



Regulatory Authority Quarterly Report

Market Operator Performance Criteria

March 2016

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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 = 1st October to 31st December
- Q2 = 1st January to 31st March
- Q3 = 1st April to 30th June
- Q4 = 1st July to 30th September

2 Manage Change

2.1 Software Deployments

2.1.1 Release SEM R2.8.0 (Proposed Deployment: June 17th 2016)

The **release cut-off date** for the June 2016 release (SEM R2.8.0) was **Friday, November 6th, 2015**

Approved scope can be found below

Change Request Reference	Summary	Business Case for Change
SEM_PC_CR351 (2014 Market Audit)	Eligible Availability Audit Change	<p>During the 2014 Market Audit an observation relating to the optimisation of Eligible Generation Availability (and therefore Capacity Payments) for Energy Limited (EL) and Pumped Storage (PS) Units was identified. Due to incorrect prioritisation of Trading Periods where either Ex-Ante or Ex-Post Loss of Load Probability (LOLP) is zero the resulting assignment of availability for the affected units is sub-optimal. This is not a strict non-compliance with the algebraic formulation of the mechanism. It could, however, be considered contrary to the intent of the rules which is to optimise revenue in relation to generation availability.</p> <p>Where LOLP is zero this indicates a diminished need for generation availability so that Capacity revenues are lower in these periods. These Trading Periods should be considered lowest priority for the assignment of availability for affected EL/PS units. Due to a “divide by zero” in the maximised function, where LOLP is zero, the function cannot be evaluated. As a result these Trading Periods are in some cases given top priority for the assignment of availability where they should be given lowest priority. This change will correct this feature.</p>
SEM_PC_CR354 (Revenue)	Irish Revenue – Electricity VAT Change	<p>Revenue has introduced new rules as to how VAT is applied to supplies of wholesale electricity in the domestic ROI area. In summary, for domestic “business to business” supplies of electricity, the generator no longer applies VAT to supplies of electricity, rather the entity receiving the supply is liable to account for VAT.</p> <p>The new rules became effective on January 1st, 2016.</p>

Table 1: Approved Scope for SEM R2.7.0 – Change Requests

2.1.2 Modification Management

SEMO Modifications Committee Report Period: 01 January 2016 to 31 March 2016	
Modification Committee Summary	Total
Number of Meetings held	1
<ul style="list-style-type: none"> • Modifications Committee Meeting 67 – 11th February 	
Modification Proposal Activity in this period	
Standard Modification Proposals raised	0
Alternative Versions of Proposals raised	0
Urgent Modification Proposals raised	0
Modification Proposals 'Withdrawn'	0
New Modification Proposals 'Deferred' as of end of this period	0
Existing Modification Proposals 'Deferred' as of end of this period	2
Existing Modification Proposals 'Further Work Required' as of end of this period	1
Modification Proposals 'Recommended for Approval'	0
Modification Proposals 'Recommended for Rejection'	0
RA Determinations in this period	
RA Decision Papers 'Extension Granted'	0
RA Decision Papers 'Further Work Required'	0
RA Decision Papers 'Approved'	0
RA Decision Papers 'Rejected'	0
Summary of All Modifications to Date (31st March 2016)	
Total raised to date	351
Total 'Withdrawn' to date	51
Currently 'New or Deferred' in process (includes anything deemed "further work required")	3
Currently 'Recommended for Rejection'	3
Currently 'Recommended for Approval'	2
Currently 'Approved' (awaiting Implementation)	2
Total 'Implemented' to date	276
Total 'Rejected' to date	14

