



# **Regulatory Authority Quarterly Report**

## **Market Operator Performance Criteria**

**March 2015**

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## Table of Contents

<b>1</b>	<b>INTRODUCTION</b> .....	<b>3</b>
<b>2</b>	<b>MANAGE CHANGE</b> .....	<b>4</b>
2.1	SOFTWARE DEPLOYMENTS .....	4
2.1.1	Release SEM R2.6.0 (To be deployed May 15 <sup>th</sup> 2015).....	4
2.1.2	Release SEM R2.7.0 (Proposed Deployment: October 6 <sup>th</sup> 2015).....	4
2.1.3	Release SEM R2.6.0 (Proposed Deployment: April 2015).....	5
2.1.4	Modification Management.....	6
<b>3</b>	<b>SERVICE DELIVERY</b> .....	<b>11</b>
3.1	CORE MARKET OPERATIONS FUNCTION PERFORMANCE EXCLUDING AD-HOC RE-PRICING AND RE-SETTLEMENT .....	11
3.2	PLANNED RESETTLEMENT M+4 AND M+13 .....	15
3.3	AD HOC PRICING AND AD-HOC RESETTLEMENT RUNS .....	15
3.4	ADMINISTRATION OF CREDIT COVER .....	15
3.5	BREACHES OF THE TRADING AND SETTLEMENT CODE .....	17
<b>4</b>	<b>REGULATORY AFFAIRS</b> .....	<b>19</b>
<b>5</b>	<b>PROVIDE INFORMATION</b> .....	<b>20</b>
5.1	CUSTOMER QUERIES IN A TIMELY MANNER .....	20
5.1	FACILITATE AND EDUCATE PARTICIPANTS TO ACCEDE TO THE CODE.....	22
5.2	FACILITATE INTERACTION WITH CUSTOMERS.....	22
<b>6</b>	<b>REQUIRED CREDIT COVER COVERAGE ANALYSIS</b> .....	<b>23</b>
6.1	FOREWORD ON REQUIRED CREDIT COVER COVERAGE.....	23
6.2	SUMMARY OF REQUIRED CREDIT COVER COVERAGE ANALYSIS.....	23
6.3	OCCURRENCES OF UNDER OR OVER ESTIMATION.....	23
6.4	EXTENT OF UNDER AND OVER ESTIMATION .....	25
6.5	MARKET MONETARY EXPOSURE .....	26
6.6	ALL QUARTERS SUMMARY .....	26
<b>7</b>	<b>APPENDIX A: REQUIRED CREDIT COVER COVERAGE</b> .....	<b>27</b>

# 1 Introduction

The Single Electricity Market has been in operation since the 1st November 2007. Under the licence conditions of both EirGrid and SONI to operate the Single Electricity Market (SEM), SEMO has to report to the Regulatory Authorities (RAs) on critical performance metrics. These critical metrics were identified in a letter dated 18th October 2007 from the RAs to SEMO. The letter outlined four main categories of metric:

- Manage Change
- Service Delivery
- Manage Stakeholders
- Provide Information

Following the third quarterly meeting with the RAs, some of the metrics were revised under discussion with SEMO. This report has taken these comments on board in its preparation.

Quarters in this report are defined according to the financial year outlined below:

- Q1 = 1<sup>st</sup> October to 31<sup>st</sup> December
- Q2 = 1<sup>st</sup> January to 31<sup>st</sup> March
- Q3 = 1<sup>st</sup> April to 30<sup>th</sup> June
- Q4 = 1<sup>st</sup> July to 30<sup>th</sup> September

## 2 Manage Change

### 2.1 Software Deployments

#### 2.1.1 Release SEM R2.6.0 (To be deployed May 15<sup>th</sup> 2015)

There are no functional changes to the Market Systems for SEM R 2.6.0 Release. A full regression test pack will be executed throughout the System Integration Test Phase (due to take place throughout April) to verify the 3 technical changes have had no adverse impact on the market systems.

Pending no issues the latest software will be deployed Friday 15<sup>th</sup> May.

#### 2.1.2 Release SEM R2.7.0 (Proposed Deployment: October 6<sup>th</sup> 2015)

The release cut-off date for the SEM R2.7.0 release to the Central Market Systems was Friday March 6<sup>th</sup> 2015.

As at the Cut-Off Date there were no:

- Approved Modification Proposals or
- One new Change Request submitted (CR349 – see below)

The SEM R2.7.0 Release has been brought forward from November to October to align with ACER's REMIT legislation coming into play.

ABB have been provided with a substantial change request to be delivered for testing by July. These changes need to be implemented fully by REMIT GO LIVE on October 7<sup>th</sup>

CR Reference	System	Description
SEM_PC_CR322	STL	Eligible Availability for Energy Limited Units Under Test
SEM_PC_CR327	MI	Event Queuing
SEM_PC_CR333	STL	Functionality to apply PUGDOG, Tariff on a Trading Day basis
SEM_PC_CR332	STL	Issue Zero Invoices
SEM_PC_CR330	MI	Changes to IART Report
SEM_PC_CR336	STL	HMRC VAT Change*
SEM_PC_CR340	MA	DSI-Processing of Bids**
SEM_PC_CR344	MA	SPOT ATC to override ATC Interval file in UUC**

Table 1: Approved Scope for SEM R2.5.0 – Change Requests

The design phase for this release was completed in June.

During June we were advised that HMRC were introducing new rules with respect to the application of VAT to supplies of wholesale electricity in the domestic UK market. As a result CR336 – *HMRC VAT Change* was added to the release scope. Information in relation to this was published to the industry on June 25th. In addition the following two Change Requests (CR340 and CR344) were added to scope in September:

- SEM\_PC\_CR340 to ensure optimisation data is handled correctly in DSI and
- SEM\_PC\_CR344 to ensure interval ATC data is utilized in UUC when required (e.g. when an Interconnector Trips).

The software was delivered by our vendors on July 31st.

System Integration Testing of the software ran to schedule and completed in early November 2014.

Although the approved scope did not have a functional impact on the interfaces between Participant systems and the Central Market Systems, a short phase of Market Test was conducted from October 8th, 2014 to October 22<sup>nd</sup>, 2014 inclusive to facilitate a regression test phase across the SEM.

The release was successfully deployed to schedule on November 14th, 2014.

A subsequent release was delivered on 16<sup>th</sup> December to facilitate the full implementation of CR340 & CR344.

### ***2.1.3 Release SEM R2.6.0 (Proposed Deployment: April 2015)***

The release cut-off date for the SEM R2.6.0 release to the Central Market Systems was Friday September 5<sup>th</sup> 2014.

As at the Cut-Off Date there were no:

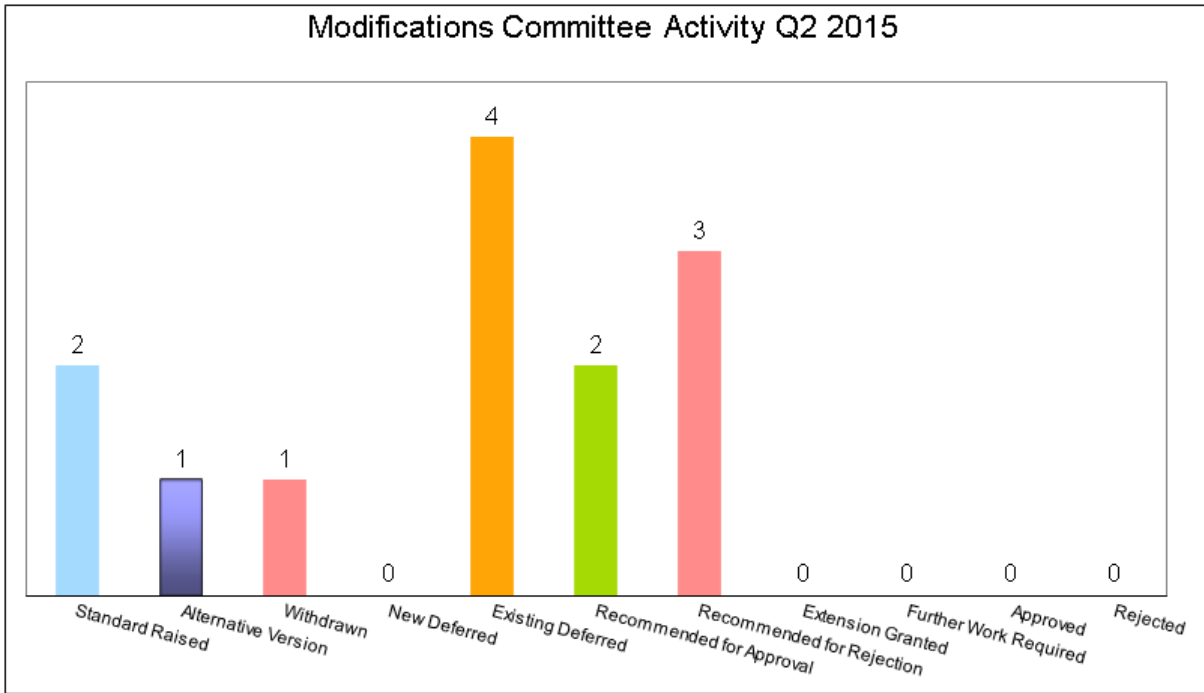
- Approved Modification Proposals or
- New Change Requests submitted to the SDS

As there are no functional changes being proposed, a Change Control Forum (CCF) meeting will not be required. Three technical changes have been proposed by SEMO IT and these are currently being assessed by our vendors. Once assessments are complete SEMO will issue a scope proposal to the Regulatory Authorities and if approved, this will be published to the industry.

