.2 KEY ASSESSMENT APPROACHES

Infra-Marginal Rent (IMR)

2.2.1 The SEM Committee continued to apply the policies set out in in the CRM Parameters consultation (SEM-16-073) and decision (SEM-17-022) and SEM-17-041, where it was stated that we will "*Use a PLEXOS model to estimate unit by unit IMR, [and] assume bids [are] at cost*".

2.2.2 During the CY2018/19 USPC process the RAs used the previous SEM PLEXOS model. With regard to the USPC process for CY2019/20 the RAs migrated to use of the new SEM PLEXOS model which was subsequently utilised again for this T-4 USPC process. The RAs made the following changes to approach / assumptions in regards to the modelling inputs:

- Updated the model to reflect the availability of the Generation Capacity Statement (GCS) 2018-2027.
- Updated Commodity Curves: Fuel and CO_2 price curves and the exchange rates applied to these curves were updated to represent the expected values at the end of January 2019.
- Changes to Technical Offer Data (TOD) observed since the new SEM went live on 1 October 2018.

2.2.3 Two scenarios were utilised in order to consider different entry and exit paths:

- **Base Scenario**: Assumes closures in line with the expectations published in the 2018 GCS, but adjusts for information about known / planned closures, all of which is now in the public domain. It also assumes no new plant entry.

- **Sensitivity Scenario:** This adjusts the Base Scenario by:
  - Assuming that a new CCGT enters to meet Dublin demand growth;
  - Closing capacity to bring the total de-rated capacity in the SEM into line with the expected Capacity Requirement and LCC minimum MWs, including expected reserves. When closing capacity for this scenario, the decision was taken to skew the closures toward capacity that is less frequently in merit, i.e. that would be expected to run less often and have a smaller impact on the IMR of base-load and mid-merit capacity. This decision has minimal impact on the level of RODPs but does create a more conservative view of any increase in IMR values as a result of the tighter capacity position.

2.2.4 For each scenario, one hundred "full" Monte Carlo runs were produced to examine a wide range of possible combinations of forced outages, and to capture infrequent events. These 100 runs were comprised of 20 runs for each of the five combinations of demand and wind profile that form part of the latest Validated PLEXOS Dataset. The IMR for each PLEXOS run was determined as the difference between the energy revenue and the total generation costs and IMR was determined as the average of the IMR from each scenarios 100 constituent runs.

Reliability Option Difference Payments (RODPs)

2.2.5 There was no change of policy with respect to the calculation of expected Reliability Option Difference Payments (RODPs). The RAs continue to model RODPs using PLEXOS. However, the PLEXOS modelling approach was updated to align with the changes to models/assumptions used in the IMR modelling, set out above.

RODPs were determined from the same PLEXOS Runs in two components, scarcity related events and high-priced non-scarcity related events. The RAs used the Base and Sensitivity Scenarios to estimate RODP exposures, taking the average of the two scenarios.

Ancillary Service Revenue

2.2.6 Within this modelling exercise, the constraints used were those anticipated for the year CY2018/19. The SEM Committee recognise that the constraints anticipated for CY2018/19 may change by CY2022/23 with a material impact on unit running. The additional running arising from physical dispatch, which was over and above market position, had low materiality for most units making a USPC application. As a conservative approach, for CY2022/23, this additional running was assumed to be zero for all units.

2.2.7 The running obtained from the unconstrained PLEXOS model was combined with the published ancillary service tariffs for 2022/23, the existing contracted volumes for each DS3 service and each unit's technical offer data to produce an estimated ancillary service revenue arising from a unit's market position.

The PLEXOS model was also used to estimate SNSP for each period and this was used to apply the appropriate DS3 temporal scarcity scalars in our determination of ancillary service revenue arising from market position (as set out in SEM-18-032).