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

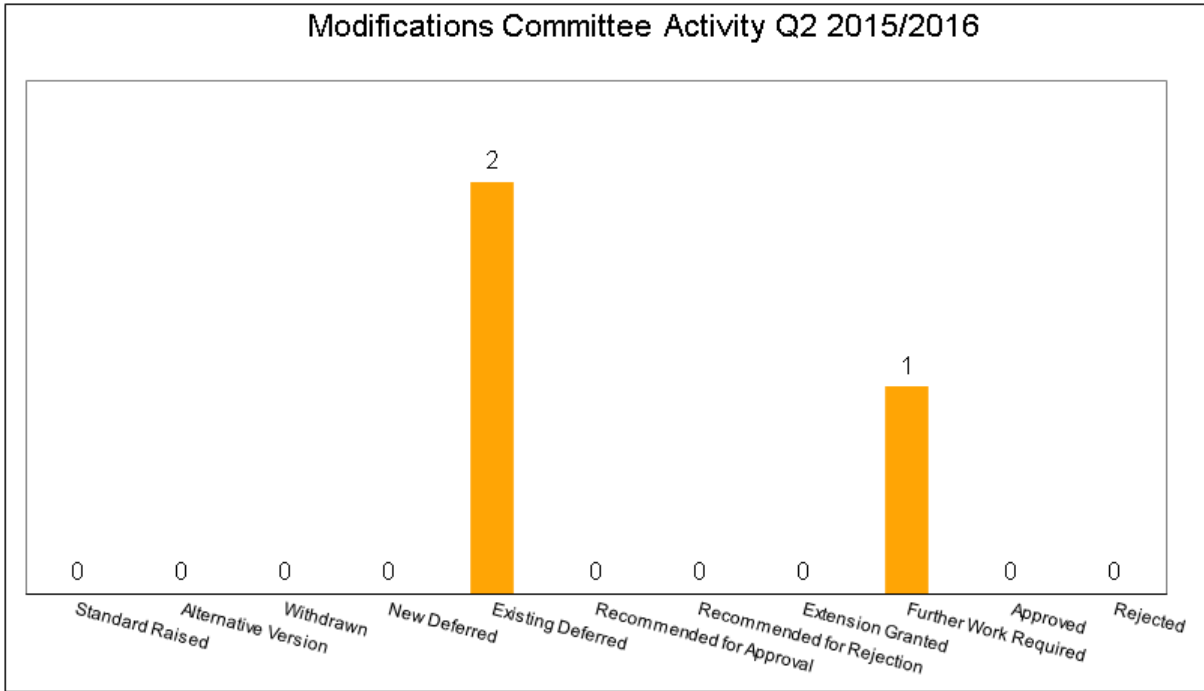


Figure 1: Modifications Summary Quarter 2 2016

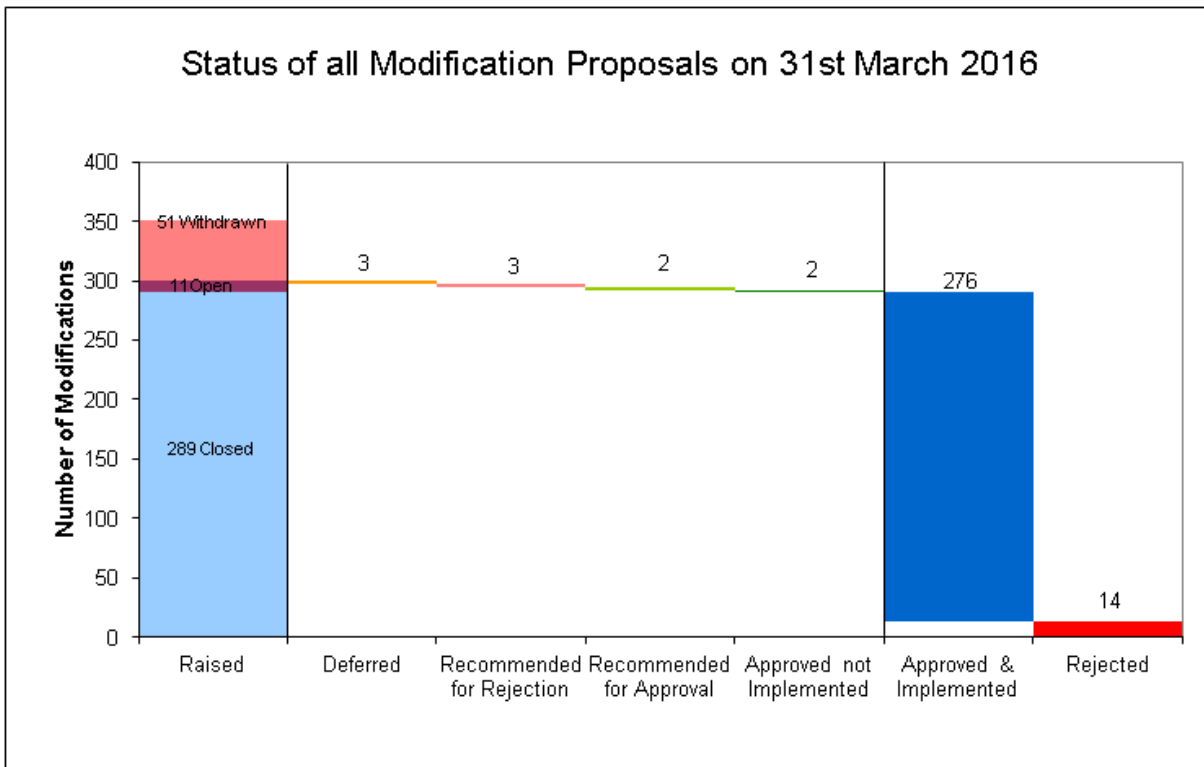


Figure 2: Modifications Status to Date on 31st March 2016

2.2 Modifications Process Development

Modifications in Quarter 2 2015/2016

One Modifications Committee Meetings took place in Q1 of 2015/2016. Modifications Committee Meeting 66 took place on Thursday 11th February 2016.

Modifications Recommended for Approval

Mod_02_13 Registration of Charges

Following an extensive modification proposal process involving external legal counsel, the committee were happy to vote at Meeting 63. The proposal was recommended for Approval by a majority vote. A final recommendation report has been sent to the Regulatory Authorities for a Final Decision

Mod_09_15: AP07 Mod_08_14) Clarification of Location of SEM Collateral Reserve Accounts

Following an extensive modification proposal process the committee were happy to vote at Meeting 61. The proposal was recommended for Approval by a majority vote. A final recommendation report has been sent to the Regulatory Authorities for a Final Decision.

Deferred Modifications

Mod_04_15: Modification to Relevant Meter Operator Role and Support Requirements for Meter Communication Channels

The purpose of this modification will require the Relevant Meter Operator and Generator where it provided Meter Communication channels, to provide 2 day support arrangements (on a 7 day basis) for Meter Communication Channels and associated power supplies to energy metering systems. This is required for the provision of meter data to the SEM as per T&SC requirements under Appendix L “Meter data Transactions”.

Engagement is also ongoing through various Metering Groups to address this issue. This proposal and progress on further engagement will be discussed again at Meeting 67 in April.

Mod_08_15: Clarification of Outturn Availability

On 29 September 2015, the SEMC published Decision Paper SEM-15-071 “Process for the Calculation of Outturn Availability”. In this decision paper, the SEMC note that Outturn Availability is not adequately defined in the Trading and Settlement Code (and not defined in the Grid Code) and requires that the TSOs bring forward modifications commensurate with this decision paper.

Outturn Availability is the name assigned in SEM to the set of availability data for the relevant day received by the SEM systems from the TSO systems following the end of that day. This set of data is subsequently used to develop the availability profile of each Generator Unit in the SEM and consequently affects the commercial position of the generator. This modification to the TSC does not propose to change this meaning of Outturn Availability, but instead to clarify the definitions of Availability and Outturn Availability, referring to the Grid Code.

As the Grid Code does not currently refer to the term Outturn Availability, as the submission of data from the TSO systems to the SEM systems after the relevant day, is not within scope of the Grid Code. A modification to the Grid Code has also been developed by EirGrid and a consultation process is also being managed by SONI. This proposal will be discussed at Meeting 67.

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).