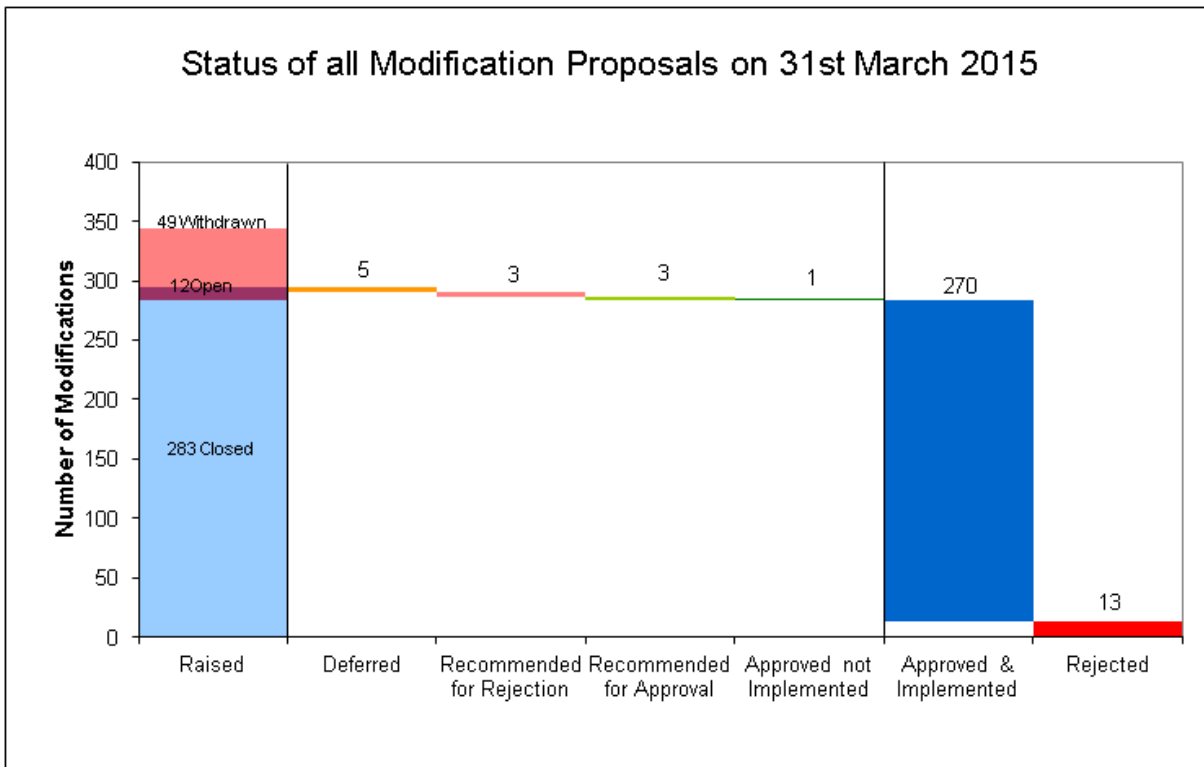
## 2.1.4 Modification Management

<b>SEMO Modifications Committee Report Period: 01 Jan 2015 to 31 Mar 2015</b>	
<b>Modification Committee Summary</b>	<b>Total</b>
Number of Meetings held	2
<ul style="list-style-type: none"> <li>• Modifications Committee Meeting 59 (February)</li> <li>• Extraordinary Modifications Committee Meeting 60 (March)</li> </ul>	1
	1
<b>Modification Proposal Activity in this period</b>	
Standard Modification Proposals raised	2
Alternative Versions of Proposals raised	1
Urgent Modification Proposals raised	0
Modification Proposals 'Withdrawn'	1
New Modification Proposals 'Deferred' as of end of this period	0
Existing Modification Proposals 'Deferred' as of end of this period	4
Existing Modification Proposals 'Further Work Required' as of end of this period	1
Modification Proposals 'Recommended for Approval'	2
Modification Proposals 'Recommended for Rejection'	3
<b>RA Determinations in this period</b>	
RA Decision Papers 'Extension Granted'	0
RA Decision Papers 'Further Work Required'	0
RA Decision Papers 'Approved'	0
RA Decision Papers 'Rejected'	0
<b>Summary of All Modifications to Date (31<sup>st</sup> January 2015)</b>	
Total raised to date	344
Total 'Withdrawn' to date	49
Currently 'New or Deferred' in process (includes anything deemed "further work required")	5
Currently 'Recommended for Rejection'	3
Currently 'Recommended for Approval'	3
Currently 'Approved' (awaiting Implementation)	1
Total 'Implemented' to date	270
Total 'Rejected' to date	13

Details of all Modifications Proposals can be found at <http://www.sem-o.com/MarketDevelopment/Modifications/Pages/Modifications.aspx?Stage=Active>



**Figure 1: Modifications Summary Quarter 2 2015**



**Figure 2: Modifications Status to Date on 31<sup>st</sup> March 2015**

## **2.2 Modifications Process Development**

### ***Modifications in Quarter 2 2015***

Two Modifications Committee Meetings convened in Q2 of 2015. Modifications Committee Meeting 59 took place on 12<sup>th</sup> February and Extraordinary Committee Meeting 60 took place on 24<sup>th</sup> March.

### ***Modifications Recommended for Approval***

#### ***Mod\_01\_15 Tolerance for Metered Volume Changes in Settlement Queries***

The proposal was put forward by SEMO in order to remove the obligation on Meter Data Providers (MDP) to raise a Settlement Query where as a result of a discovered error the net change in Meter Data Volumes is within +/- 1MWh per settlement day per unit. Currently MDPs have an obligation to submit these queries further advising that there were 63 instances in last 2 years with minimal difference in resettlement which results in an insufficient utilisation of resources

Committee were in agreement with the mod on the basis that the MDP will notify the Participant, especially after M+13 run. Secretariat drew attention to typo in the proposal advising it will also be addressed in the legal drafting.

Legal drafting changes were agreed as follows:

- When generating a Settlement Query or Dispute, Meter Data Providers may apply a tolerance where the net change in Meter Data Volumes, as a result of a Discovered Error, is within +/- 1MWh per settlement day per unit, provided that this is communicated to the affected unit.”
- Removal of “less than”
- Insertion of notification of the Participant
- AP Notification published – effective date 6<sup>th</sup> March 2015

#### ***Mod\_09\_14 version 2 Amendments to Make Whole Payments for Interconnector Units***

Following detailed discussions at Meeting 59 an Extraordinary Meeting was convened to review this modification and also Mod\_12\_14 with a view to bringing this to the conclusion of a vote. Mod\_09\_14 version 2 was revised by Electric Ireland who are now the proposers of this proposal. The committee approved this proposal unanimously, while Mod\_10\_14, Mod\_11\_14 and Mod\_12\_14 were rejected with a majority vote. Further detail on these proposals is set out below. The FRR’s (Final Recommendation Reports) are being compiled for submission to the RA’s for final decisions.



### ***Modifications Recommended for Rejection***

#### ***Make Whole Payments Proposals***

***Mod\_10\_14: Make Whole Payments for Interconnector Units***

***Mod\_11\_14: Pay-as-bid/Paid-as-bid for Interconnector Units/***

***Mod\_12\_14: Amendment to Make Whole Mechanism to Remove Settlement Periods of Simultaneous Import and Export Flows***

As discussed in previous paragraph, Mod\_12\_14 was recommended for Rejection at Extraordinary Meeting 60. Meeting 59 concluded with a vote to reject both Mod\_10\_14 and Mod\_11\_14 also Make Whole Payments proposals. These FRR's have been compiled and issued to the RA's for final decisions.

### ***Modifications Withdrawn***

#### ***Mod\_02\_15 Amendment to Special Units Pumped Storage definition to include Energy Storage***

This proposal was put forward by the RA's however Activation Energy had raised the same proposal in 2009 as MOD\_30\_09 with a working Group held to discuss the issue where it was agreed that it was not a valid option. Proposer had requested to withdraw the proposal in accordance with Section 2.188A of the Code. DSU member proposed a different approach to registration in order to remove the obligation to check for Supplier Licence when registering a TSSU as a requirement for DSU registration.

A withdrawal notification advising Participants that the proposal has been withdrawn was published on 3<sup>rd</sup> March 2015.

### ***Deferred Modifications***

#### ***Mod\_11\_12: Proposal to extend the definition of Special Units to include Compressed Air Energy Storage***

SO Alternate advised that a scope for internal studies is still being agreed upon and the proposal is progressing internally. Meetings have taken place with Gaelectric and the SO to review how to progress this proposal. Gaelectric also met with representatives from the ISEM project to discuss this issue being incorporated in the future market design. Gaelectric will take place in Euphemia trials and testing. The modification proposal may be withdrawn if sufficient guarantee is given by RAs that this will be included in ISEM design.

The proposal will be discussed again at the next Modifications Committee Meeting on 15<sup>th</sup> April 2015. A further extension request must be submitted to the RAs as the current extension will expire on 30<sup>th</sup> April 2015.

### ***Mod\_02\_13: Registration of Charges***

External Counsel has drafted version 6 of the deed of charge taking into account the issues raised by Participants at the previous conference call. Taking into consideration the legal costs incurred and resourcing deployed to date it is felt that this proposal should be brought to a vote at the next meeting. External Counsel feels that the drafting process has brought this document as far as possible and that no further drafting can be completed without affecting the structure that such a document should contain. A conference call to review the latest version will be held Monday 13<sup>th</sup> April and the proposal will be discussed at the next Modifications Committee Meeting on 15<sup>th</sup> April 2015.

### ***Mod\_13\_14: DSU's as Price Takers***

Background presentations to the modification advised that Demand Side Units are currently prohibited from being registered as predictable price takers. Proposer advised that the business is built on the provision of capacity and capacity payments; DSUs, which are scheduled by the market, do not rely on the energy market payments. Proposer advised that autonomous generators run their CHPs 24/7 as they see fit, and don't enter the market for 2 reasons, firstly it is not efficient for a unit that size to take part in the market, secondly the current provisions within the Code, do not allow for the units to register within the market as high efficiency CHPs, even though the units provide greater flexibility to the TSO.

This proposal will be discussed at the next Modifications Committee Meeting on 15<sup>th</sup> April 2015.

### ***Mod\_08\_14: Clarification of Location of SEM Collateral Reserve Accounts***

The proposal seeks to reflect that SEM Collateral Reserve Accounts may be held in either Ireland or the United Kingdom rather than in either Ireland or Northern Ireland as currently implied by Section 6.19.

SEMO are currently addressing a number of issues raised covering why the Sterling accounts cannot be located in Dublin and also how the process for managing any new system would be handled by the Market Operator. An additional comment has also been addressed directly to Danske Bank. SEMO Finance are collating this response.

This proposal will be discussed at the next Modifications Committee Meeting on 15<sup>th</sup> April 2015.

### 3 Service Delivery

This metric is to indicate how timely SEMO was in producing reports to Participants.

#### 3.1 Core Market Operations Function Performance excluding ad-hoc Re-pricing and Re-settlement

SEMO's daily obligations include closing the market gate, issuing Ex-Ante Indicative schedules, running Indicative and Initial pricing runs and issuing Initial and Indicative Settlement runs. The following series of graphs shows the percentage of all reports issued in the Quarter that were on time, late by less than an hour or late by over an hour. In summary, the majority of reports are published on time or within an hour of the required time. Priority is given to the Initial Reports (Ex-Post Initial Pricing Schedule and Initial Settlement Statements).

