



# **SEMO Key Performance Indicators**

## **Consultation Paper**

SEM-19-11

8 March 2019

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# 1. Introduction

## 1.1 Background

This Consultation Paper follows on from the Price Control Final Determination Paper for the Single Electricity Market Operator (SEMO) published in February 2018 (SEM-18-003), in which the SEM Committee's views with respect to Key Performance Indicators to apply to SEMO were outlined. The aim of such KPIs is to ensure a high standard of performance and service for market participants and to facilitate the RAs' Market Monitoring functions.

While the SEMO Price Control Draft Determination Paper (SEM-17-075) concerned the number of KPIs to apply to SEMO, assumptions around such KPIs, their definitions, incentive pot and any bedding in period to apply, it did not set out a view on the weightings of the various KPIs or the precise metrics that would apply to each KPI to measure performance. A number of SEMO's functions and responsibilities have changed between SEM and I-SEM. A key difference for KPIs to apply to SEMO within the 2018-2021 price control as opposed to the previous price control relates to SEMO's reporting requirements and the differences in the key market information it will need to publish under the new market arrangements.

It was stated in SEM-18-003 that further consultation was required on this issue, in particular to identify the key reports which SEMO publishes in the new wholesale electricity market and their associated timelines and to identify appropriate weightings for each indicator.

On 16 January 2019, the RAs requested SEMO to submit a proposal for performance standards to apply under its price control, in a form suitable for publication as part of the consultation process. The RAs have considered SEMO's submission in relation to the proposals outlined in this Consultation Paper and this is published along with this Consultation.

Interested stakeholders are invited to respond to the proposals outlined in this consultation paper until 19 April 2019. Responses can be submitted to [gkelly@cru.ie](mailto:gkelly@cru.ie) and [Karen.Shiels@uregni.gov.uk](mailto:Karen.Shiels@uregni.gov.uk).

## 1.2 Role of SEMO

SEMO has a number of responsibilities in the Single Electricity Market (SEM) and exists as a jurisdictional joint venture between EirGrid Plc and SONI Ltd, the Transmission System Operator (TSO) licence and Market Operator (MO) licence holders in ROI and NI respectively. The current price control which applies to SEMO accounts for the revised roles and responsibilities of SEMO in the current market, which went live on 1 October 2018. The roles and responsibilities of SEMO under the new market arrangements have been set out in a number of decision papers, the Trading and Settlement Code and in the Market Operator licences granted to EirGrid and SONI.

Under the previous price control framework which applied under the old set of market arrangements, SEMO was incentivised to manage performance through Key Performance Indicators (KPIs). These KPIs were aimed at improving performance, promoting customer service, increasing efficiencies and delivering value to customers. Between each price control from 2009, changes were made to the number of KPIs and their weightings to reflect SEMO's performance in line with achievable targets and the development of the market.

### 1.3 Proposals outlined in this Consultation Paper

This Consultation Paper presents a number of proposed KPIs to apply to SEMO under its current price control. In terms of high-level definitions, these proposals broadly reflect those outlined in SEM-18-003, however some proposed changes are outlined in order to ensure that each proposed KPI is both specific and measurable, particularly in relation to reporting requirements for SEMO.

It is envisaged that the KPIs outlined in this paper will be useful both to market participants and for the purpose of facilitating the RA/SEMC Market Monitoring functions. Feedback from stakeholders on the definition and parameters to apply to each KPI is invited.

This paper also proposes weightings and upper and lower targets for each KPI, based on analysis of SEMO's past performance against KPIs applied in preceding price controls. Where SEMO has consistently met or exceeded the performance threshold for any indicators which also applied under the old market arrangements, it is proposed that the associated weightings of these KPIs are reduced in order to be targeted at other KPIs to be met by SEMO. Where new KPIs are proposed, respondents' comments on their proposed weightings is also invited.

Two options are also presented for the application of targets for each KPI. The first option involves the same targets being applicable for each remaining tariff period of the SEMO price control, while the second option considers different targets being applied for each period to reflect the development of the market.

## 2. Application of KPIs in Previous SEMO Price Controls

### 2.1 Key Performance Indicators between 2009 and 2018

A brief overview of KPIs that applied to SEMO in price controls between 2009 and 2018 is presented here to demonstrate the assumptions and principles that applied to KPIs under each price control and the development of such performance metrics over time. The number of KPIs and their associated targets increased between 2009 and 2018 as the market matured.

In each price control, SEMO was required to deliver on each applicable metric within one hour of the targeted time defined for each indicator. Some external factors outside of the Market Operator's direct control were excluded from the calculation of SEMO's performance against these metrics, such as limited communication failure by a Market Participant, late provision of data by System Operators or the Meter Data Provider, Government policy changes, Regulatory Authorities' policy changes or other factors outside of SEMO's control.

In the October 2009 to September 2010 Price Control, the assessment of SEMO's Key Performance Indicators was carried out based on an overall measurement or performance against each KPI at the end of the tariff year, using the average value of each KPI over the year. From October 2010, this was changed to a measure being taken at the end of each quarter using the average value of each KPI over that period. Any KPI reward was then adjusted through the k-factor mechanism in each tariff year.

The KPI incentive pot increased from 2.5% of total internal costs in the 2009/10 price control, to 3% of total OPEX for 2010-2013, based on an increase in the targets applied to several KPIs. In the 2013-2016 price control, the incentive pot was increased to 4% of total OPEX for each year. The 2016-2018 price control maintained the KPI incentive pot at 4% of total OPEX revenue for each year. This

means that where SEMO successfully met its targets for each KPI for each quarter, as shown in Table 1, an associated percentage of the incentive pot was awarded based on the weighting applied to each KPI.

For example, if the approved OPEX revenue for one tariff year was €10,000,000, the KPI incentive pot would be €400,000 euro for a tariff year. If the target for publication of Ex-Ante pricing reports was met in each quarter of this year, this would equate to 10% of €400,000 based on the weighting of this metric and an award of €40,000 or €10,000 for each successful quarter. If the target was not met in any particular quarter, there would be no incentive award applied to this quarter.

Table 1 below outlines the metrics which applied for the 2016-2018 Price Control. There were 4 KPIs in the 2009-2010 Price Control, increasing to 6 in the 2010-2013 price control and 7 in the 2013-2016 Price Control.

<b>October 2016 to September 2018 SEMO Price Control</b>			
	Weighting	Target	Upper Bound
Ex-Ante Pricing Report	0.10	99%	100%
MIUN publication	0.05	99%	100%
Ex-Post Initial Pricing Report	0.10	99%	100%
Invoicing	0.20	97%	100%
Credit Cover Increase Notices	0.10	99%	100%
SEMO related Resettlement Queries	0.20	< 9 incidents per quarter	<5 per quarter
General Queries	0.15	97% answered within 20 business days	99% answered within 20 business days
System Availability (7am to 5pm Monday-Sunday)	0.10	99.4%	99.9%

**Table 1**

Previously, SEMO submitted a report to the RAs which set out its performance against each KPI and associated incentive payment for the preceding tariff year. This was reviewed by the RAs for recovery through an adjustment to the k-factor in the RAs' SEMO Revenue and Tariffs Decision.

## 2.2 Description of Key Performance Indicators

A brief description of the seven Key Performance Indicators which were set out in SEMO's price control from 2016 to 2018 is provided here for reference. Further information can be found in SEM-16-043 and in the SEMO Key Performance Indicator Outturn reports available on the SEMO website.

The seven indicators were;

1. *Ex Ante Pricing Report*: The percentage of occurrences where the Ex-Ante 1 pricing reports were published on time. The target time for publication of these reports was 11:00am each day, seven days a week. These reports provided the day ahead forecast of Market Scheduled Quantities and System Marginal Price for all units.
2. *Ex-post Initial Pricing Report*: The percentage of occurrences where the Ex-Post Initial pricing reports were published on time. The target time for publication of these reports was 17:00 each day, seven days a week. These were carried out on D+4 with the final SMPs and MSQs for all participants.