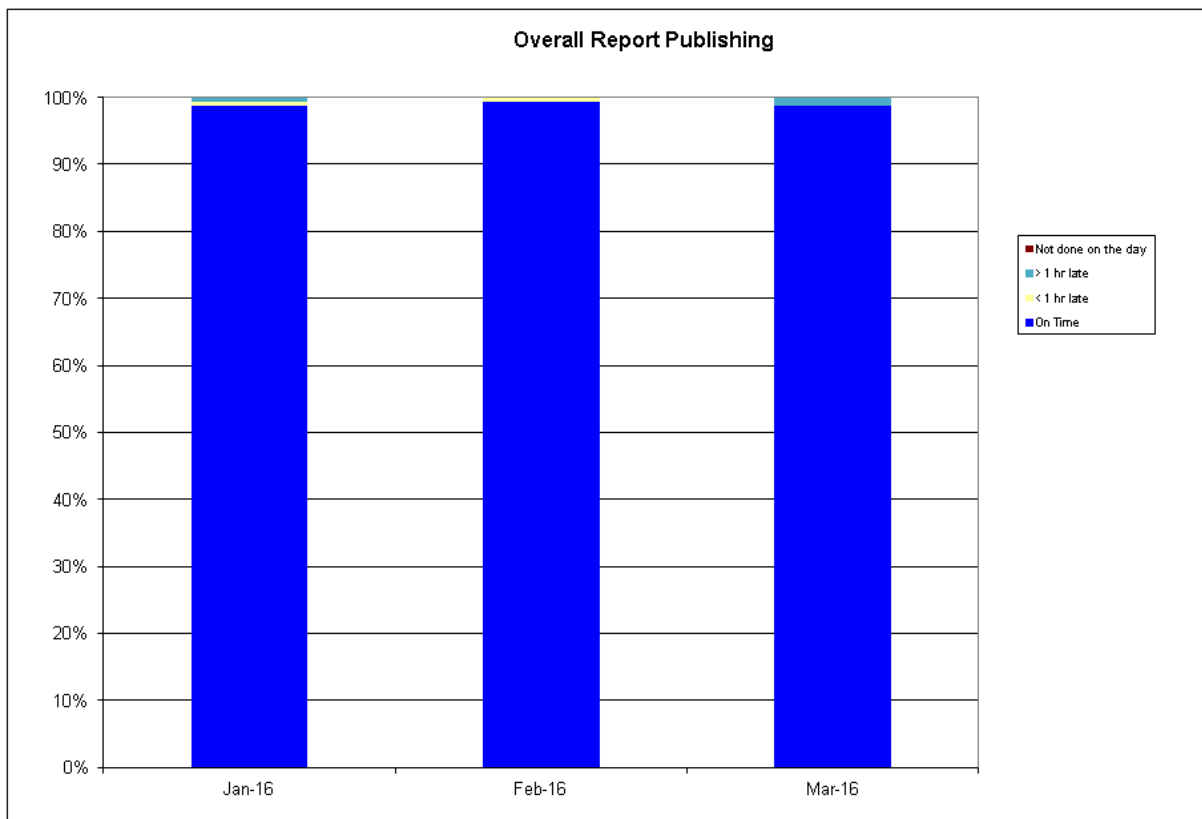


Figure 3 - Overall Daily Report Publication

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

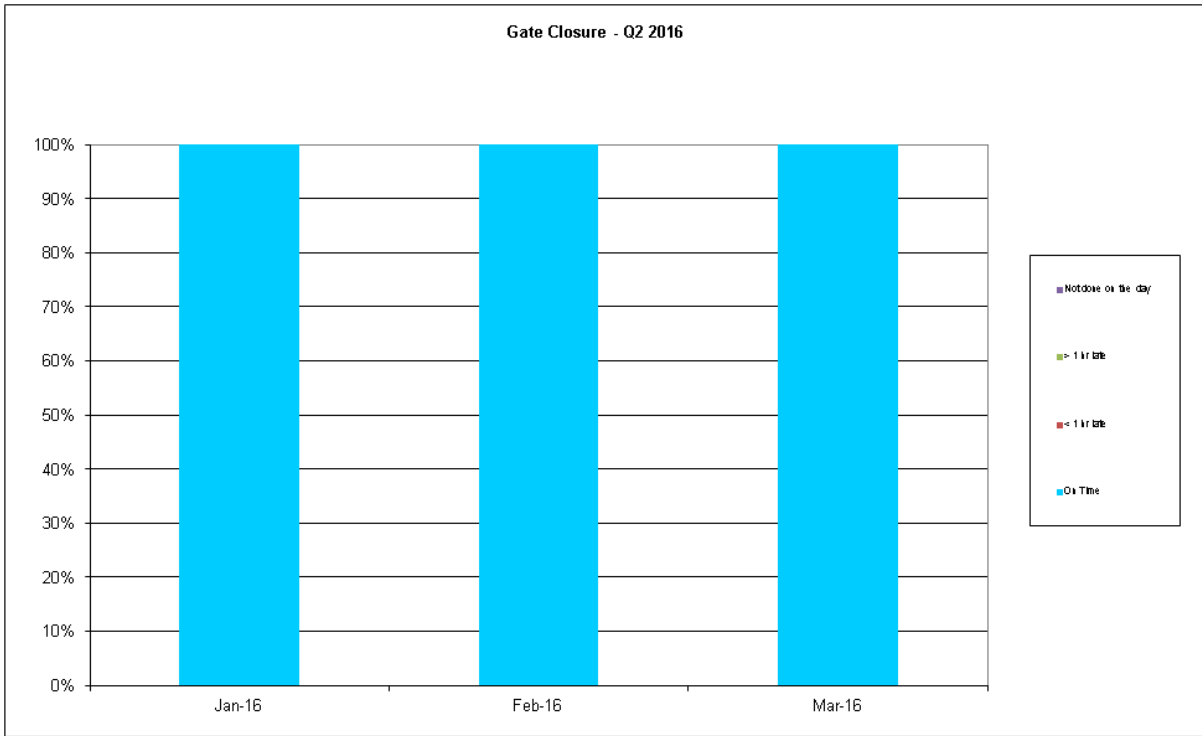


Figure 4 - Gate Closure performance

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.