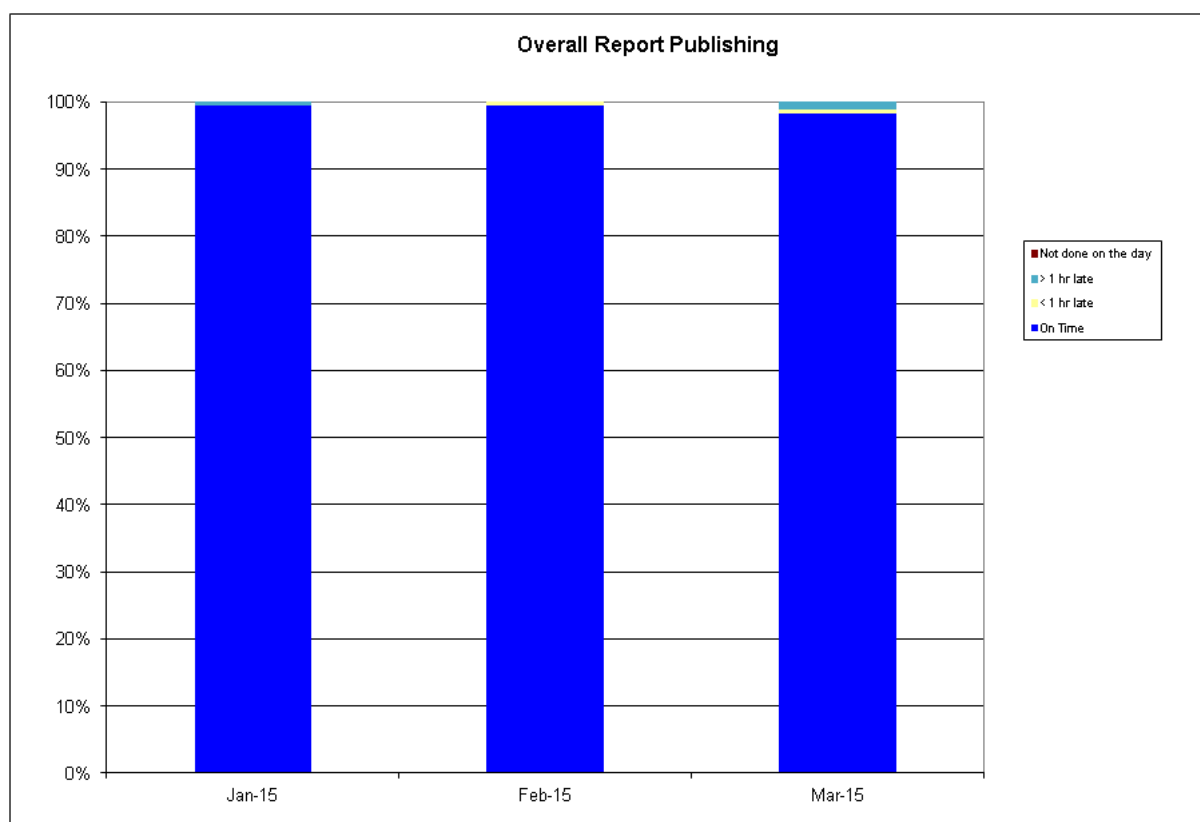
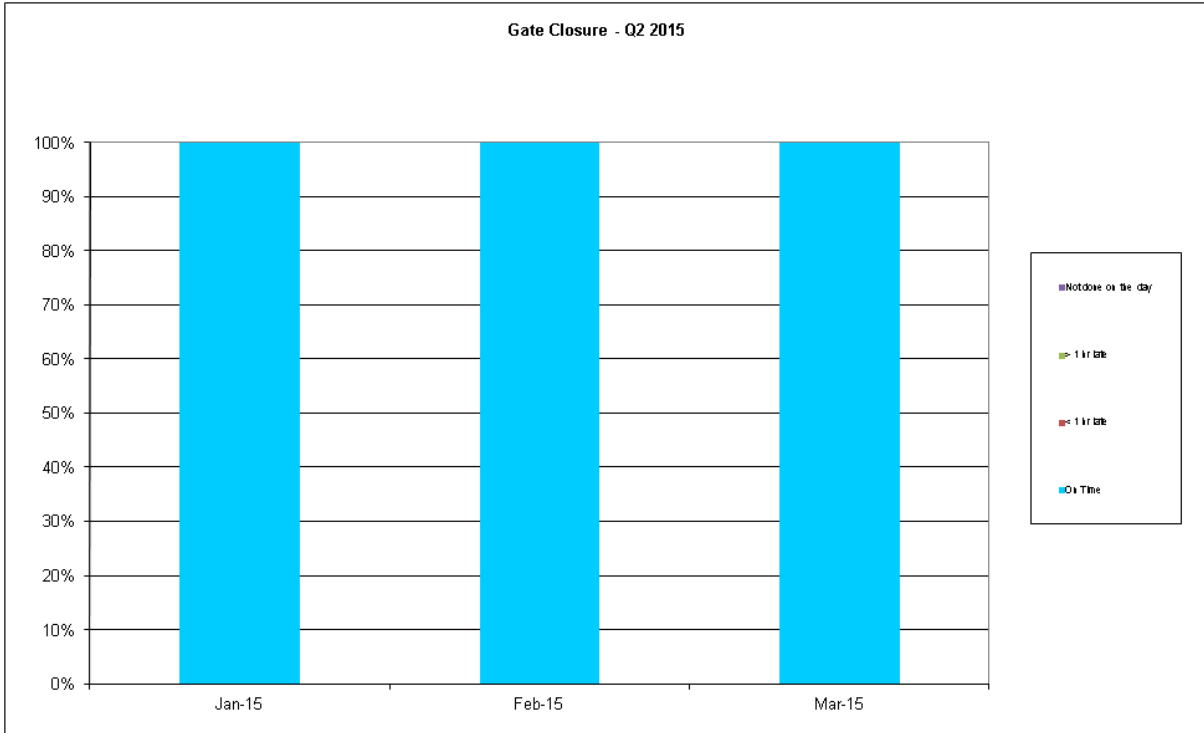


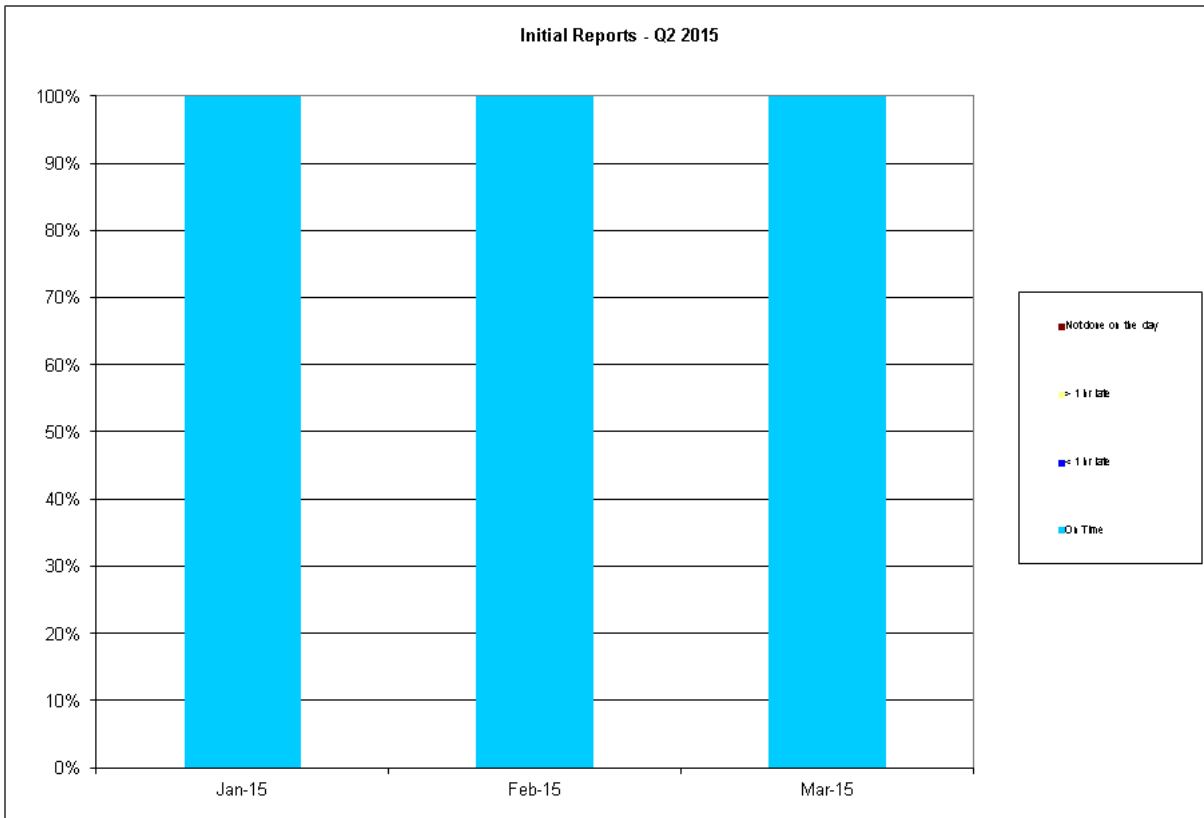
Figure 3 - Overall Daily Report Publication

Gate closure is a significant market event as all bids and offers are required to be captured at that point.



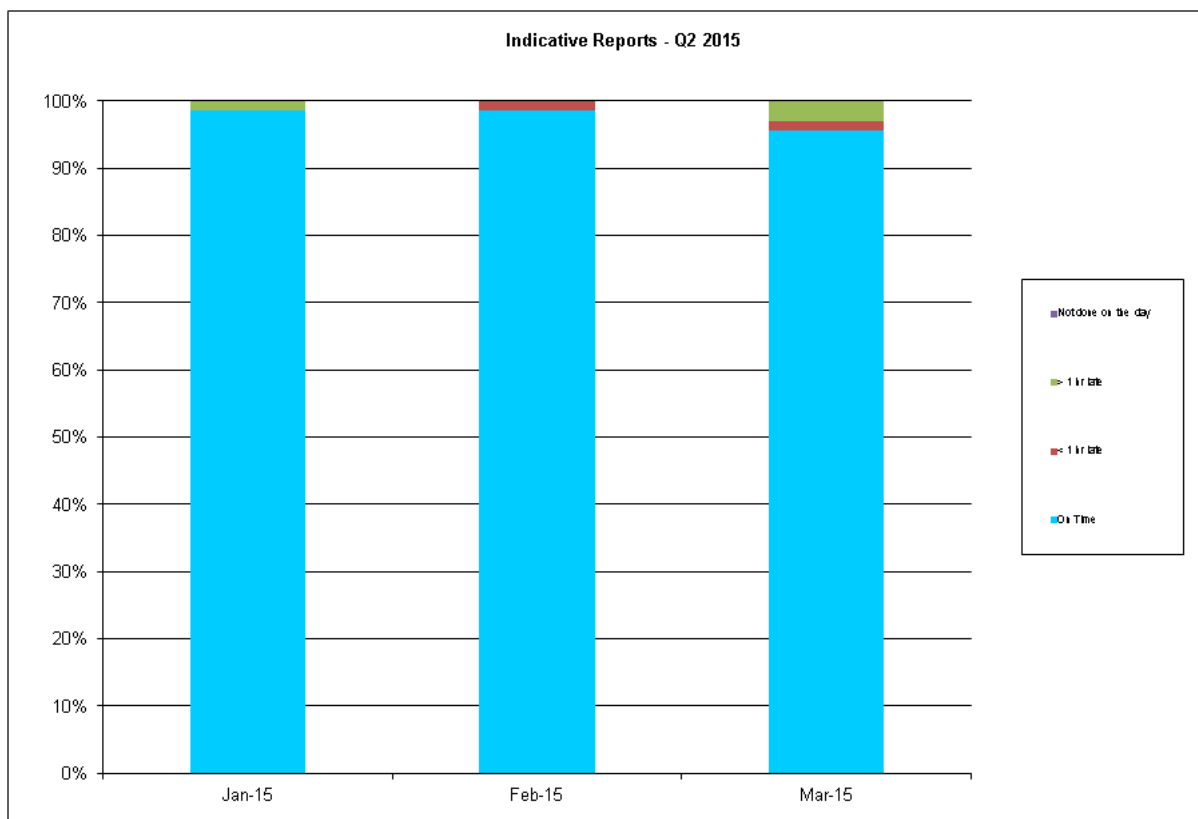
**Figure 4 - Gate Closure performance**

The Initial Reports (Pricing and Settlement) are published on a calendar and Working Day respectively. It is these reports that are used in the final settlement of the market.



**Figure 5 - Initial report performance**

All Initial Market Schedules were published within the Trading and Settlement Code time scales.