3. *Invoicing*: The percentage of occurrences where invoices to all participants were published on time. The target for weekly energy Market and Variable Market Operator Charges was 12:00 each Friday. The target for Capacity was 12:00 seven working days after the end of the month and the target for Fixed Market Operator Charges was 12:00 on the first Friday after the end of the month.
4. *Credit Cover Increase Notices*: The percentage of occurrences where the CCINs were published on time, to inform market participants that their posted collateral cover was less than their required collateral cover. The target time for publications was 17:00 each working day.
5. *SEMO related ad hoc resettlement queries*: This refers to upheld formal queries from market participants which identified errors attributed to SEMO's operations and processes. The aim of this KPI was to reduce the number of SEMO related resettlement issues. Correction of such errors was completed in either the scheduled Resettlement (M+4 and M+13) or in ad hoc Resettlement. This was measured based on the number of upheld query incidents and Resettlements per Quarter, excluding those driven by external factors outside of SEMO's control.
6. *General Queries*: The percentage of occurrences where a General Query was not addressed within 20 Business days. This KPI aimed to maintain efficiency and customer focus within SEMO.
7. *Central Market System Availability*: System availability was the ratio of time infrastructure systems were in a functioning condition compared to the total time they were required or expected to be available. This was measured based on a set level of operational performance being met between 7:00 to 17:00 Monday to Sunday.

Further to SEM-18-003, it is proposed that Key Performance Indicators that are still applicable under the new market arrangements are retained. These include the KPIs for invoicing, credit cover increase notices, resettlement queries, general queries and central market system availability. This proposal is discussed in detail in Section 3 of this Consultation Paper.

Appendix 1 of this Consultation Paper also looks at SEMO's performance against each of these indicators between 2013 and 2016.

## 3. Proposals on KPIs for 2018-2021 SEMO Price Control

### 3.1 Decisions from the SEMO Price Control Final Determination

It was stated in SEM-18-003 that further consultation was required on the KPIs to apply to SEMO in the new market, particularly in relation to the weightings and targets to apply to each indicator and the definitions of key market information and data provision. Given the period of time that has passed since this Decision Paper was published, respondents' comments on the continued applicability of the indicators proposed here and how they should be specifically defined and measured are invited.

A number of the KPIs which were proposed under the current SEMO Price Control, but which were not implemented due to uncertainty about reporting and timing issues, are related to KPIs which recently applied to SEMO in the SEM. The main difference in the proposed KPIs relates to SEMO's reporting requirements and key market information it will need to publish in I-SEM.

The Final Determination Paper (SEM-18-003) concerned the number of KPIs to apply, assumptions around these KPIs, their definitions, incentive pot and any bedding in period to apply.

### 3.2 KPI Implementation period

It is proposed that the KPIs determined through this consultation process are implemented and measured as early as practically possible following publication of the SEM Committee Decision on SEMO's Key Performance Indicators.

It is envisaged that these would come into effect from Q2 2019, to apply for the remaining period of the 2018/19 tariff year, rather than waiting for a new tariff year. Following this, KPIs would be applied for the remaining two years of the price control up to September 2021. This would lead to three periods of application;

1. From publication of the Decision Paper on KPIs – 31<sup>st</sup> September 2019
2. 1<sup>st</sup> October – 31<sup>st</sup> September 2020
3. 1<sup>st</sup> October – 31<sup>st</sup> September 2021

This would mean that in the first period, a pro-rata portion of the yearly 4% of total OPEX revenue for 2018/19 would be available should SEMO meet its targets, while in the second and third period 4% of total OPEX revenue for each tariff year would be available.

### 3.3 KPI Parameters

The assumptions for any KPIs applied to SEMO under the current price control were considered by the SEMC in SEM-18-003, which led to the following proposed parameters for the final set of KPIs;

1. Where applicable, metrics should be delivered within one hour of the targeted time.
2. External factors which are demonstrably outside of the Market Operator's direct control are to be excluded e.g. Limited Communication failure by Market Participant, late provision of data by the Meter Data Provider, Government policy changes, Regulatory Authorities' policy changes etc.

3. In terms of assessing the KPIs, a measure is to be taken at the end of each Quarter using the average value of each KPI over that period.
4. The KPI incentive pot will be set at 4% of total OPEX revenue for each year. Any KPI reward will be recovered through an adjustment to the K-Factor.

The RAs do not propose to change parameters 1,2 and 4 at this stage. However, in the RAs' view further consideration of parameter 3 is merited in terms of when a measure of performance against each KPI should be taken. The view set out in SEM-18-003 was that a measure should be taken at the end of each quarter, based on the average value of each KPI over that period. This was based on the precedent from previous price controls.

An alternative to this would be to take a measure of performance at the end of each month based on the average value of each KPI during this period. This could potentially allow SEMO to access a higher KPI reward as failure to meet its targets within one or two months would not preclude SEMO failing to access a KPI reward for the quarter based on the average value for the period.

**Consultation Question 1:** Comments are invited from interested stakeholders on the parameter to be used for assessment of KPIs. Under option 1, a measure would be taken at the end of each quarter using the average value of each KPI over that period.

Under option 2, a measure would be taken at the end of each month using the average value of each KPI over that period.

### 3.4 KPI Proposals - Definitions

The eight KPIs which were proposed in SEM-18-003 are presented below, along with a number of proposed changes to each in order to ensure their definitions are specific and measurable. This Consultation Paper proposes revised definitions of the KPIs related to 'Timely publication of key market information' and 'Timely and accurate data provision for use in public user systems' along with minor changes and further definitions to other KPIs.

#### *Invoicing*

It is proposed that this metric is further defined to include the targets for publication of invoices and settlement documents.

KPI	Description (as per SEM-18-003)	Changes Proposed
Invoicing/ settlement documents	The percentage of occurrences where invoices to participants are published on time.	<p>The percentage of occurrences where invoices/settlement documents to participants are published on time.</p> <ul style="list-style-type: none"> <li>• The target for the weekly energy markets and Variable Market Operator Charge invoices is 12:00 each Friday.</li> <li>• The target for Capacity settlement documents is 12:00 seven working days after the end of each month.</li> </ul>

		<ul style="list-style-type: none"> <li>The target for the Fixed Market Operator Charge settlement documents is the first Friday after the end of the month at 12:00.</li> </ul>
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### *Credit Cover Increase Notices*

It is proposed that this metric is further defined to include the targets for publication of Credit reports, which include Credit Cover Increase Notices which inform market participants that their posted collateral cover is less than their required collateral cover. Market participants have two working days in which to rectify this on receipt of the CCIN.

KPI	Description (as per SEM-18-003)	Changes Proposed
Credit Cover Increase Notices	The percentage of occurrences where credit cover increase notices are published on time.	<p>The percentage of occurrences where credit cover increase notices are published on time.</p> <ul style="list-style-type: none"> <li>Three credit reports should be issued each day, with publication of each required by 9.45am, 12.45pm and 4.15pm.</li> </ul>

### *SEMO Resettlement Queries*

It is proposed that this metric is further defined to include clarification of how this should be measured where there are multiple upheld queries for one incident and one upheld query which references a number of days.

This is measured based on the number of upheld query incidents and Resettlements per Quarter, excluding those driven by external factors outside of SEMO's control. While the targets for this are based on a lower and upper bound number of upheld queries, the RAs are also requesting feedback from interested stakeholders on whether the timelines for dealing with resettlement queries should be considered under this indicator or a separate indicator.

KPI	Description (as per SEM-18-003)	Changes Proposed
SEMO Resettlement Queries	<p>The number of upheld formal queries from market participants which have identified errors in settling the market which are attributed to SEMO's operations and processes.</p> <p>Correction of such errors is completed in either the scheduled Resettlement (M+4 and M+13) or in an ad hoc Resettlement. Measurement of this KPI is related to the number</p>	<p>The number of upheld formal queries from market participants which have identified errors in settling the market which are attributed to SEMO's operations and processes, including defects and pricing issues.</p> <p>Correction of such errors is completed in either the scheduled Resettlement (M+4 and M+13) or in an ad hoc Resettlement.</p> <p>Measurement of this KPI is related to the number of SEMO upheld query incidents and Resettlements per Quarter.</p>

	of SEMO upheld query incidents and Resettlements per Quarter.	Multiple Upheld Queries for one incident shall be classified as one Upheld Query Incident. A Formal Query referencing a number of days shall be classified as Multiple Upheld Queries Incidents.
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**Consultation Question 2:** Should the timelines for addressing resettlement queries be considered under this indicator or a separate indicator?

### *General Queries*

It is proposed that the measurement of the General Queries KPI is revised to the percentage of occurrences where a general query is not addressed within 20 business days as the market will be live for over six months by the time this KPI is implemented. A General Query is defined within this metric as any request logged at the SEMO helpdesk.