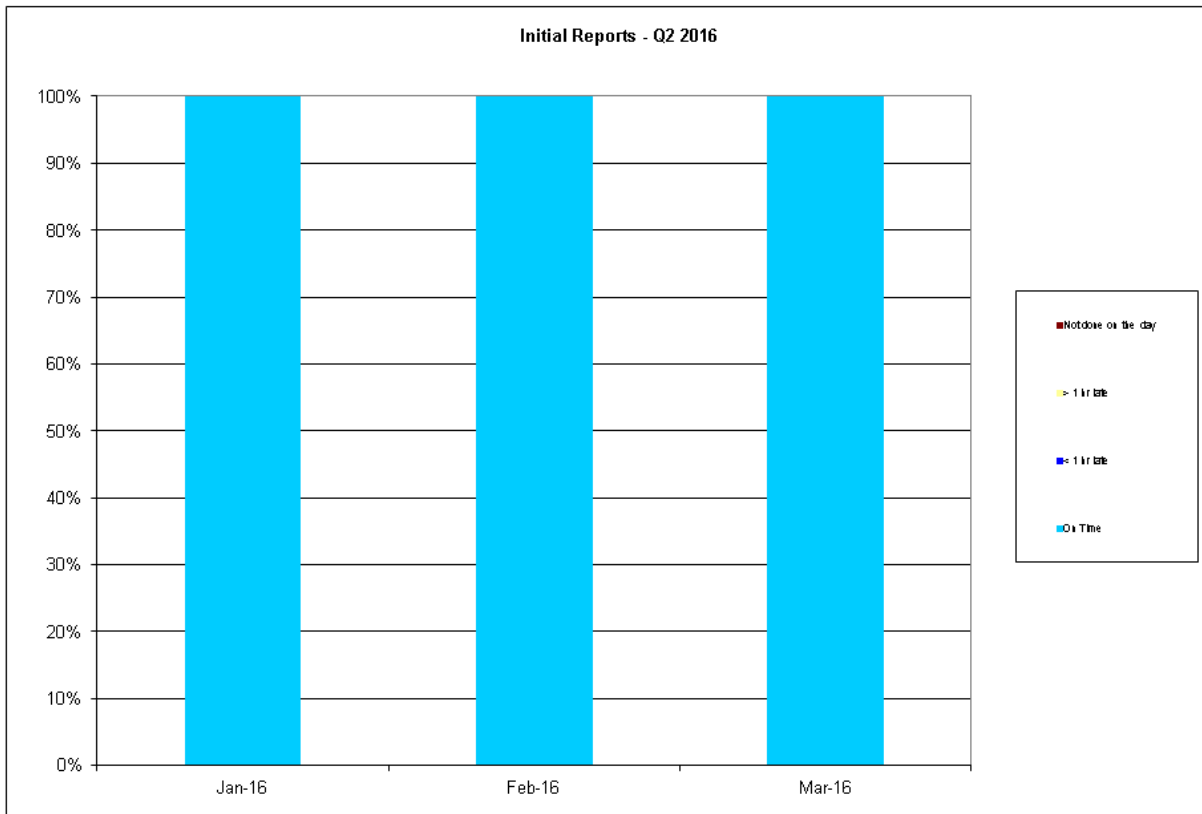


Figure 5 - Initial report performance

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