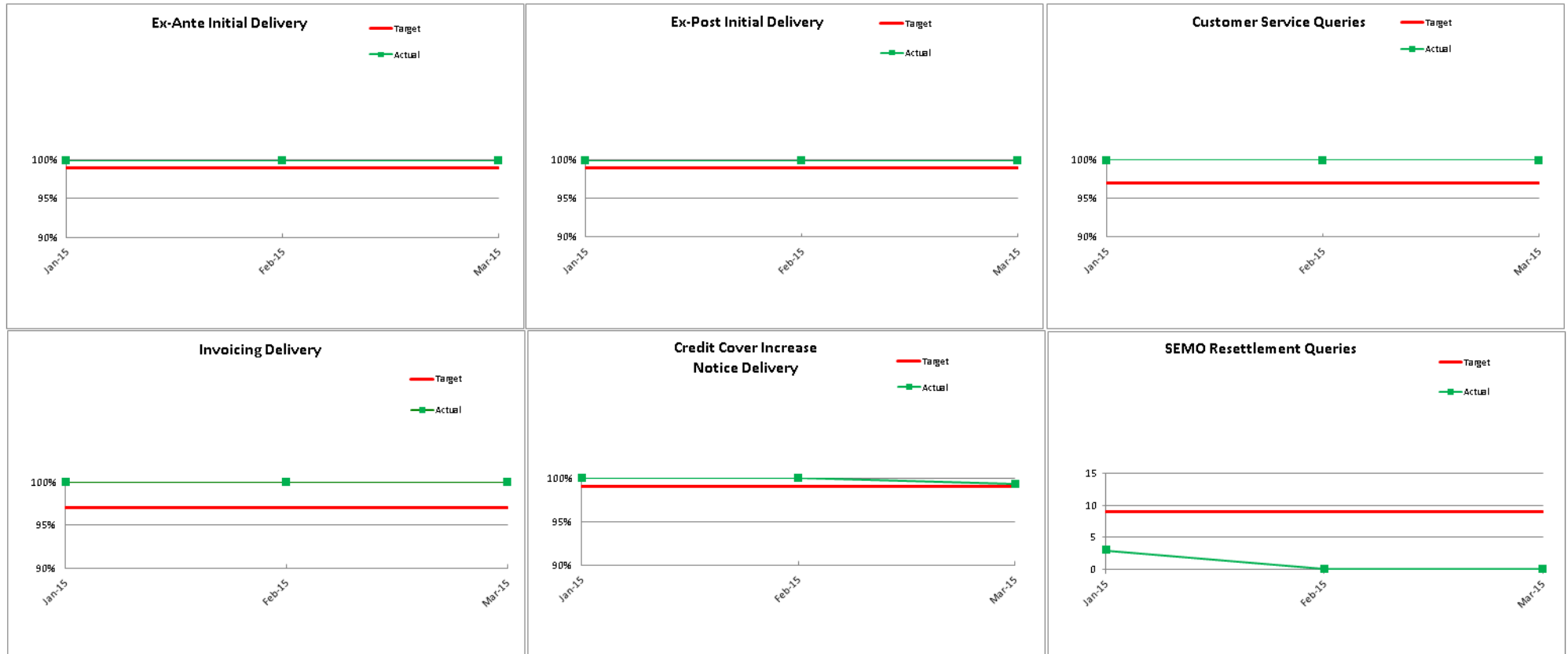
**Figure 6 - Indicative report performance**

The Ex-Post Indicative (EP1) Market Schedule for Trading Day 26/03/2015 and 27/03/2015 were published after the 16:00 deadline.

Indicative Energy and VMOC Reports for Settlement Day 20/01/2015 were published after the 17:00 deadline. This was due to a delay in the publication of the Ex-Post Indicative (EP1) Market Schedule.

### 3.2 SEMO Key Performance Indicators

The following graphs display SEMO performance in line with the Key Performance Indicators as set out in the SEM Revenue & Tariffs decision paper.



### 3.2 Planned Resettlement M+4 and M+13

Scheduled Re-Settlement has continued to run on time and on schedule.

### 3.3 Ad hoc Pricing and Ad-hoc Resettlement Runs

#### Ad hoc Settlement Runs

- **Week 33, 2012:** Ad hoc Statements and Participant Information Reports (PIRs) for Billing Period Week 33 2012 was delayed 19/02/2015 and was published a day late 20/02/2015

### 3.4 Administration of Credit Cover

The SEM has been fully collateralised according to the Trading and Settlement Code provisions during Q2, Jan 2015 – Mar 2015. However at times Posted Credit Cover may be less than the calculated requirement leading to Participants being issued with Credit Cover Increase Notices (CCINs). There were three CCINs that were not fully honoured within the two days allowed in the code. These CCINs were resolved next day. For more information on Credit Cover in the SEM, please refer to [section 6](#).

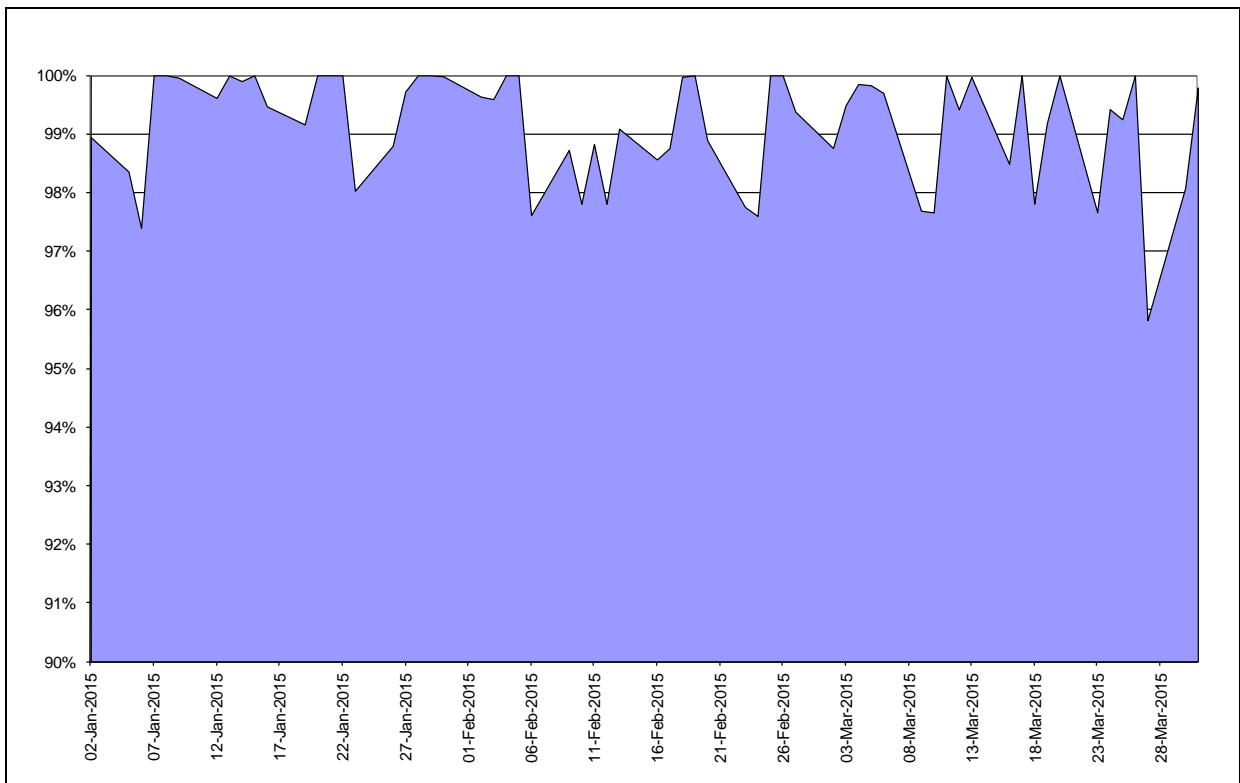
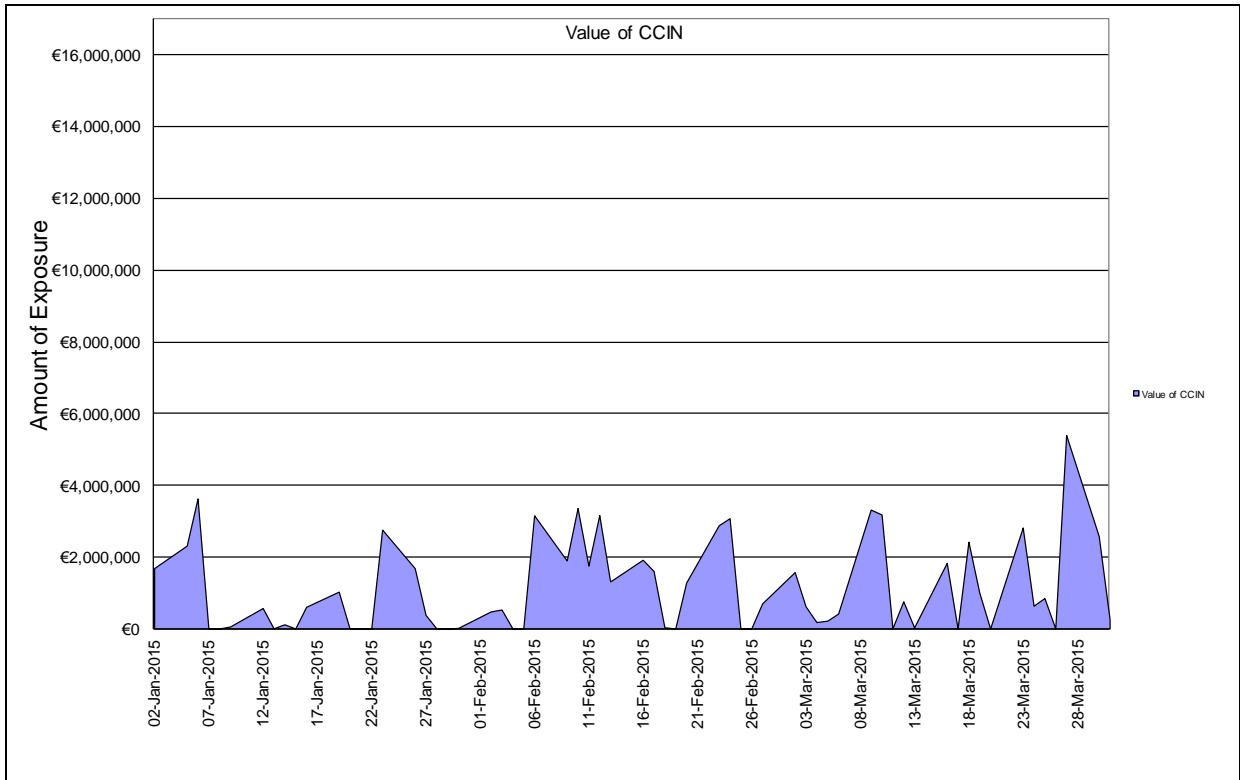
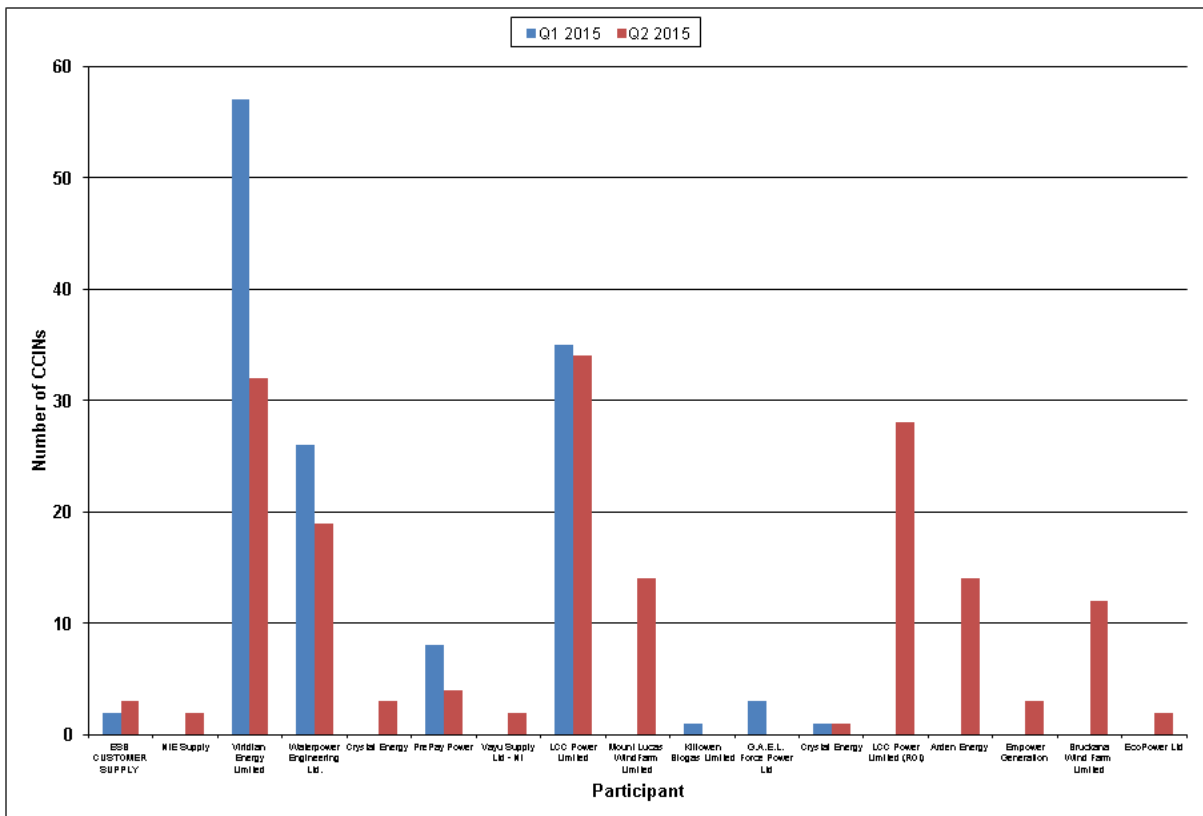