<b>KPI</b>	<b>Description (as per SEM-18-003)</b>	<b>Changes Proposed</b>
General Queries	The percentage of occurrences where a General Query is not addressed within 30 business days.	The percentage of occurrences where a General Query is not addressed within 20 business days. A General Query is defined within this metric as any request logged at the SEMO helpdesk.

### *System Availability*

The I-SEM market is made up of a large number of market systems, some of which require 24/7 availability. It is proposed that this metric is defined further to identify the market systems under the responsibility of the Market Operator and the required availability for each. It is also proposed that planned or ad hoc outages are removed from availability calculations.

<b>KPI</b>	<b>Description (as per SEM-18-003)</b>	<b>Changes Proposed</b>
System Availability	Availability of central market systems on a 24-hour basis Monday to Sunday. This is the ratio of the time systems are said to be in a functioning condition to the total time they are required to be available.	<p>Availability of central market systems which the Market Operator has responsibility for according to their required availability.</p> <p>This is the ratio of the time systems are said to be in a functioning condition to the total time they are required to be available and covers the following;</p> <ol style="list-style-type: none"> <li>1. Balancing Market systems on a 24-hour basis Monday to Sunday.</li> <li>2. Settlement and Credit Clearing system on a 24-hour basis Monday to Sunday.</li> <li>3. Reporting and Market Monitoring system on a 24-hour basis Monday to Sunday.</li> </ol>

		<p>4. Registration system between 9am-5pm Monday to Friday.</p> <p>5. Capacity Auction Platform availability as required during each auction.</p>
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*Timely Publication of Key Market Information*

The provision of market information on a timely basis to all market participants is important to enable the market to function effectively. This helps to prevent information asymmetry and facilitates the most economic outcomes for consumers.

The I-SEM Publication Guide and Appendix E of Part B of the Trading and Settlement Code refer to specific requirements to ensure that key market information is published according to scheduled timelines. Agreed Procedure 6 of the TSC relates to data publication and data reporting requirements in relation to the Market Operator. Certain publications may be more important or time-sensitive than others for market participants and on this basis the views of interested stakeholders are sought in relation to the definition of relevant and timely market information.

There are two options for defining measurable targets for this indicator. The first option is to include all data reports which SEMO is required to publish for the balancing and capacity markets within certain timelines as part of this indicator, both ex-ante and ex-post publications. The relevant timelines within which the data should be published are set out in the TSC and I-SEM Data Publication Guides. Under this option, the definition of timely reporting of key market information would be *‘Publication of ex-ante and ex-post market information in a timely manner relating to the capacity and balancing markets, as set out in the Trading and Settlement Code and ISEM Data Publication Guide.’* This KPI would be measured based on the percentage of occurrences where **all such reports** are published on time and accurate at the time of publication.

The second option is to identify information which is regarded as most important by market participants in order to include measurable targets for publication of certain reports within a particular timeframe for this indicator. A number of potential publications to include under this second option are included here for comment. Appendix 1 of this paper includes the list of data items that SEMO is required to publish within certain timelines, which respondents to this Consultation Paper may use for reference to propose additional publications to measure under this KPI. This would lead to a definition of timely reporting of key market information as *‘Publication of the following market information in a timely manner as set out in the Trading and Settlement Code’*, with an associated list of required market information under this KPI. This would be measured based on the percentage of occurrences where the **market information listed as part of the KPI** is published on time and accurate at the time of publication. The RAs propose that under this option, the following ex-ante and ex-post market information relating to the capacity and balancing markets is included under this KPI;

Proposed Reports for Key Market Information KPI		
Report Name & Description:	MPI Reference:	Website Reference:
Commercial Offer Data – This is important for market transparency and pricing outcomes.	REPT_013: Member Public REPT_053: Member Private	BM-034
Four Day Aggregated Rolling Wind Unit Forecast – This allows market	REPT_028	BM-013

participants to understand TSO expectations for wind.		
Hourly Dispatch Instructions Report – This allows market participants to understand what is taking place in the system in real time.	REPT_102	BM-160
Imbalance Price – This allows market participants to assess their exposure and position in real time.	Settlements (30 min): REPT_009 Pricing (5-min): REPT_008	Settlements (30 min): BM-026 Pricing (5-min): BM-025
Imbalance Price Supporting Information Report - This allows market participants to a understand how the imbalance price has been determined.	REPT_050	BM-027
Half Hourly PNs – This allows market participants to see traded positions in real time.	REPT_052: PN Report – Member Public	BM-023: Final PN Report BM-020: Aggregated Final PN
Long Term Schedules Operational Schedule Report – This allows participants to assess system margin over a longer time horizon.	REPT_001b	BM-162
RTUC Operational Schedule Report – This allows participants to see TSO requirements in the immediate time horizon.	REPT_002b	BM-163
PN and COD data for the full trading day and day ahead	In addition to Half Hourly PNs, Commercial Offer Data: REPT_013: COD Report, Member Public REPT_053: COD Report, Member Private	In addition to Half Hourly PNs, Commercial Offer Data: BM-034
Hourly Forecast Imbalance Report – This is updated hourly or half hourly prior to the Imbalance Settlement Period.	Appendix E of Part B	Appendix E of Part B
Jurisdictional data publications, including four day rolling wind power unit forecast aggregated by jurisdiction (published by 17:00 on the day prior to the trading day) and metered generation by jurisdiction (published by 16:00 Working Day +1 and by 17:00 Trading Day +5)	Appendix E of Part B	Appendix E of Part B

**Table 2**

Any list of market information defined under option 2 would apply to this KPI for the remaining duration of the 2018-2021 SEMO Price Control. The RAs recognise that there may be revisions to data outputs based on requests from the industry or by the RAs during this period and would

consider a periodic review of data outputs by SEMO as useful to assess the feasibility of publication of additional data in future.

For both option 1 and 2 it is proposed that the KPI requires all data to be accurate at the time of publication as this is important for transparency in the market.

<b>KPI</b>	<b>Description (as per SEM-18-003)</b>	<b>Changes Proposed</b>
Timely publication of key market information	<p>Publication of ex-ante and ex-post market information in a timely manner relating to the capacity and balancing markets, as set out in the Trading and Settlement Code and ISEM Data Publication Guide.</p> <p>The target refers to the percentage of occurrences where reports are published on time.</p>	<p>The RAs have identified two options for the definition of this indicator and have added a requirement around the accuracy of such publications;</p> <p>Option 1: <i>'Publication of ex-ante and ex-post market information in a timely manner relating to the capacity and balancing markets, as set out in the Trading and Settlement Code and ISEM Data Publication Guide.'</i> This would be measured based on the percentage of occurrences where all reports are published on time and accurate at the time of publication.</p> <p>Option 2: <i>Publication of the following market information in a timely manner as set out in the Trading and Settlement Code'</i>, with an associated list of required market information under this KPI. This would be measured based on the percentage of occurrences where the market information listed as part of the KPI is published on time and accurate at the time of publication.</p>

#### *Website Availability*

In order to allow for higher weightings to be applied to other indicators, it is proposed that the indicator related to website availability is removed. Implicitly, in order to meet the KPI for publication of key market information, SEMO's website would need to be available in order for market participants to access this information.

<b>KPI</b>	<b>Description (as per SEM-18-003)</b>	<b>Changes Proposed</b>
Website availability	<p>Website availability on a 24-hour basis, Monday to Sunday, from I-SEM Go-Live.</p> <p>This is the ratio of the time the website is said to be in a functioning condition to the total time it is required to be available.</p>	<p>The RAs are seeking feedback from interested stakeholders on whether this KPI is required or if it should be removed to allow for higher weightings being applied to other indicators.</p>

### *Timely and accurate data provision for use in public user systems*

As currently drafted this indicator relates to timely reporting of accurate data to the website such that it can be accessed by both the RAs and market participants. It is proposed that this KPI is revised to focus on data provision to the RAs and SEMC and assisting the Market Monitoring Unit, based the proposed refinements to the KPI on publication of key market information which introduces specific reporting timelines and a requirement for accuracy at the time of publication.

It is proposed that this KPI includes a requirement in relation to timely reporting to the RAs where potential issues in the market have been identified by the Market Operator and provision of information requested by the Market Monitoring Unit within a set timeframe.