2.2.8 The treatment of ramping services was brought into line with the latest DS3 rule set and was based on Physical Dispatch with a Temporal Scalar of unity applied in all hours. In determining the level of revenue from ramping services, the RAs have taken the conservative assumption that revenue from ramping services would be 50% of that expected had Physical Dispatch matched Market Position.

Tolerances

2.2.9 As set out in the *CRM Parameters and Auction Timings Decision Paper* (SEM-17-022) the SEM Committee decided that to account for uncertainty, where a positive value for Net Going Forward Costs is determined, the assessment of the USPC includes a 10% upwards adjustment to the NGFC. This was applied as part of the USPC process for CY2018/19, CY2019/20 and has also been applied to this USPC process.

2.2.10 During the USPC Exceptions applications process for CY2022/23 the SEM Committee considered feedback received from applicants in regards to arguments for the inclusion of backcasting and for the use of Mixed Integer Programming (MIP) optimisation as opposed to the current utilisation of Rounded Relaxation (RR) within the PLEXOS modelling used to forecast IMR. The use of MIP was considered in the preparation of the current validated PLEXOS dataset in November 2018 in the context of the Directed Contracts (DCs) process. At this time the retention of RR was recommended, although it was suggested this be re-evaluated in future validation exercises, particularly once one can compare PLEXOS SEM Model results to actual SEM data.

2.2.11 As described in the Validation Report for I-SEM PLEXOS Model 2018-2023[4], it was intended that the optimisation settings would be reviewed once sufficient SEM data is available, and the possibility of both processes moving to the utilisation of MIP was a possibility. This is still the case. The SEM Committee also noted, that in regards to backcasting, it is currently too soon for this to take place due to the lack of data from the new market arrangements, however upon the availability of a sufficient level of data this would be considered.

[4] https://www.semcommittee.com/sites/semc/files/media-files/SEM-18-175%28a%29%20NERA%20Report%20on%20the%20validated%20SEM%20PLEXOS%20model%202018-2023.pdf

2.2.12 As part of the USPC process the SEM Committee therefore decided not to amend the optimisation, however, recognised that the choice of unit commitment algorithm can have an impact on the outturn unit commitment patterns. While a 10% tolerance is already added to the total NGFC estimate in arriving at the SEM Committee estimate of USPC, for this T-4 CY2022/23 USPC process the SEM Committee have also applied an additional 5% tolerance in respect of the values derived from PLEXOS modelling (i.e. IMR, RODPs and ancillary service revenue). It should be noted however that this additional tolerance is **applied for the first T-4 capacity auction only**. This will be reviewed for future capacity auctions and should not be viewed as creating a precedent for future USPC Exception application and Capacity auction processes.

Other

2.2.13 **Unavoidable Future Investment (UFI)** – The RAs provided for CY2022/23 T-4 applicants to apply for UFI allowances in respect of investments for CY2020/21 and CY2021/22, the two "intervening" years for auctions that are yet to take place. Any UFI allowances, if granted, were carried forward from CY2020/21 and CY2021/22 to the auction year, CY2022/23 in accordance with the normal process.

2.2.14 This follows naturally from the fact that this is a T-4 auction that takes place before the remaining transitional auctions. It should be noted that this is not deemed a change of policy.

2.2.15 **General Inflation Assumptions** – In line with the SEM Committee Parameters decision (SEM-18-155) the RAs used an inflation rate of 2% p.a. for the whole island of Ireland in preparing the both the USPC determinations.

3. ACRONYMS

CRM	Capacity Remuneration Mechanism
CY	Capacity Year
GCS	Generation Capacity Statement
I-SEM	Integrated Single Electricity Market
MW	Megawatt
NGFC	Net Going Forward Costs
NI	Northern Ireland
RA	Regulatory Authority
ROI	Republic of Ireland
RODP	Reliability Option Difference Payment
SEM	Single Electricity Market
TOD	Technical Offer Data
TSO	Transmission System Operator
UFI	Unavoidable Future Investment
USPC	Unit Specific Price Cap