Figure 7 Market Collateralisation in Accordance with Trading and Settlement Code Requirements

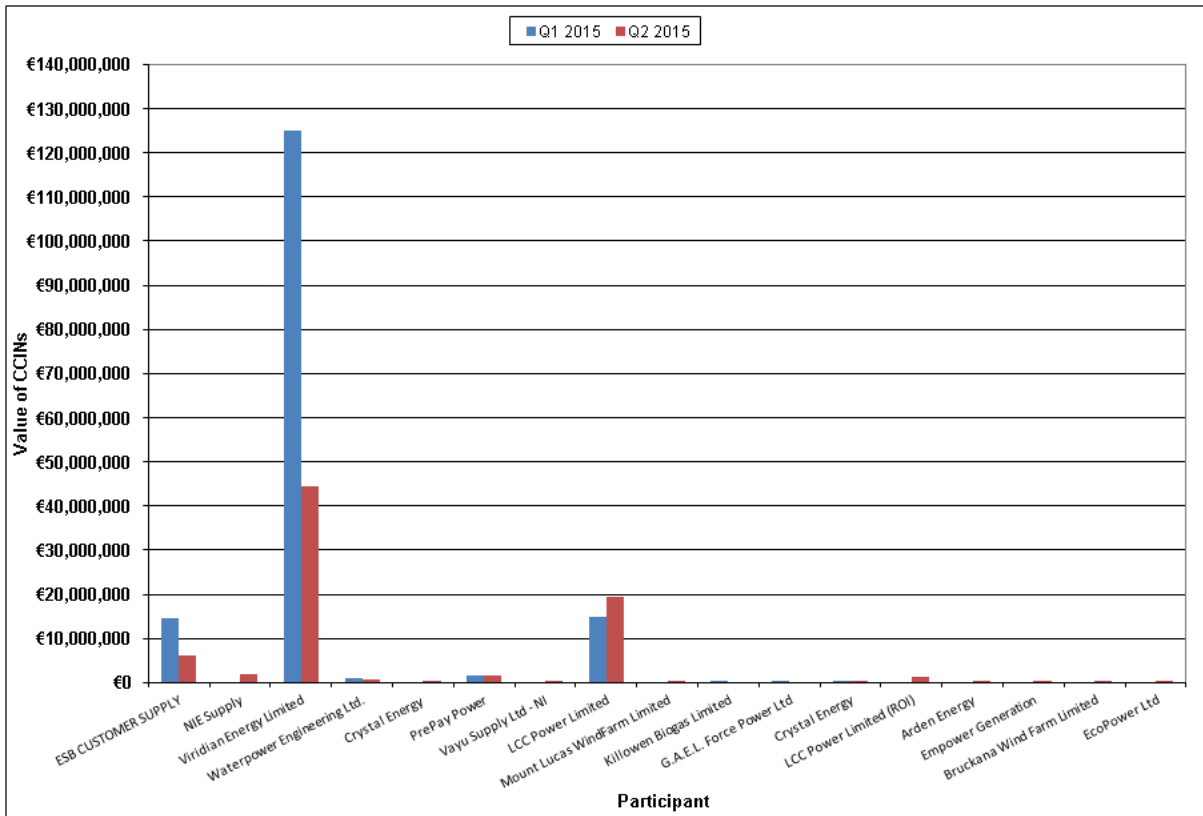


**Figure 8 Credit Cover Increase Notice Total Amounts per Day**



**Figure 9 –Number of Credit Cover Increase Notices Issued**





**Figure 10 - Value of Credit Cover Increase Notices**

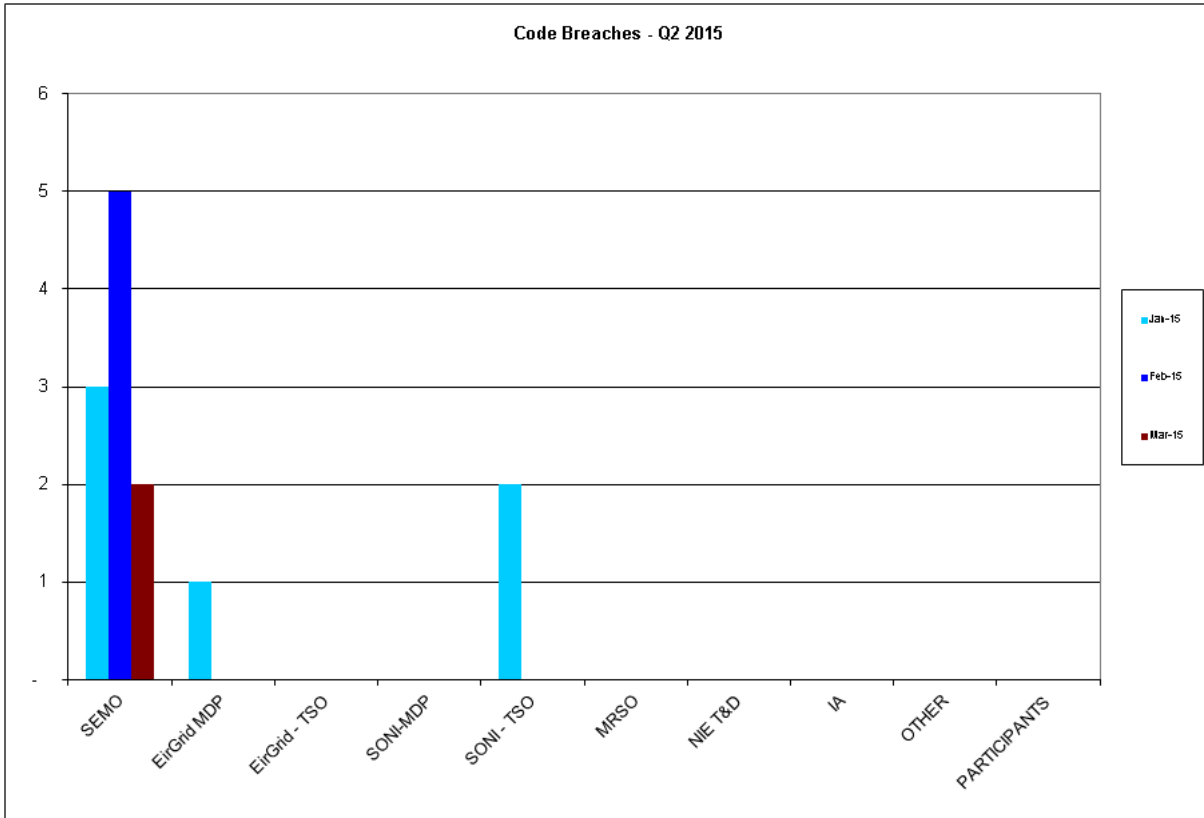
The frequency of CCINs increased in Q1 2015 compared to Q2 2015 (133 compared to 173 last quarter) with the greatest number of CCINs issued in March 2015 (73).

These CCINs were distributed across 15 Participants this quarter. The total value of the CCINs issued was just over €75 million compared to €157 million in the previous quarter.

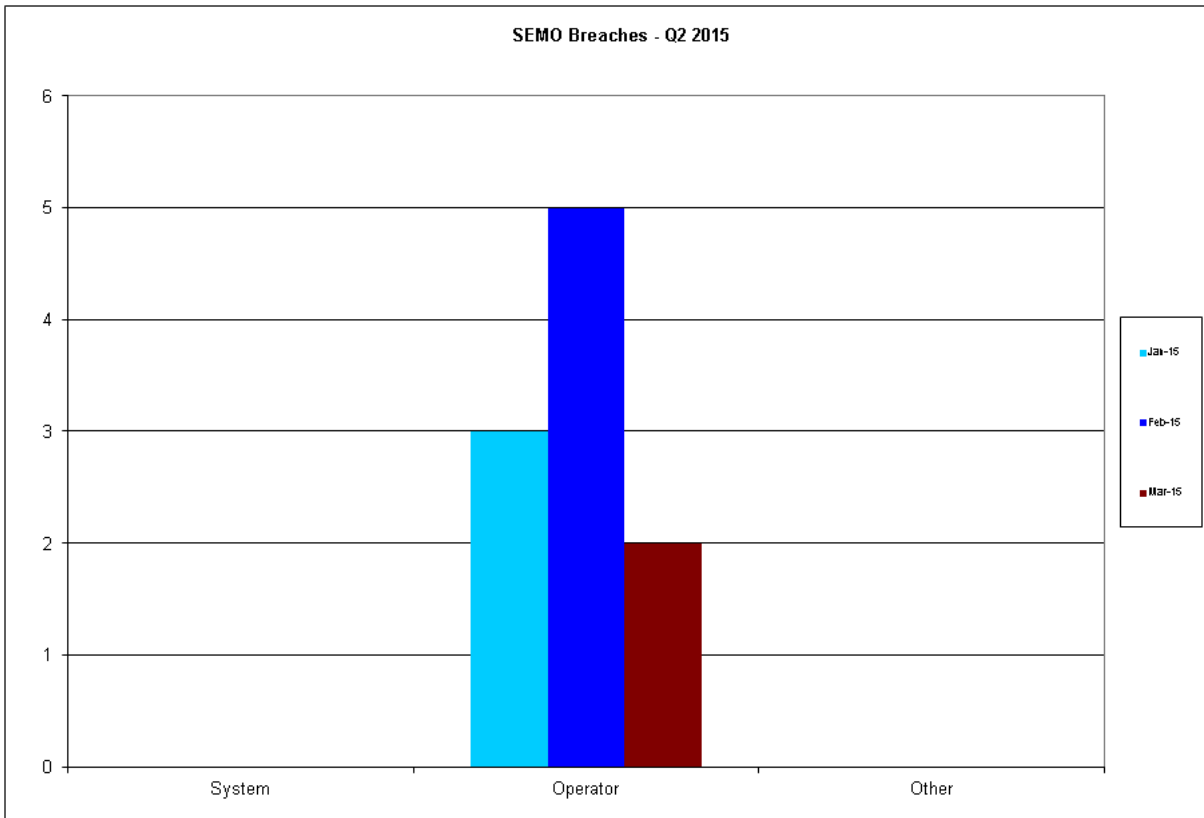
### **3.5 Breaches of the Trading and Settlement Code**

There were 13 breaches of the Trading & Settlement Code in Q2 2015 that SEMO is aware of. This is down from 20 in Q1 2015.