In their submission for the 2018-2021 Price Control, SEMO requested 2 FTEs for a dedicated function within SEMO to perform monitoring, surveillance and reporting on behalf of the Group. It was stated that the Market Surveillance and Reporting team would develop suitable reporting tools, covering reporting obligations under relevant regulations and legislation and reporting to the RAs' Market Monitoring Unit. It was also stated that the MSR team would meet regularly with the SEM Regulatory Authorities' Market Monitoring Unit in order to;

- Report on market monitoring work.
- Discuss RA requests for additional data reporting requirements.
- Continuously share information with the RAs and other Market Surveillance Offices.
- Escalate any market anomalies identified by the MSR team to the RA Market Monitoring Unit.

The RAs recognise that some of this work will be ad hoc in nature which makes it difficult to define a specific target, however feedback on the proposed definition below is welcomed.

<b>KPI</b>	<b>Description (as per SEM-18-003)</b>	<b>Changes Proposed</b>
Timely and accurate data provision for use in public user systems	Timely posting of accurate data to the website such that the MMU and market participants are able to smoothly automate (from the client side) the accessing of data reports from SEMO.	<p>It is proposed that this is indicator is revised to focus on reporting to the RAs and assisting the Market Monitoring Unit.</p> <p>On this basis, the KPI would be called 'Timely information provision to the RAs and SEMC' and would be defined as 'Timely provision of detailed quarterly reports to the RAs on market performance and trends and provision of additional data reporting requested by the RAs. This would also require timely reporting to the RAs where market anomalies and potential instances of market abuse and/or insider trading have been identified.'</p> <p>This would be measured against specific submission dates for quarterly reports and provision of information within the timelines set out by the RAs for any ad hoc information requests.</p>

		Timely reporting where market anomalies have been identified would entail notification within 1 day of the issue being identified.
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**Consultation Question 3:** The RAs have identified two options for the definition of the ‘Timely Publication of Key Market Information’ KPI and have added a requirement around the accuracy of publications. Feedback is requested from interested stakeholders on whether this should be measured against all required publications or against a specific list of key market information. Feedback is also requested on the RAs’ proposed list of key market information.

**Consultation Question 4:** The RAs are minded to revise the KPI on ‘Timely and accurate data provision for use in public user systems’ to ‘Timely Information Provision to the RAs and SEMC’. This would be measured based on provision of market information requested by the RAs within a set timeframe. Feedback is invited on this proposal.

**Consultation Question 5:** Feedback is invited from stakeholders on each of the KPIs and definitions of KPIs proposed to apply to SEMO from Q2 2019. The RAs request feedback from interested stakeholders on any additional KPIs to apply to SEMO or any revision to the proposed definitions which are summarised in Table 3.

Summary of Proposed Definitions of SEMO KPIs		
Number	SEMO KPIs	Proposed Definition
1	Invoicing	<p>The percentage of occurrences where invoices to participants are published on time.</p> <ul style="list-style-type: none"> <li>• The target for the weekly energy markets and Variable Market Operator Charge invoices is 12:00 each Friday.</li> <li>• The target for Capacity settlement documents is 12:00 seven working days after the end of each month.</li> <li>• The target for the Fixed Market Operator Charge settlement documents is the first Friday after the end of the month at 12:00.</li> </ul>
2	Credit Cover Increase Notices	<p>The percentage of occurrences where credit cover increase notices are published on time.</p> <ul style="list-style-type: none"> <li>• Three credit reports should be issued each day, with publication of each required by 9.45am, 12.45pm and 4.15pm.</li> </ul>
3	SEMO Resettlement Queries	<p>The number of upheld formal queries from market participants which have identified errors in settling the market which are attributed the SEMO’s operations and processes, including defects and pricing issues. Correction of such errors is completed in either the scheduled Resettlement (M+4 and M+13) or in an ad hoc Resettlement.</p>

		<p>Measurement of this KPI is related to the number of SEMO upheld query incidents and Resettlements per Quarter.</p> <p>Multiple Upheld Queries for one incident shall be classified as one Upheld Query Incident. A Formal Query referencing a number of days shall be classified as Multiple Upheld Queries Incidents.</p>
4	General Queries	<p>The percentage of occurrences where a General Query is not addressed within 20 business days. A General Query is defined within this metric as any request logged at the SEMO helpdesk.</p>
5	System Availability	<p>Availability of central market systems which the Market Operator has responsibility for according to their required availability.</p> <p>This is the ratio of the time systems are said to be in a functioning condition to the total time they are required to be available and covers the following;</p> <ol style="list-style-type: none"> <li>1. Balancing Market systems on a 24-hour basis Monday to Sunday.</li> <li>2. Settlement and Credit Clearing system on a 24-hour basis Monday to Sunday.</li> <li>3. Reporting and Market Monitoring system on a 24-hour basis Monday to Sunday.</li> <li>4. Registration system between 9am-5pm Monday to Friday.</li> <li>5. Capacity Auction Platform availability as required during each auction.</li> </ol>
6	Timely publication of key market information	<p>The RAs have identified two options for the definition of this indicator and have added a requirement around the accuracy of such publications;</p> <p>Option 1: <i>'Publication of ex-ante and ex-post market information in a timely manner relating to the capacity and balancing markets, as set out in the Trading and Settlement Code and ISEM Data Publication Guide.'</i> This would be measured based on the percentage of occurrences where <b>all reports</b> are published on time and accurate at the time of publication.</p> <p>Option 2: <i>Publication of the following market information in a timely manner as set out in the Trading and Settlement Code'</i>, with an associated list of required market information under this KPI. This would be measured based on the percentage of occurrences where the market information listed as part of the KPI is published on time and accurate at the time of publication. The current list of information required is;</p>

		<ul style="list-style-type: none"> <li>• Commercial Offer Data</li> <li>• Four Day Aggregated Rolling Wind Unit Forecast</li> <li>• Hourly Dispatch Instructions Report</li> <li>• Imbalance Price</li> <li>• Imbalance Price Supporting Information Report</li> <li>• Half Hourly PNs</li> <li>• Long Term Schedules Operational Schedule Report</li> <li>• RTUC Operational Schedule Report</li> <li>• PN and COD data for the full trading day and day ahead</li> <li>• Hourly Forecast Imbalance Report</li> <li>• Four Day Rolling Wind Power Unit Forecast aggregated by Jurisdiction</li> <li>• Metered Generation by Jurisdiction</li> </ul>
7	Timely information provision to the RAs and SEMC	<p>Timely provision of detailed quarterly reports to the RAs on market performance and trends and provision of additional data reporting requested by the RAs. This would also require timely reporting to the RAs where market anomalies and potential instances of market abuse and/or insider trading have been identified.</p> <p>This would be measured against specific submission dates for quarterly reports and provision of information within the timelines set out by the RAs for any ad hoc information requests.</p> <p>Timely reporting where market anomalies have been identified would entail notification within 1 day of the issue being identified.</p>

**Table 3 – Summary of proposals for KPIs and definitions**

## 4. Proposed KPI Weightings and Targets

This section proposes weightings, targets and upper bounds for each key performance indicator. These are based on a review of the weightings applied to KPIs for SEMO in the SEM, a review of SEMO's performance between 2013 and 2016 (which can be found in Appendix 1) and an assessment of the importance of each indicator given participant's responses the SEMO Price Control Draft Determination (SEM-17-075).

Feedback was also requested from SEMO as part of the preliminary review for this Consultation Paper and SEMO's proposals for targets and weightings have also been considered here.

### 4.1 Proposed Weightings

Appendix 1 of this Consultation Paper provides a review of SEMO's performance against certain KPIs between 2013 and 2016. This has been taken into account along with feedback from market participants as part of the consultation process for the 2018-2021 SEMO Price Control on the relative importance of each KPI. Table 4 summarises the RAs' proposals in relation to weightings for each KPI and a rationale for each is also provided here.

*Invoicing:* The RAs understand that timely invoicing is important both from a balance of market payments perspective and for practical purposes for market participants. However, given that the target for this KPI was consistently met by SEMO between 2013 and 2016 it is proposed that the weighting is reduced to 15%.

*Credit Cover Increase Notices:* It is important to ensure an appropriate level of market collateralisation at all times and to provide timely notifications to market participants. Again, as this KPI was consistently met by SEMO in the 2013-2016 price control it is proposed that the weighting is lowered to 5%.

*SEMO Resettlement Queries:* This indicator is intended to minimise the number of such queries and reduce the need for ad hoc resettlements. It is proposed that both the current weighting of 20% is retained.

*General Queries:* A weighting of 10% is proposed for this indicator.

*System Availability:* The RAs view this as a key requirement given the dynamic nature of the market and balance responsibility for market participants. It is proposed that the weighting is set to 10%.