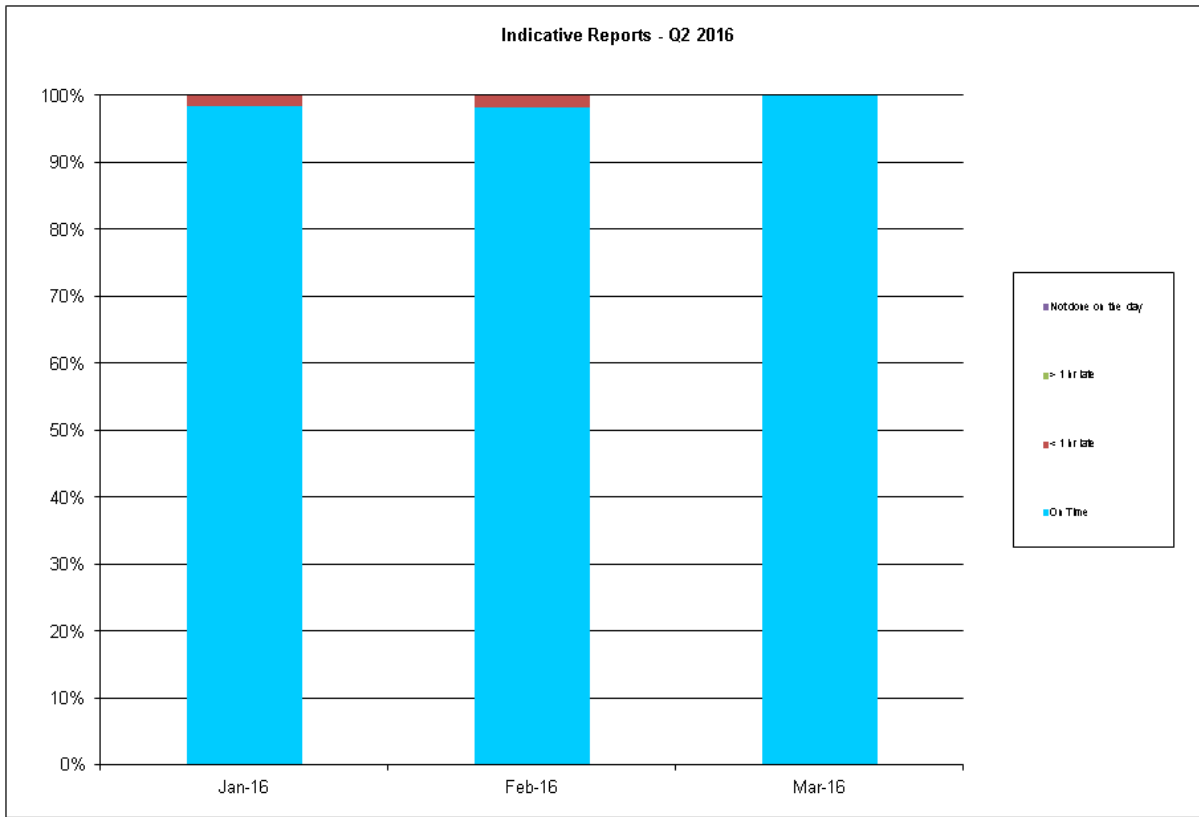
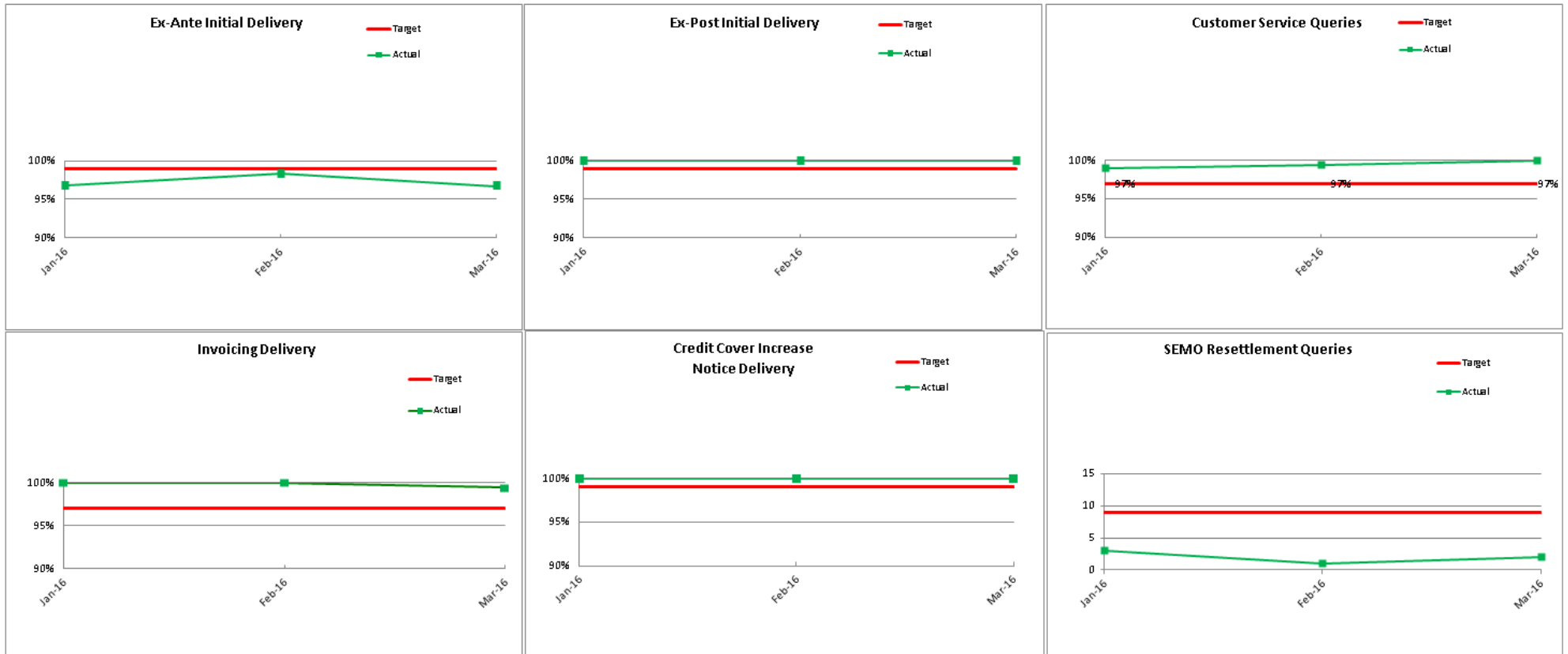