SEMO was responsible for a total of 10 breaches in the last quarter, down from 12 in Q1 2015.



**Figure 11 - Number of Trading and Settlement Code Breaches**



**Figure 12 - Source of SEMO Trading and Settlement Code Breaches**

## **4 Regulatory Affairs**

SEMO has no update for the Regulatory Affairs section in this period.

## 5 Provide Information

The Trading and Settlement Code obligates SEMO to answer Data Queries and Settlement Queries within a given time line. Since 1<sup>st</sup> November 2007, with the exception of two Settlement Queries, all such queries have been answered within the timelines prescribed. This is still the case for this quarter. General queries have no prescribed timeline for response; however, SEMO aims to answer these within 15 working days. We aim to answer Urgent General Queries within 3 working days; the number of queries answered within SEMO guideline timeframes continues to be a focus for SEMO.

There were no new Disputes raised in this quarter.

### 5.1 Customer Queries in a Timely Manner

Details of Data, Settlement and General Queries can be found in the below table and graphs for the Quarter ending 31/03/2015.

Query Type	Received	Resolved in period	Resolution Time
Settlement	12	8	6.04
Data	3	3	8.74
Dispute	0	0	0
Urgent	2	2	0.45
General	502	485	1.48

Table 2: Query Statistics for Quarter

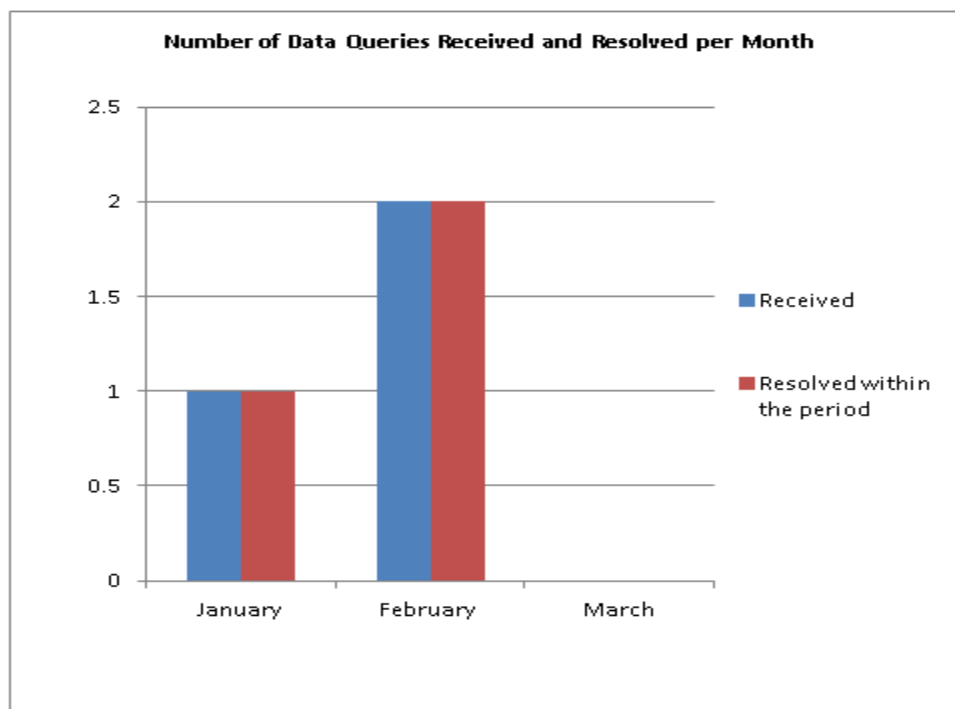
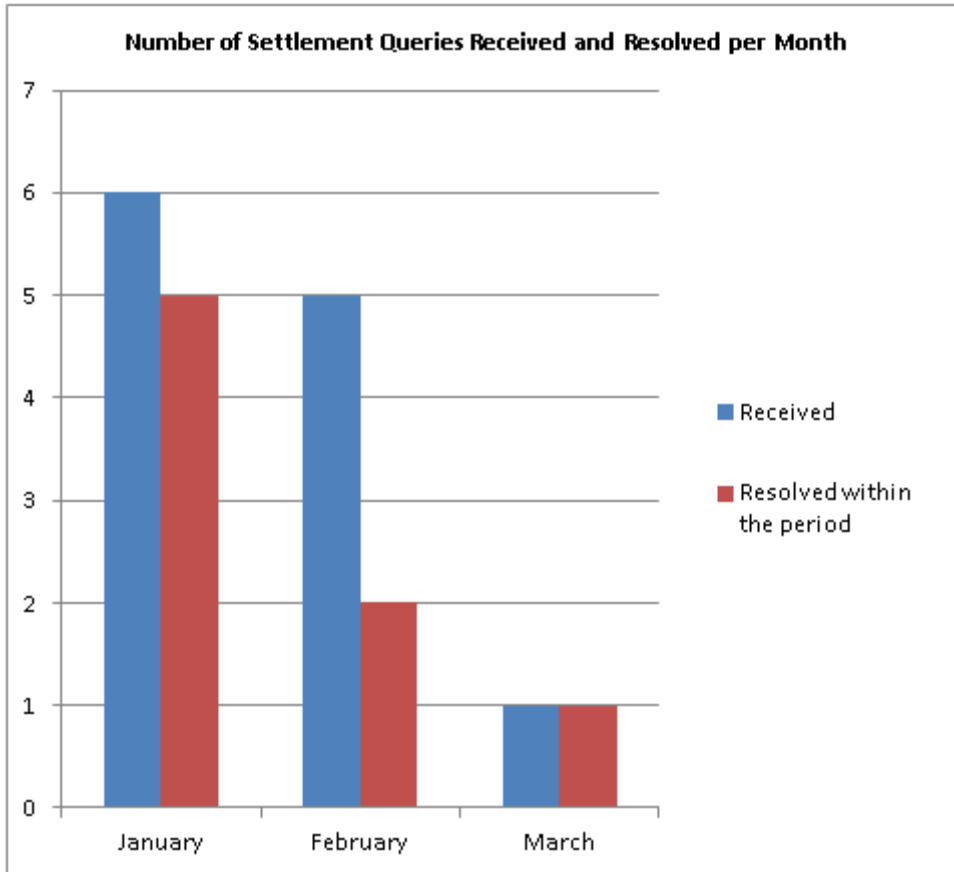
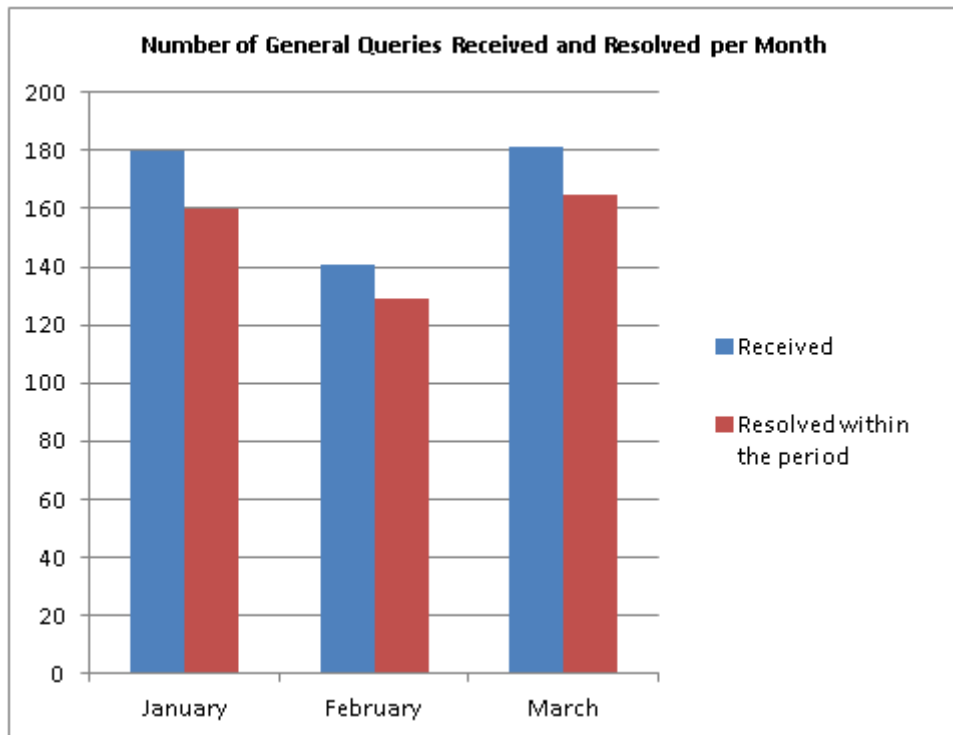