*Timely publication of key market information:* This has been identified as one of the most important KPIs to apply to SEMO in order to ensure that there is full information availability to market participants. On this basis, a weighting of 35% is proposed.

*Timely information provision to the RAs and SEMC:* This indicator aims to both enable the RAs to carry out their functions of market monitoring and act based on any issues which have been identified in the market. It is proposed that the weighting for this new indicator is 5%.

Proposed Weightings			
Number	SEMO KPI	Previous Weighting	Proposed Weighting
1	Invoicing	20%	15%
2	Credit Cover Increase Notices	10%	5%

3	SEMO Resettlement Queries	20%	20%
4	General Queries	10%	10%
5	System Availability	10%	10%
6	Timely publication of key market information	N/A	35%
7	Timely information provision to the RAs and SEMC	N/A	5%

**Table 4**

**Consultation Question 6:** Feedback is requested on the proposed weightings for each indicator as set out in Table 4.

## 4.2 Proposed Targets

There are two options for the application of targets in each of the proposed KPI periods from Section 3.3. of this Consultation Paper. These KPI periods are;

- *Period 1:* From publication of the Decision Paper on KPIs – 31<sup>st</sup> September 2019
- *Period 2:* 1<sup>st</sup> October – 31<sup>st</sup> September 2020
- *Period 3:* 1<sup>st</sup> October – 31<sup>st</sup> September 2021

The first option is to apply the same targets to all three periods, while the second option is to apply different targets from period 1 to 3, to allow for increased targets as the market develops. Each option is considered separately here, with a separate table outlining weightings and targets based on analysis of how each might apply to the incentive pot within the current SEMO price control and whether these are achievable.

The RAs are minded to apply the same targets to each of the three periods, given that by Q2 2019 the market will have been operational for over six months. In addition, application of the same targets ensures that these KPIs are simple and understandable for the wider market. The RAs note however that such targets will need to be balanced in order to be achievable as the I-SEM market matures and may be challenging for SEMO in the initial periods.

Table 5 below sets out the RAs' proposals for targets to apply to each KPI based on the same targets being applied for each period. This is based on the revised KPIs and definitions proposed by the RAs in Section 3.4 of this Consultation Paper. The RAs are cognisant that such targets should be set in order to be ambitious but achievable.

Proposed Weightings and Targets			
Number	SEMO KPIs	Proposed Lower Bound Target	Proposed Upper Bound Target
1	Invoicing	97%	100%
2	Credit Cover Increase Notices	97%	100%

3	SEMO Resettlement Queries	<15 incidents per quarter	<5 per quarter
4	General Queries	97% answered within 20 business days	99% answered within 20 business days
5	System Availability	99.5%	99.9%
6	Timely publication of key market information	95%	100%
7	Timely information provision to the RAs and SEMC	95%	100%

**Table 5 – Proposed Targets (applied to all three periods)**

The second option would be to increase the lower and upper bound targets between period 1 and 3 to allow for the development of the market and improved performance by SEMO over this period. Table 5 outlines proposed weightings and targets proposed to apply in this instance.

Proposed Weightings and Targets			
Period	SEMO KPIs	Proposed Lower Bound Target	Proposed Upper Bound Target
1	Invoicing	90%	97%
2		95%	97%
3		98%	100%
1	Credit Cover Increase Notices	90%	95%
2		95%	99%
3		99%	100%
1	SEMO Resettlement Queries	<30	<20
2		<25	<15
3		<10	<8
1	General Queries	90%	95%
2		95%	99%
3		98%	99%
1	System Availability	97%	99%
2		98%	99.5%
3		99.5%	99.9%
1	Timely publication of key market information	90%	95%
2		95%	100%
3		99%	100%
1	Timely information	97%	99%

	provision to the RAs and SEMC		
2		98%	99.5%
3		99%	100%

**Table 6 – Proposed Targets (applied separately to each period)**

**Consultation Question 7:** Feedback is requested on whether targets applied to each KPI should be the same from period 1-3 under the current SEMO price control or if targets should be increased in each period to account for improved performance and market development.

**Consultation Question 8:** Feedback is requested in the proposed targets applied under each scenario.

## 5. Next Steps

The closing date for responses to this Consultation Paper is 19 April 2019. Responses can be submitted to [gkelly@cru.ie](mailto:gkelly@cru.ie) and [Karen.Shiels@uregni.gov.uk](mailto:Karen.Shiels@uregni.gov.uk).

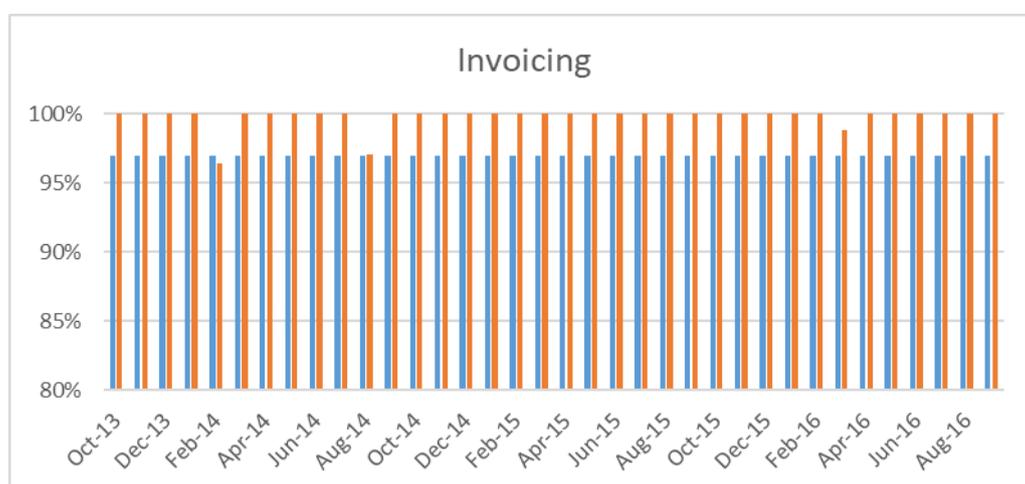
A Decision Paper on the definitions of KPIs, weightings and targets to apply under the current SEMO Price Control will then be published and it is proposed that these come into effect from Q2 2019.

## Appendix 1- Assessment of past performance against KPIs

An assessment of SEMO's performance against each of the indicators which applied to SEMO under the 2013-2016 price control and which are proposed to apply to SEMO under the current price control has been carried out. The aim of this assessment is to understand SEMO's performance to date for existing performance metrics which are being carried over to the current price control. The 2013-2016 price control period was chosen in order to reflect an established market before the transition phase to I-SEM which was included in the 2016 to 2018 price control.

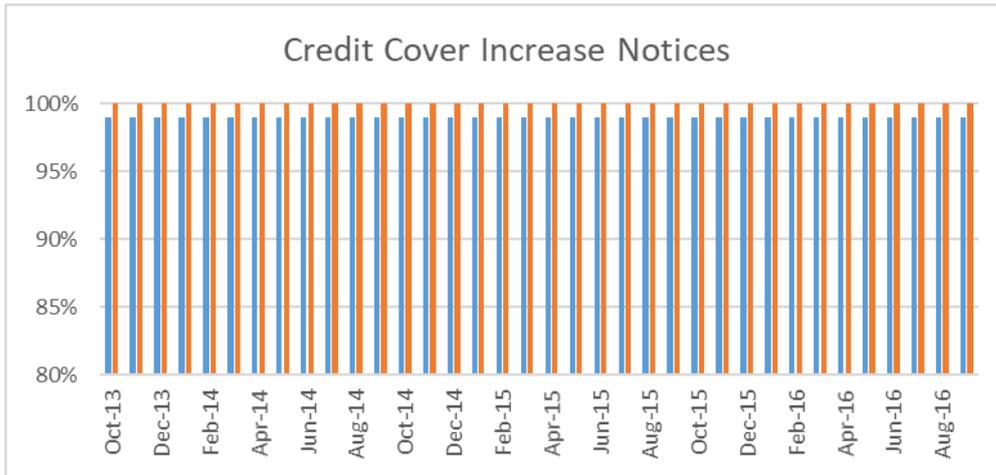
Where SEMO has consistently exceeded its target for indicators that are still applicable under the new market arrangements, it is proposed that the weighting of such KPIs is lowered. Proposed targets and weightings are discussed further in Section 4 of this paper.

**Invoicing:** As discussed, this relates to the percentage of occurrences where invoices to all participants are published on time. Between 2013 and 2016, SEMO only failed to reach its target for one month, in February 2014. Apart from this, the target for invoicing has consistently been exceeded, with SEMO achieving 100% in the majority of cases from 2013-2016. The weighting for this metric under the 2016-2018 Price Control was 0.2.



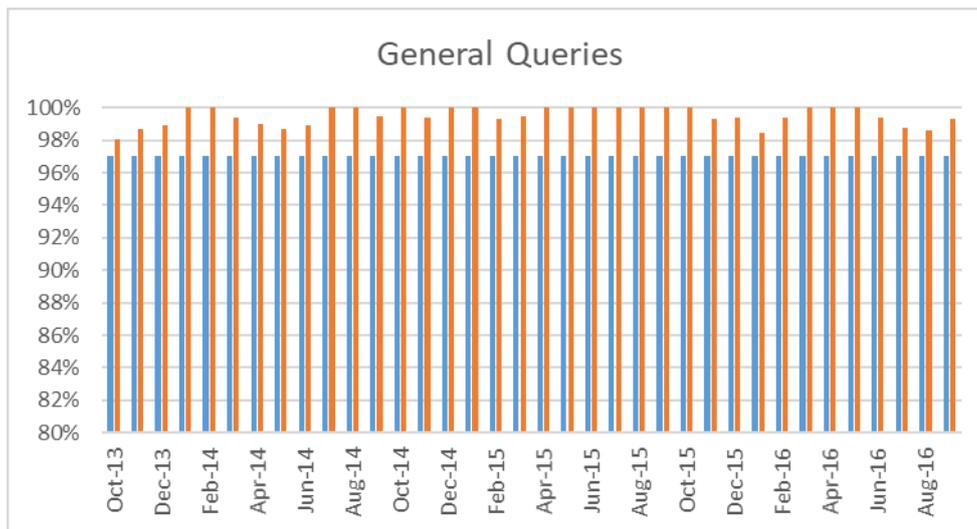
**Figure 1 - Performance against Invoicing KPI 2013-2016**

**Credit Cover Increase Notices:** This relates to the percentage of occurrences where the CCINs are published on time, to inform market participants that their posted collateral cover is less than their required collateral cover. Between 2013 and 2016, SEMO consistently achieved 100% for this target. The weighting for this metric under the 2016-2018 Price Control was 0.1.



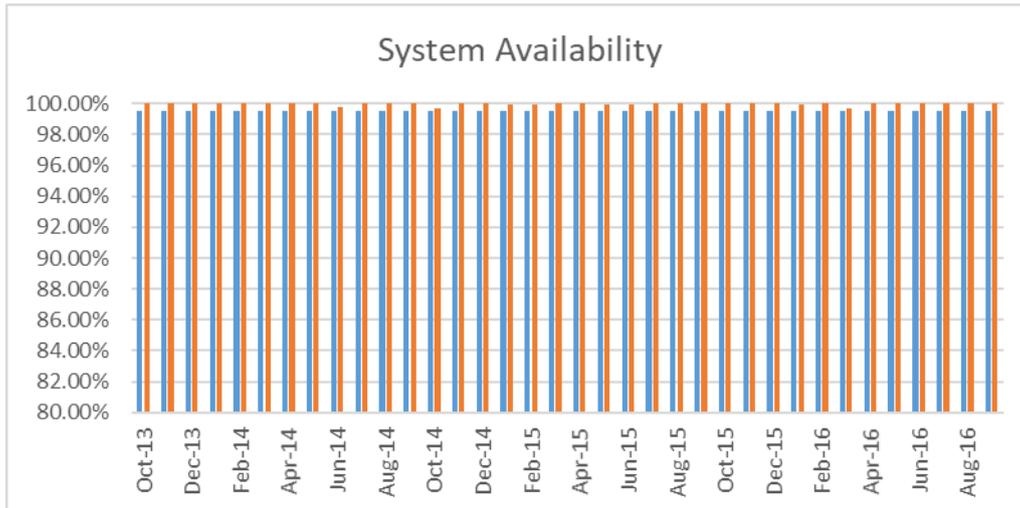
**Figure 2 - Performance against Credit Cover Increase Notices KPI 2013-2016**

**General Queries:** This relates to the percentage of occurrences where a General Query is not addressed within 20 Business days. While SEMO has not achieved 100% at all times for this indicator, it has consistently exceeded its target of 97% of queries addressed within 20 business days. The weighting for this metric under the 2016-2018 Price Control was 0.15.



**Figure 3 - Performance against General Queries KPI 2013-2016**

**Central Market System Availability:** This is the ratio of time infrastructure systems are said to be in a functioning condition to the total time it is required or expected to be available. The lower bound for this target is 99.4%. SEMO met and exceeded this target each month between 2013 and 2016. The weighting for this metric under the 2016-2018 Price Control was 0.1.



**Figure 4 - Performance against Central Market System Availability General Queries KPI 2013-2016**

In 2016, SEMO met or exceeded the KPI standard across each of the four metrics reviewed, which indicates that a rebalancing of the weighting of KPIs to take account of the significance of new KPIs that are being proposed may be merited. The target level for each KPI could also be considered on this basis.

The RAs note however that it may be more challenging for SEMO to meet similar KPIs in the early stages of operation of the new market and welcome feedback on this. This analysis feeds into the proposed weightings for each indicator discussed in Section 3.

## Appendix 2 – Data Publication List under Part B Appendix E of the TSC

A list of data items that the Market Operator is required to publish and the timing with which the Market Operator is required to publish them is included in Appendix E of Part B of the Trading and Settlement Code. This list is included here for reference for respondents to this Consultation Paper.

**Table 1 – Data publication list part 1: updated periodically as required**

Time	Item / Data Record	Term	Subscribe
<b>Periodically as required</b>			
No less frequently than twice yearly in line with the Scheduled Release	The Code (including Agreed Procedures)		
At least once a year and no later than two weeks prior to the first meeting in the schedule	Schedule of Modification Panel meetings		
As soon as practical but no later than two Working Days after receipt of Modification Proposal	Modification Proposal		
As soon as practical but no later than two Working Days after receipt of consultation on Modification Proposal	Public Consultation on Modification Proposal		

<b>Time</b>	<b>Item / Data Record</b>	<b>Term</b>	<b>Subscript</b>
As soon as practical but no later than two Working Days after closing of consultation on Modification Proposal	Responses to Public Consultation on Modification Proposal		
As soon as practical but no later than two Working Days after receipt of further information on Modification Proposal	Further information on Modification Proposal		
As soon as practical but no later than two Working Days after issue of Final Recommendation Report to the Regulatory Authorities	Final Recommendation Report		
As soon as practical but no later than two Working Days after receipt of Regulatory Authority decision on Final Modification Recommendation	Regulatory Authority decision on Final Modification Recommendation		
As updated and at least within five Working Days of a successful application for Registration or Deregistration	List of Parties, Participants and each of their Generator Units and Supplier Units		
As soon as practical after being issued and at least within two Working Days of issue	Making or lifting of a Suspension Order		
As soon as practical after being issued and at least within two Working Days of issue	Termination Order		
As received and at least within two Working Days of issue	Generator Unit Under Test Notice		
As soon as practical after being updated	Proposed Market Operator Isolated Market System Testing Schedule		
As updated and at least within five Working Days of update	Details of the Accession Fees and Participation Fees		
As updated and at least two weeks in advance of the Meeting	Date of the next meeting of the Modifications Committee		
Within one Working Day of receipt from the Regulatory Authorities	Supplier Suspension Delay Period		e
Within one Working Day of receipt from the Regulatory Authorities	Generator Suspension Delay Period		e
As updated and at least within two Working Days of update	Members and chairperson of the Modification Committee		
As soon as possible after calculation	Calculations and methodology used by the Market Operator during Administered Settlement		
As required	REMIT Data Transaction		h
Updated as required from time to time	Price Materiality Threshold		