Figure 13 - Number of Data Queries submitted and Resolved per month



**Figure 14 - Number of Settlement Queries submitted and resolved per month**



**Figure 15 - Number of General Queries submitted and resolved per month**

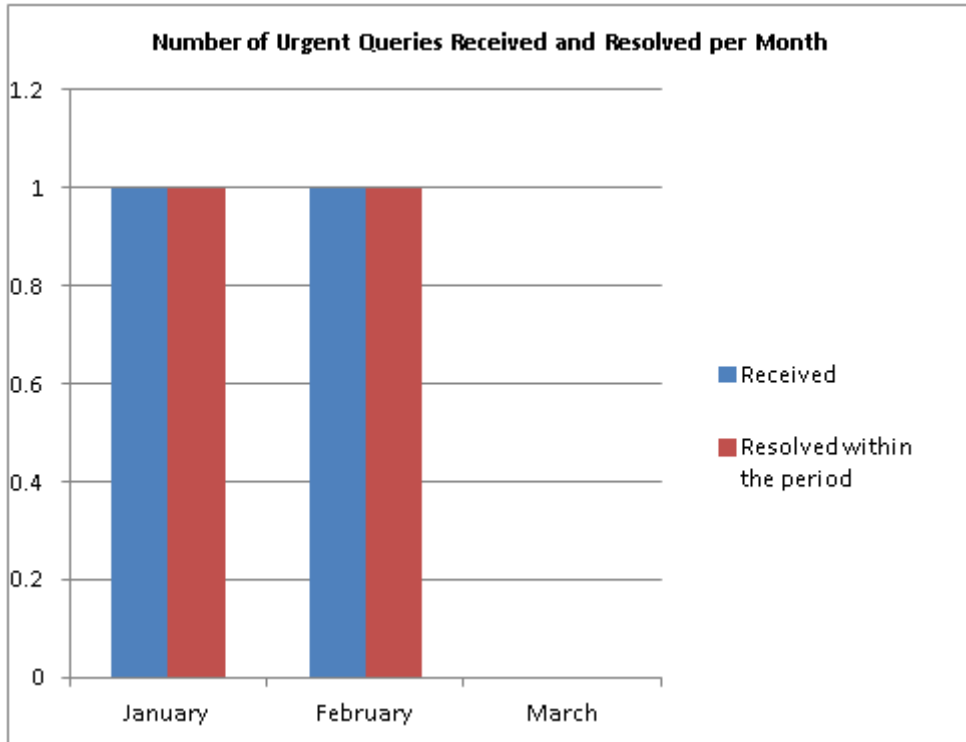


Figure 16 - Number of Urgent Queries submitted and resolved per month

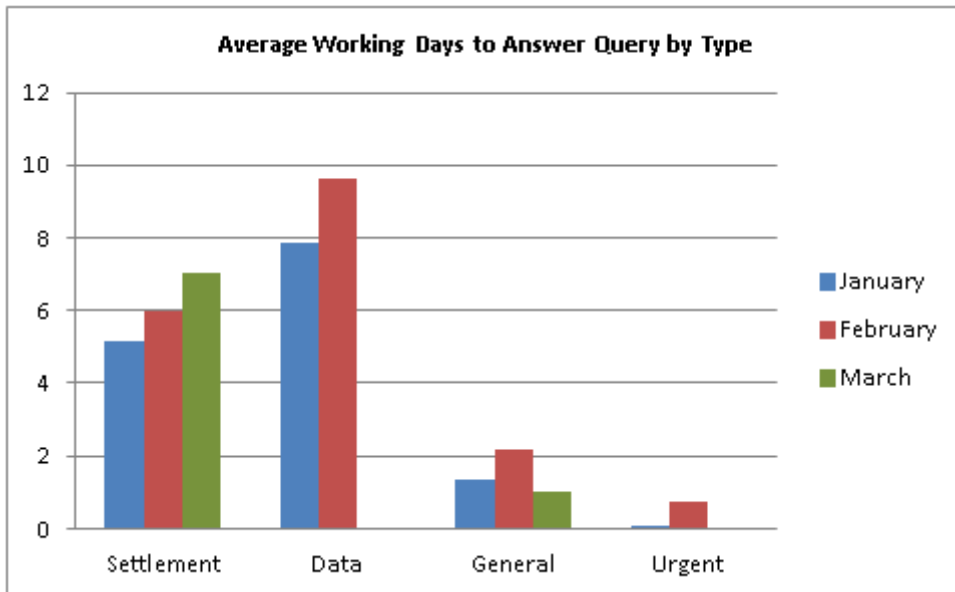


Figure 17 - Average Working Days to answer query type per month

**5.1 Facilitate and Educate Participants to accede to the Code**

In this period two Parties have registered in the Single Electricity Market:

**5.2 Facilitate Interaction with Customers**

**Stakeholder Events**

SEMO organised one Market Operator User Group Conference Call (25/02/2015).

## 6 Required Credit Cover Coverage Analysis

### 6.1 Foreword on Required Credit Cover Coverage

On a quarterly basis the Market Operator (MO) is obliged under decision paper SEM/07/10 to "compare the extent to which calculated RCC was sufficient to meet the actual liabilities realised in respect of each Participant". This report compares how well the calculated Required Credit Cover (RCC) matches the actual (or realised) RCC in the SEM.

Given the complex nature and volumes of data involved in performing an exact comparison of calculated to realised RCC, the modelling performed was based on a number of assumptions which simplified the analysis. Full details of the assumptions used in the RCC Coverage modelling are provided in Appendix A.

In the results below the term 'under-estimation' refers to situations where the calculated RCC was less than the realised RCC meaning the RCC at the time of calculation was less, in hindsight, than it should have been. The reverse is true for 'over-estimation' where the calculated RCC was more than what was actually required.

Occurrences of under-estimation identified in the analysis do not necessarily mean that the market itself was under-collateralised as this is dependent on the level of Posted Credit Cover. The majority of Participants tend to have sufficient levels of Posted Credit Cover to meet fluctuations in RCC. The under-estimation merely identifies where the calculation of RCC was less than ideal relative to the realised RCC.

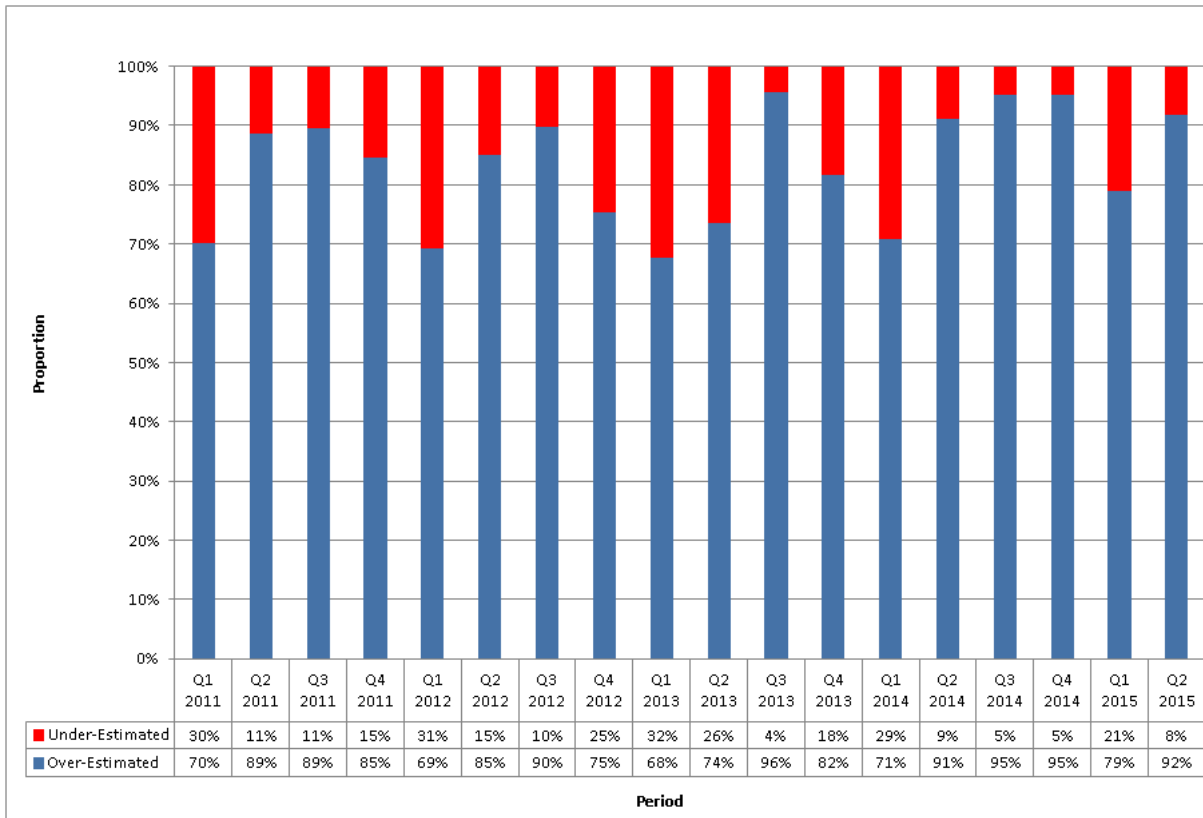
### 6.2 Summary of Required Credit Cover Coverage Analysis

The key conclusions on the RCC Coverage are:

- RCC Coverage was under-estimated 8% of the time in Q2 2015. This showed a decrease of 13% compared against Q1 2015. This figure is also lower than the long term average of 18% under-estimation since market start. It is, lower than the values seen in the same quarter last year of 9%.
- The value of each occurrences of under-estimation has decreased from the previous quarter from 1.09% to 0.03%, lower than the long term average of 0.84%.
- In Q2 2015, where the RCC Coverage is not sufficient, the market is under-estimated by an average of approximately €70,000 on a total market exposure of just over €227 million. The long term average equates to an under-estimation of €2 million on a total average market exposure of €240 million from the beginning of the market.

### 6.3 Occurrences of Under or Over Estimation

Figure 17 below illustrates the trend in the number of RCC calculations under or over-estimated. For the SEM as a whole, Q2 2015 period has seen the RCC under-estimated on 8% of credit cover calculations. This is a decrease of 1% from the same period last year and an decrease of 13% from previous quarter reported. The average SMP price and the demand both decreased only slightly compared to the previous quarter.



**Figure 17- Occurrences of Under or Over Estimation**

As discussed in previous reports on RCC Coverage the key factor in the proportion of under or over estimation is the historical SMP relative to the current period SMP.

Figure 18 below illustrates the trend in average daily SMP for Q2 2015, the daily time weighted average was €54, which is slightly lower than in Q1 2015 (€57). The SMP has historically been higher and more volatile in the first years of the market. It had then stabilised at lower values from around Oct 12 until March 2015. From this time on, we have seen SMP only slightly increasing in average value; however, there has been more deviation with higher peak prices being seen a few times in Q2 2015.

Another factor impacting on the proportion of under or over estimation is the variation in the System Demand which, in this quarter, has increased by 5% from previous quarter.

These small variations have limited the amount of under estimation in the current quarter, particularly as demand shows an increasing trend across the Q2 2015.



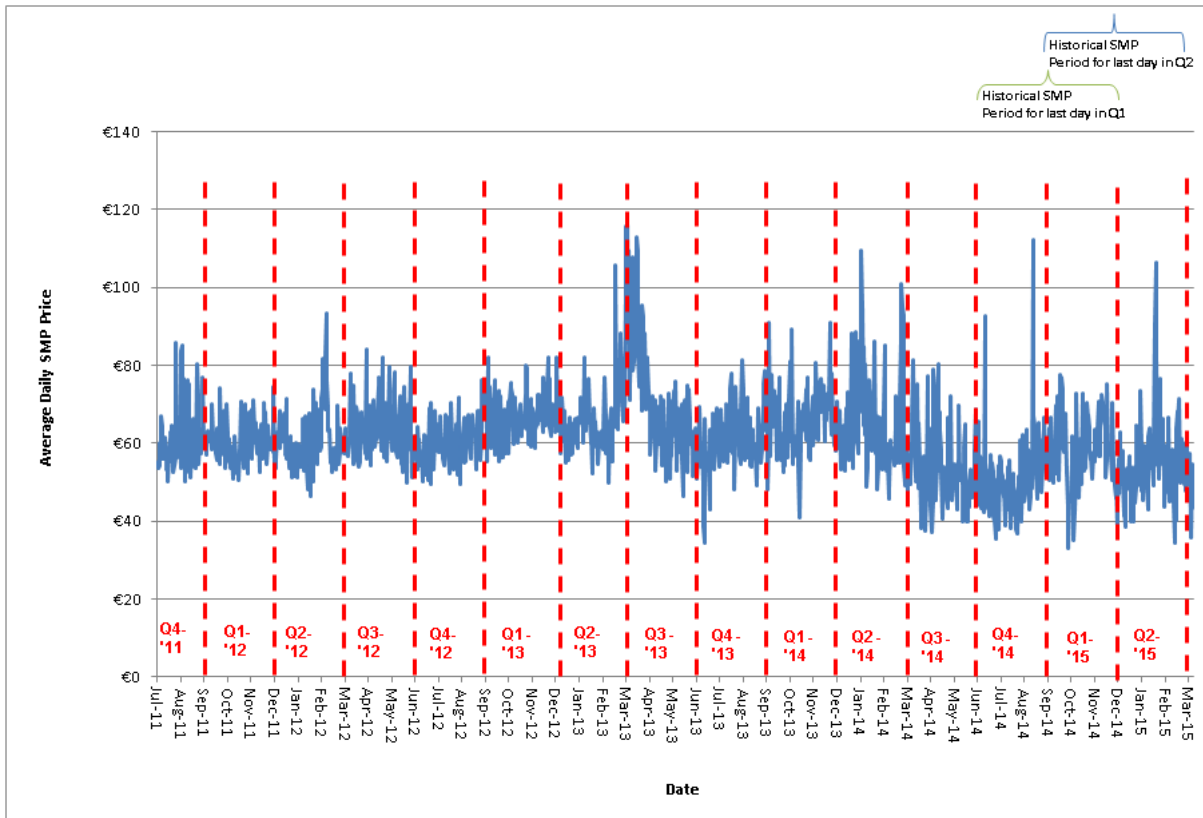


Figure 18- Trend in Average Daily SMP

#### 6.4 Extent of Under and Over Estimation

Figure 19 below illustrates the trend in the extent to which RCC is under or over-estimated, when it occurs.