<b>Time</b>	<b>Item / Data Record</b>	<b>Term</b>	<b>Subscript</b>
Updated as required from time to time	Settlement Recalculation Threshold		
Within five Working Days of receipt from the Regulatory Authorities approval	Imbalance Weighting Factor	WFIMB	yy
Within five Working Days of receipt from the Regulatory Authorities approval or two months before effective day whichever is later	De Minimis Acceptance Threshold		
At least four Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever is later	Full Administered Scarcity Price	PFAS	
Within five Working Days of receipt from the Regulatory Authorities approval or two months before effective day whichever is later	Reserve Scarcity Price Curve	PRSC	Θ
Within five Working Days of receipt from the Regulatory Authorities approval or two months before effective day whichever is later	Price Average Reference Quantity		
Within five Working Days of receipt from the Regulatory Authorities approval	Information Imbalance Quantity Weighting Factor	WFQII	υβγ
Within five Working Days of receipt from the Regulatory Authorities approval	Information Imbalance Tolerance	TOLII	υβγ
Within five Working Days of receipt from the Regulatory Authorities approval	Information Imbalance Price	PII	uy
Within five Working Days of receipt from the Regulatory Authorities approval	Tracked Difference Payment Shortfall Amount	CSHORTDIFFPTR ACK	vd
Within five Working Days of receipt from the Regulatory Authorities approval	Carbon Price	PCARBON	m
Within five Working Days of receipt from the Regulatory Authorities approval	Natural Gas Fuel Price	PFUELNG	m
Within five Working Days of receipt from the Regulatory Authorities approval	Oil Fuel Price	PFUELO	m
Within five Working Days of receipt from the Regulatory Authorities approval	Peaking Unit Theoretical Efficiency	FTHEORYPU	y
Within five Working Days of receipt from the Regulatory Authorities approval	Natural Gas Carbon Intensity Factor	FCARBONING	y

Time	Item / Data Record	Term	Subscript
Within five Working Days of receipt from the Regulatory Authorities approval	Oil Carbon Intensity Factor	FCARBONIO	y
Within five Working Days of receipt from the Regulatory Authorities determination	Aggregated Settlement Period	α	
At least two Months before start of the Capacity Auction, or within five Working Days of its approval from the Regulatory Authorities, whichever is later	Annual Stop-Loss Limit Factor	FSLLA	uy
At least two Months before start of the Capacity Auction, or within five Working Days of its approval from the Regulatory Authorities, whichever is later	Billing Period Stop-Loss Limit Factor	FSLLB	ub
After every Capacity Auction	Total Capacity Awarded	CCP	Ωc
Within five Working Days of receipt from the Regulatory Authorities	Response Period Duration		

**Table 2 – Data publication list part 2: updated annually and as required**

Time	Item / Data Record	Term	Subscript
<b>Annual</b>			
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever is later	Annual Capacity Charge Exchange Rate	XRCCA	y
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever is later	Capacity Duration Exchange Rate	XRCD	ny
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever is later	Capacity Charge Metered Quantity Factor	FQMCC	y
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever is later	Supplier Capacity Charge Price	PCCSUP	y
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever is later	Difference Payment Socialisation Multiplier	FSOCDIFFP	y
At least four Months before start of Year	Annual Load Forecast		

<b>Time</b>	<b>Item / Data Record</b>	<b>Term</b>	<b>Subscript</b>
At least four Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Market Price Cap	PCAP	y
At least four Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Market Price Floor	PFLOOR	y
At least four Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever is later	Residual Meter Volume Interval Proportion	RMVIP	ey
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever is later	Residual Error Volume Price	PREV	y
At least one Month before start of Year	Fixed Market Operator Charge (Supplier Unit)	CMOAV	vy
At least one Month before start of Year	Fixed Market Operator Charge (Generator Unit)	CMOAU	uy
At least one Month before start of Year	Variable Market Operator Price	PVMO	y
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Engineering Tolerance	TOLENG	
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	MW Tolerance	TOLMW	t
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	System per Unit Regulation Factor	FUREG	
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Discount for Over Generation Factor	FDOG	uy
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Premium for Under Generation Factor	FPUG	uy
Four Weeks before start of Audit, or within one Working Day of its receipt from the Regulatory Authorities, whichever later	Terms of Reference for Market Operator Audit		

<b>Time</b>	<b>Item / Data Record</b>	<b>Term</b>	<b>Subscript</b>
Within five Working Days after delivery of Audit Report in its final form to the Regulatory Authorities, or within one Working Day of its receipt from the Regulatory Authorities, whichever later	Audit Report		
At least two Months before start of Tariff Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever is later	Transmission Loss Adjustment Factors	FTLAF	uy for Generator Units, ly for Interconnector
At least two Months before start of Tariff Year, or within five Working Days of its receipt from the relevant System Operator, whichever is later	Distribution Loss Adjustment Factors	FDLAF	uy for Generator Units, ly for Interconnector
At least two weeks before start of Tariff Year, or within five Working Days of its receipt from the relevant System Operator, whichever is later	Combined Loss Adjustment Factors	FCLAF	uy for Generator Units, ly for Interconnector
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Imperfections Price	PIMP	y
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Imperfections Charge Factor	FCIMP	yy
Four Months before start of Year	Testing Tariff	PTESTTARIFF	uy
Four Months before start of Year	Settlement Calendar		
Four Months before start of Year, and as updated	Schedule of Testing Tariffs		
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Fixed Credit Requirement, in respect of Generator and/or Supplier Units	FCR	py
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Days in Historical Assessment Period	DINHAP	
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Analysis Percentile Parameter	AnPP	
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Credit Cover Adjustment Trigger		

Time	Item / Data Record	Term	Subscript
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Currency Cost Price	PCC	y
At least two Months before start of Year, or within five Working Days of its receipt from the Regulatory Authorities, whichever later	Currency Cost Charge Factor	FCCA	y
In April of each Year	Annual Maintenance Schedule - Transmission Line Outages		
At least two Months before start of Year	Two Year Maintenance Schedule - Generator Outages Schedule		

**Table 3 – Data publication list part 3: updated Monthly**

Time	Item / Data Record	Term	Subscript
<b>Monthly</b>			
Within five Working Days of its creation	Market Operator Performance Report		
At least one Working Day before start of Month	Monthly Maintenance Schedule – Generator Unit outages	--	--
At least one Working Day before start of Month	Monthly Maintenance Schedule – Transmission System line outages		
At least one Working Day before start of Month	Monthly Load Forecast and assumptions	--	--
At least once every Month	Registered Capacity	RC	u

**Table 4 – Data publication list part 4: updated daily in advance of the Trading Day**

Time	Item / Data Record	Term	Subscript
<b>Daily, in advance of the the Trading Day</b>			
By 17:00 on the day prior to the Gate Closure 1 in respect of the Trading Day	Trading Day Exchange Rate between euro (€) and pounds sterling (£)	-	-
By 17:00 on the day prior to the Trading Day, plus as updated	Unit Under Test		
By 17:00 on the day prior to the Trading Day, plus as updated	Net Transfer Capacity		
By 17:00 on the day prior to the Trading Day, plus as updated	Four Day Load Forecast	-	-

By 17:00 on the day prior to the Trading Day, plus as updated	Four Day Rolling Wind Power Unit Forecast by Unit		
By 17:00 on the day prior to the Trading Day, plus as updated	Four Day Rolling Wind Power Unit Forecast aggregated by Jurisdiction	-	-
By 17:00 on the day prior to the Trading Day, plus as updated	Four Day Rolling Wind Power Unit Forecast by Market	-	-
By 17:00 on the day prior to the Trading Day, plus as updated	OUTAGE ADJUSTED WIND UNIT FORECAST – 36 hours lookout		
By 17:00 on the day prior to the Trading Day	Daily Transmission Outage Schedule Report		

**Table 5 – Data publication list part 5: updated hourly or half hourly prior to the Imbalance Settlement Period (ISP)**

Time	Item / Data Record	Term	Subscript
<b>Hourly or half hour prior to each ISP</b>			
Every hour prior to each ISP	Forecast Imbalance		γ
Every half hour prior to each ISP	Net Imbalance Volume Forecast		γ

**Table 6 – Data publication list part 6: updated following each Gate Closure 1**

Time	Item / Data Record	Term	Subscript
<b>Following each Gate Closure 1</b>			
After each Gate Closure 1	Aggregated Final Physical Notifications		γ

**Table 7 – Data publication list part 7: updated following each Imbalance Pricing Period (IPP) or Imbalance Settlement Period (ISP)**

Time	Item / Data Record	Term	Subscript
<b>Following each IPP or ISP</b>			
Following each IPP	Imbalance Price by IPP	PIMB	φ
Following each ISP	Imbalance Settlement Price by ISP	PIMB	γ
Following each IPP	Net Imbalance Volume Quantity by IPP	QNIV	φ
Following each ISP	Net Imbalance Volume Quantity by ISP	QNIV	γ
Following each IPP	Net Imbalance Volume Tag	TNIV	ukφ
Following each IPP	Demand Control Quantity	QDC	φ
Following each IPP	Marginal Energy Action Price	PMEA	φ
Following each IPP	Price Average Reference Tag	TPAR	ukφ
Following each IPP	Bid Offer Price	PBO	ukφ

Following each IPP	Accepted Bid Quantity	QAB	ukφ
Following each IPP	Accepted Offer Quantity	QAO	ukφ
Following each IPP	System Operator Flag	FSO	ukφ
Following each IPP	Non-Marginal Flag	FNM	ukφ
Following each ISP	Anonymised Incremental/ Decremental Price Quantity Pairs		

**Table 8 – Data publication list part 8: updated daily post Trading Day or Settlement Day**

Time	Item	Term	Subscript
<b>Daily, post Trading Day or Settlement Day</b>			
By 16:00 Trading Day +1	Technical Offer Data Accepted		ut
By 16:00 Trading Day +1	Forecast Availability		uy
By 16:00 Trading Day +1	Outturn Availability		uy
By 16:00 Trading Day +1	Final Physical Notifications		uy
By 16:00 Trading Day +1	Commercial Offer Data Accepted		uy
By 16:00 Trading Day +1	Daily Generator Outage Schedules		
By 16:00 Trading Day +1	Demand Control Data Transaction	QDC	φ
By 16:00 Trading Day +1 and by 17:00 Trading Day +5	Dispatch Instructions	-	-
By 16:00 Trading Day +1	SO Interconnector Trades	PBO, QAO, QAB	u
By 16:00 Trading Day +1	Market Back Up Prices	PMBU	y
By 17:00 Trading Day +5	Initial Interconnector Flows and Residual Capacity		
By 16:00 Trading Day +1	Generator Unit Technical Characteristics Data Transaction		
By 16:00 Trading Day +1	Nominal System Frequency	FRQNOR	γ
By 16:00 Trading Day +1	Average System Frequency	FRQAVG	γ
By 16:00 Working Day +1 and by 17:00 Trading Day +5	Metered Generation by Unit	QM	uy, vy
By 16:00 Working Day +1 and by 17:00 Trading Day +5	Metered Generation by Jurisdiction	QM,	ue or ve
By 16:00 each Working Day	Credit Assessment Price for the Undefined Exposure Period for Billing Periods	PCA	g
By 16:00 each Working Day	Dispatch Quantity	DQ	uy

Time	Item	Term	Subscript
By 16:00 each Working Day	Billing Period Undefined Potential Exposure Quantity	QUPEB	pg
By 16:00 on Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Tolerance for Over Generation	TOLOG	uy
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Tolerance for Under Generation	TOLUG	uy
By 16:00 Two Working Days after Trading Day, by 17:00 Five Working Days after end Trading Day and as updated at 17:00 the day of recalculation	Trading Payments and Charges D+1	CIMB, CPREMIUM, CDISCOUNT, CAOPO, CABBPO, CCURL, CUNIMB, CII, CFC, CIMP, CTEST, CREV, CCA	uy, uk or vy as appropriate
By 16:00] Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Capacity Quantity Scaling Factor	FSQC	y
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Required Capacity Quantity	qCREQ	y
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Reserve Adjustment Capacity	qCREQAR	y
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Net Capacity Quantity	QCNET	Ωy
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Obligated Capacity Quantity	QCOB	Ωy
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Loss-Adjusted Commissioned Capacity Quantity	qCCOMMISSLF	Ωy
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	De-Rating Factor	FDERATE	Ω
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Above De-Rated Capacity Factor	FCADERATE	Ωy
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Capacity Quantity	qC	Ωn
By 16:00 Two by Working Days after Trading Day and 17:00 Five Working Days after Trading Day	Initial Primary Auction Capacity Payment Price	PCPIPA	y
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Day-ahead Difference Quantity	QDIFFDA	Ωy

Time	Item	Term	Subscript
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Day-ahead Trade Quantity	qTDA	xuh
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Day-ahead Trade Price for Trade	PTDA	xuh
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Day-ahead Difference Charge	CDIFFCDA	Qy
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Day-ahead Difference Charge Metered Quantity	QMDIFFCDA	vγ
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Strike Price for Month	PSTR	m
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Loss-Adjusted Accepted Offer Quantity	QAOLF	uoιγ
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Loss-Adjusted Accepted Bid Quantity	QABLF	uoιγ
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Loss-Adjusted Offer Price Only Accepted Offer Quantity	QAOPOLF	uoιγ
By 16:00 Two Working Days after Trading Day and 17:00 Five Working Days after Trading Day	Biased Accepted Offer Quantity	QAObIAS	uoιγ
B 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Loss-Adjusted Trade Opposite TSO Accepted Offer Quantity	QAOTOTSOLF	uoιγ
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Within-day Trade Difference Quantity	QDIFFCTWD	Qγk
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Within-day Trade Difference Charge	CDIFFCTWD	Qγk
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Within-day Difference Charge Metered Quantity	QMDIFFCWD	sy
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	System Service Flag	FSS	uy
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	System Service Difference Quantity	QDIFFCSS	uy
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Non-performance Difference Quantity	QDIFFCNP	Qγ
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Loss-Adjusted Maximum Import Capacity Market Availability Quantity for Interconnector	qCMAMAXILF	ly

Time	Item	Term	Subscript
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Annual Cumulative Non-performance Difference Charge	CDIFFCNPA	$\Omega(y-1)$
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Billing Period Cumulative Non-performance Difference Charge	CDIFFCNPB	$\Omega(y-1)$
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Total Difference Charge	CDIFFCTOT	py
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Day-ahead Difference Payment	CDIFFPDA	vd
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Intraday Trade Quantity for Trade	qTID	xuhk
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Intraday Trade Price for Trade	PTID	xvhk
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Intraday Trade Difference Quantity	QDIFFPTID	vyk
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Intraday Trade Difference Payment	CDIFFPTID	vyk
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Tracked Difference Quantity	QDIFFTRACK	vyk
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Imbalance Difference Quantity	QDIFFPIMB	vy
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Total Difference Payment	CDIFFPTOT	vd
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Daily Total Difference Payment	CDIFFPTOTD	d
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Difference Payment Shortfall Amount	CSHORTDIFFP	vd
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Difference Payment Socialisation Balance in Settlement Day	CBSOCDIFFP	d
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Difference Payment Reimbursement Payment	CREIMDIFFP	v(d-1)
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Tracked Difference Payment Shortfall Charge	CSHORTDIFFP RACK	vd
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Achievable Difference Payment	CDIFFPACHIEVE	vd

Time	Item	Term	Subscript
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Total Achievable Difference Payment	CDIFFPACHIEVE TOT	pd
By 16:00 Two Working Days after Trading Day and by 17:00 Five Working Days after Trading Day	Initial Socialisation Balance	CBSOCI	d

**Table 9 – Data publication list part 9: updated on a Capacity Period basis, post end of Capacity Period (all variables Capacity Period+3 WD and Capacity Period +7WD)**

Time	Item	Term	Subscript
<b>Each Capacity Period, post end of Capacity Period</b>			
By 17:00] Three Working Days and by 12:00 Seven Working Days after end of Capacity Period,	Capacity Payment Price	PCP	Ωn
By 17:00 Three Working Days and by 12:00 Seven Working Days after end of Capacity Period,	Capacity Payments to each Capacity Market Unit	CCP	Ωc
By 17:00 Three Working Days and by 12:00 Seven Working Days after end of Capacity Period,	Supplier Capacity Charge Price	PCCSUP	y
By 17:00] Three Working Days and by 12:00 Seven Working Days after end of Capacity Period,	Difference Payment Socialisation Multiplier	FSOCDIFFP	y
By 17:00 Three Working Days and by 12:00 Seven Working Days after end of Capacity Period,	Capacity Charge Metered Quantity Factor	FQMCC	y
By 17:00 Three Working Days and by 12:00 Seven Working Days after end of Capacity Period,	Capacity Charge	CCC	vc
By 17:00 Three Working Days and by 12:00 Seven Working Days after end of Capacity Period,	Total Capacity Charge	CCCTOT	pc
By 17:00 Three Working Days and by 12:00 Seven Working Days after end of Capacity Period,	Difference Payment Socialisation Charge	CSOCDIFFP	vc
By 17:00 Three Working Days and by 12:00 Seven Working Days after end of Capacity Period,	Total Difference Payment Socialisation Charge	CSOCDIFFPTO T	pc