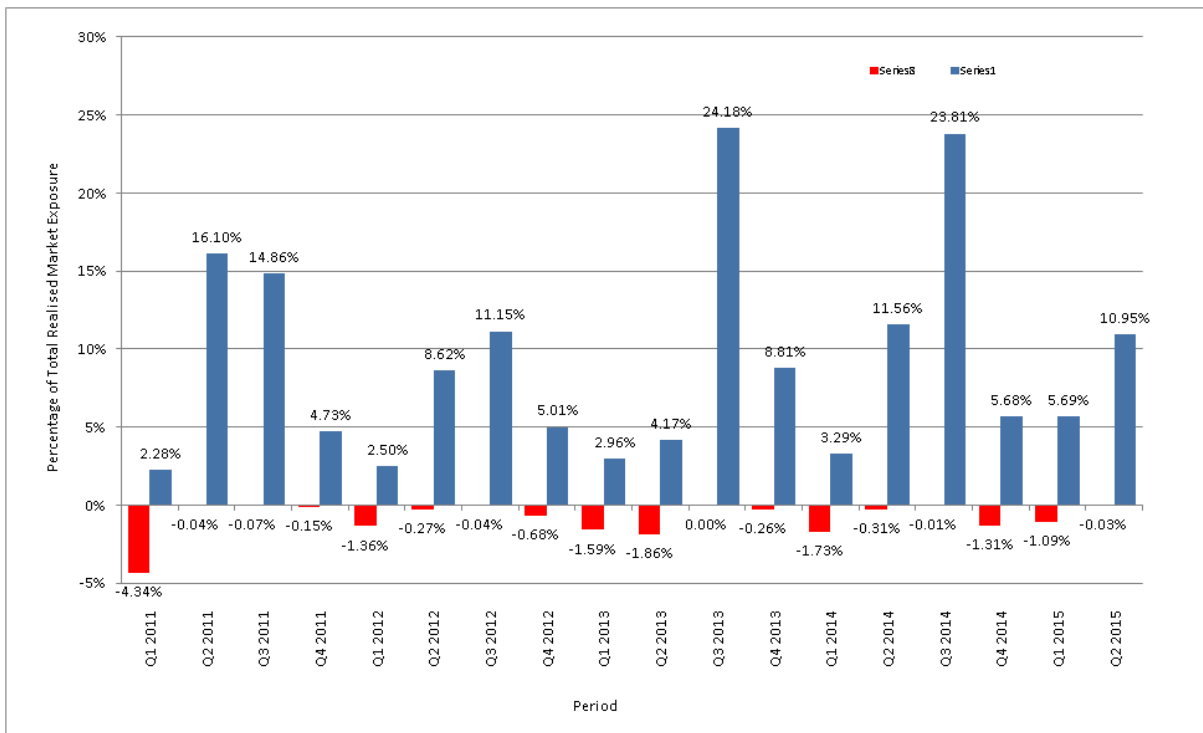


Figure 19 – Extent of Under or Over Estimation when Under or Over Estimation Occurs

The majority of under-estimation, since the start of the market, is below 1%. Q2 2015 is slightly lower with a figure of 0.03%.

Where over-estimation occurs, this has been on average between approximately 1.54% and 27% since the start of the market. In the quarter under analysis, the extent of over-estimation increased to 10.95% compares to 5.69% in the previous quarter. This is higher than the long term average of 9.10%.

### 6.5 Market Monetary Exposure

Figure 20 below shows the actual monetary exposure of the SEM (excluding VAT) to these under or over estimations.

In Q2 2015, from an average exposure of the market of just over €227 million, the market has had an average RCC under-estimation of just over €70,000 and an average RCC over-estimation of € 24 million on any given day.

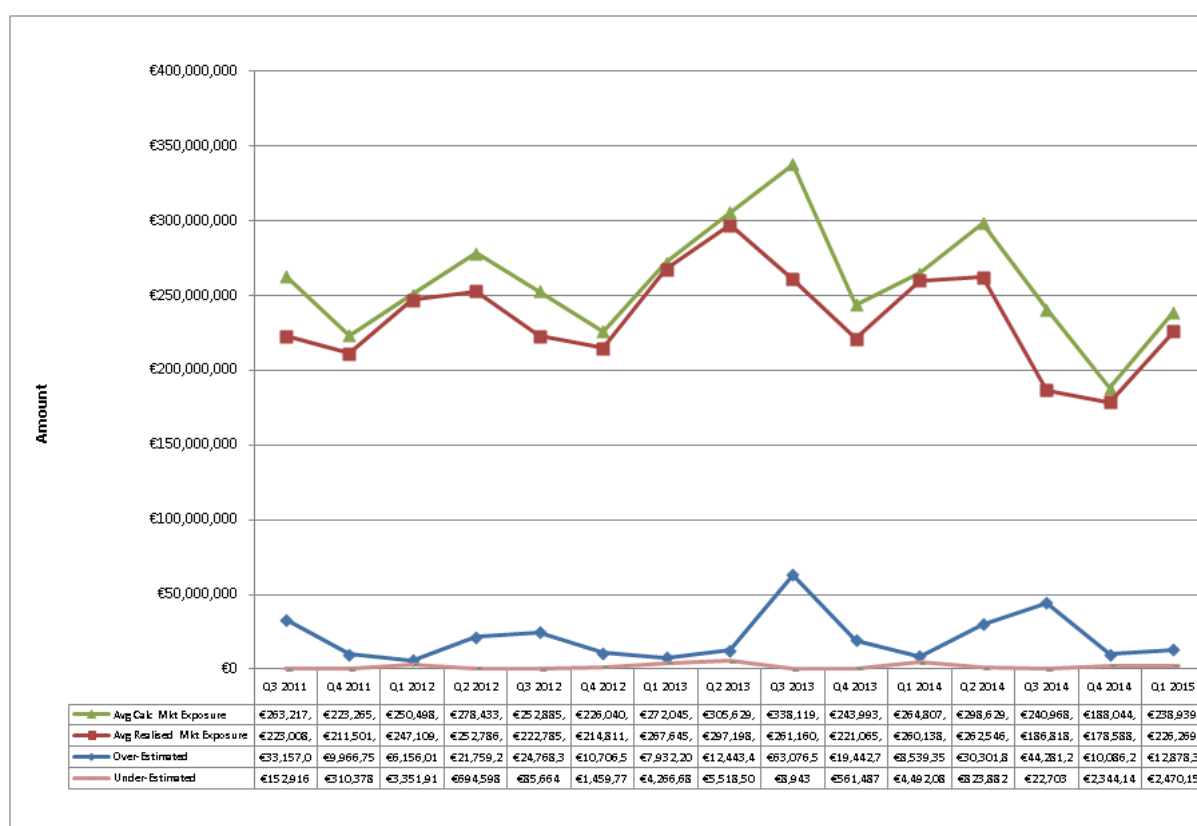


Figure 20 – Monetary Exposure due to Accuracy of Credit Cover Calculations

### 6.6 All Quarters Summary

For the SEM as a whole, from market start to the end of March 2015, RCC has been under-estimated 18% of the time. Of these occurrences the under-estimation as a percentage of the total realised market exposure is on average less than 1%, or €70,000 out of a total average realised market exposure of € 258 million.

With regard to over-estimation, the SEM as a whole has been over-estimated 92% of the time with the over-estimation as a percentage of the total realised market exposure being on average 10.95%, or €24million out of a total average realised market exposure of €258million.

## 7 Appendix A: Required Credit Cover Coverage

### a) Required Credit Cover Coverage Modelling Assumptions

Given the complex nature and volumes of data involved in performing an exact comparison of calculated to realised RCC, the modelling performed was based on a number of assumptions which simplified the analysis.

- Only Participants with Supply Units were considered in the RCC analysis as they are the only Participants that have a positive RCC liability as a result of initial settlement. Generators are considered to have a negative RCC liability (i.e. no liability) as a result of initial settlement. Generators may have a liability due to resettlement but this is covered in credit cover calculations by the fixed credit cover requirement.
- Analysis was performed on a Participant Account basis for supply accounts only.
- All values were converted into Euros for ease of comparison. The exchange rate used was for trade date 14<sup>th</sup> April 2015. The value was 0.7244 for Euro to Pounds sterling.
- Settlement values used in the analysis are Initial Settlement values, with the exception of some Indicative Settlement values which were used for the last few days of analysis as initial values were not available. This is also the reason for small adjustments to figures published last quarter.
- When compiling the current report, data was available for the retrieval of the realised versus calculated UDE for the whole period up to the end of March 2014
- Results for previous reporting periods may have changed slightly due to adjustments made to the model. This was to exclude units prior to enough historical data being available for the correct comparison of calculated and actual values. The change in values is not material to the results.
- VAT was not included in calculated or realised figures for Actual, Undefined or total market exposure. Proportions and percentages were determined without the application of VAT. This assumption was deemed to have little bearing on the final results as it is a percentage based tax which would apply to both calculated and realised amounts in the same proportions.
- A methodology was employed that simplified the analysis required in determining Actual Exposure and both calculated and realised Undefined Exposure (UDE). The volumes of processing required would otherwise involve repeating calculations for each day of the market for each Participant for both Energy and Capacity, using the snapshot of inputs for that particular day. This functionality is not available in the Credit Risk Management system implemented for the market and is not practical to perform external to the market systems at this point in time.
  - The Energy UDE and Actual Exposure were determined using settlement amounts for each day of the period being analysed (Nov 2007 to March 2015).
  - The UDE period for Energy was kept constant at 16 days when comparing calculated and realised RCC. The modelling does not allow for holidays or delays receiving settlement data for weekends, however, the comparison basis is the same for both calculated and realised RCC. Therefore, this assumption should have minimal effect on the results.

- The Actual Exposure for Energy was kept constant at 14 days. This is based on the average Actual Exposure being 7 days invoiced and 7 days un-invoiced.
- Part of the analysis required the comparison of the under or over estimation to the total market exposure. In order to determine the total market exposure the following methodology was used.
  1. Determine Energy UDE
  2. Determine Energy Actual Exposure
  3. Determine Proportion of Total Exposure made up by Energy and Capacity individually
  4. Determine the Capacity contribution to total exposure using the proportions of Energy and Capacity, and the Energy UDE and Energy Actual Exposure.
- The total market exposure proportion was determined using the following assumptions:
  - Energy has a significantly greater effect on the total exposure in the market relative to Capacity. Energy, based on 2014 financial year, is typically 76% of total market exposure, while Capacity is 24% of total market exposure. This is based on the figures for the period Oct 2009 to Sep 2014, of operation of the market, in which the Energy market was approximately €2.1 billion and a Capacity market of approximately €555 million.
  - VAT was not included in Total Market Exposure figures.
  - Fixed Credit Cover used to provide collateral for resettlement was not considered as it forms a small proportion of the total exposure and should not affect the calculated versus realised comparisons.
- The first quarter of 2007 only consists of two months, November and December 2007. This is as a result of the market starting on 1<sup>st</sup> November 2007. All subsequent quarters are three months, and align with the standard reporting year for the market.
- There are only 14 days of analysis included in Q4 2007 as 45 days worth of historical data (HAP) are needed before the calculation of UDE can be determined.
- Please note that as of October 2010 report, reporting graphs now reflect the Financial Year not the Calendar Year as previously presented i.e. Quarter 1 (October – December 2010), Quarter 2 (January – March 2013) and Quarter 3 (April – June 2013).