Figure 6 - Indicative report performance

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 Re-prices

There was no Ad hoc re-prices required for Quarter 2.

Ad-hoc Re-settlement

There were two Ad hoc resettlement weeks in energy for Week 40, 2015 and Week 05, 2015. There was one Ad hoc in January for October Capacity 2015.

3.4 Administration of Credit Cover

The SEM has been fully collateralised according to the Trading and Settlement Code provisions during Q2, Jan 2016 – Mar 2016. However at times Posted Credit Cover may be less than the calculated requirement leading to Participants being issued with Credit Cover Increase Notices (CCINs). All CCINs were fully honoured within Q2. For more information on Credit Cover in the SEM, please refer to [section 6](#).

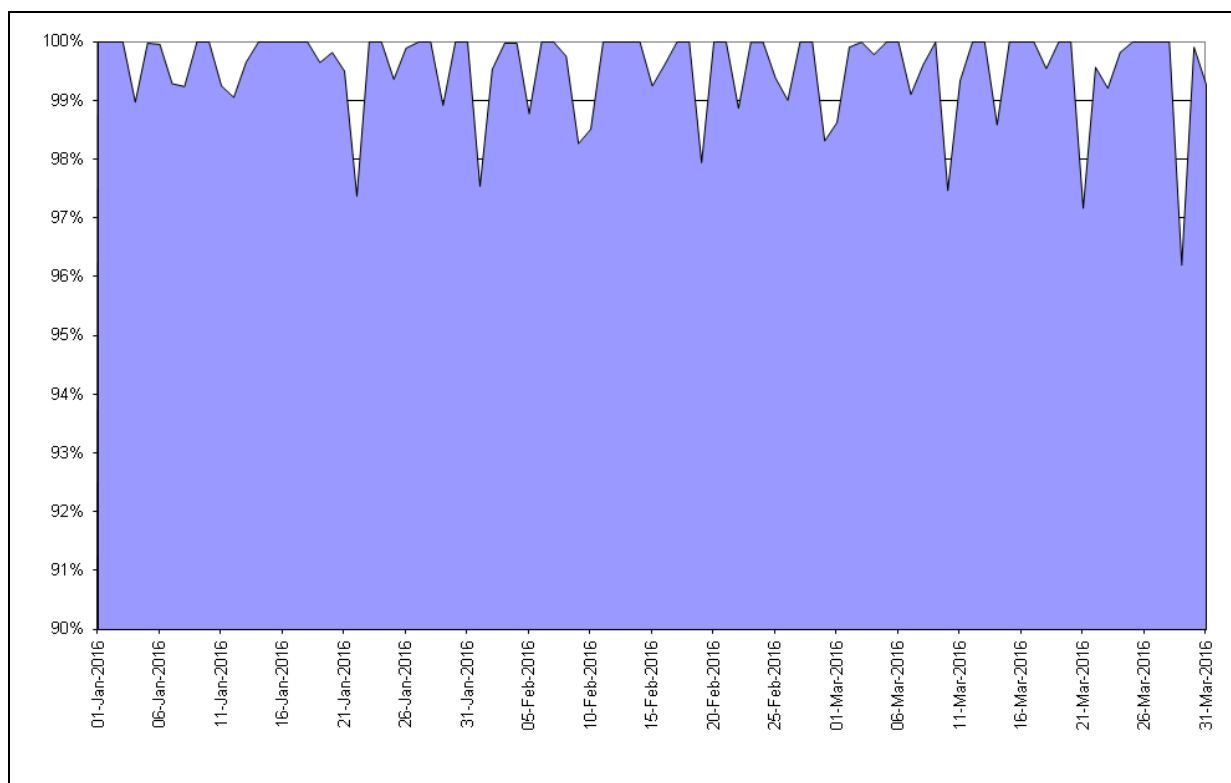


Figure 7 Market Collateralisation in Accordance with Trading and Settlement Code Requirements

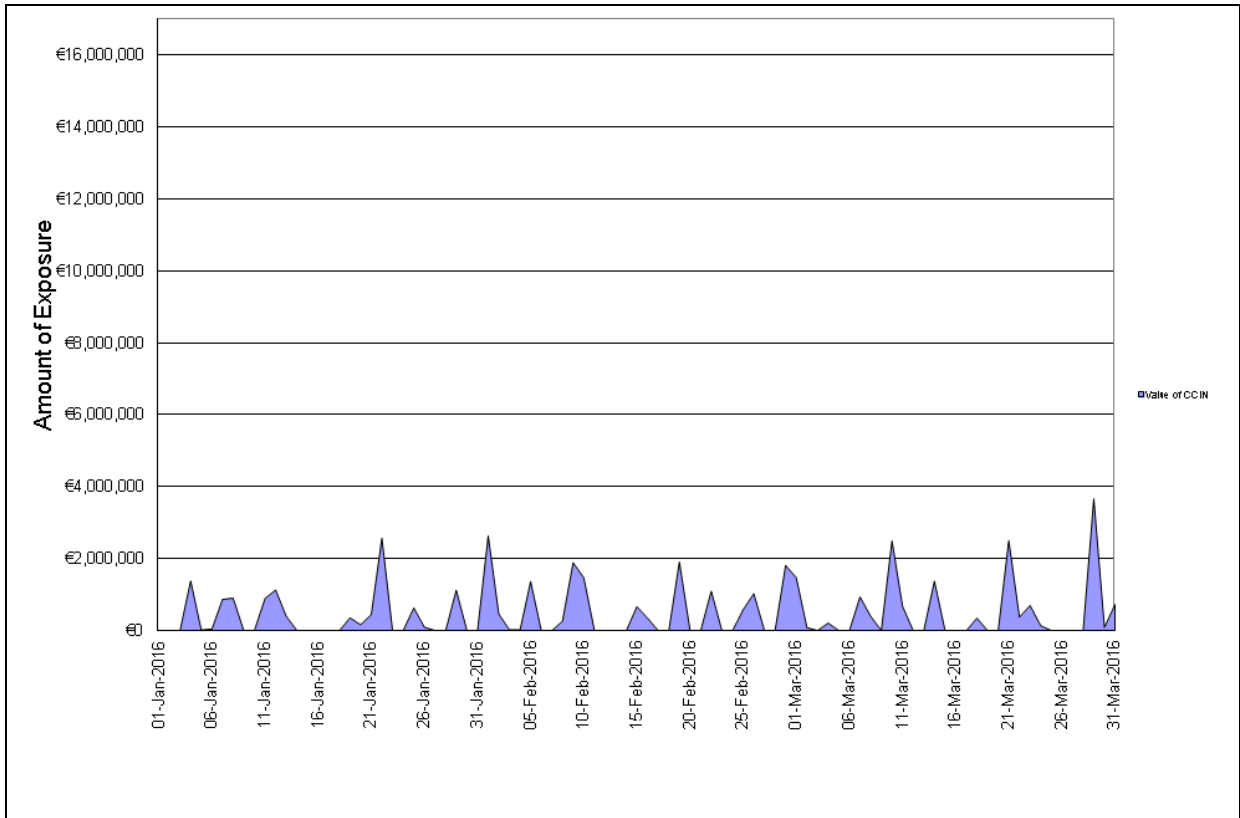


Figure 8 Credit Cover Increase Notice Total Amounts per Day

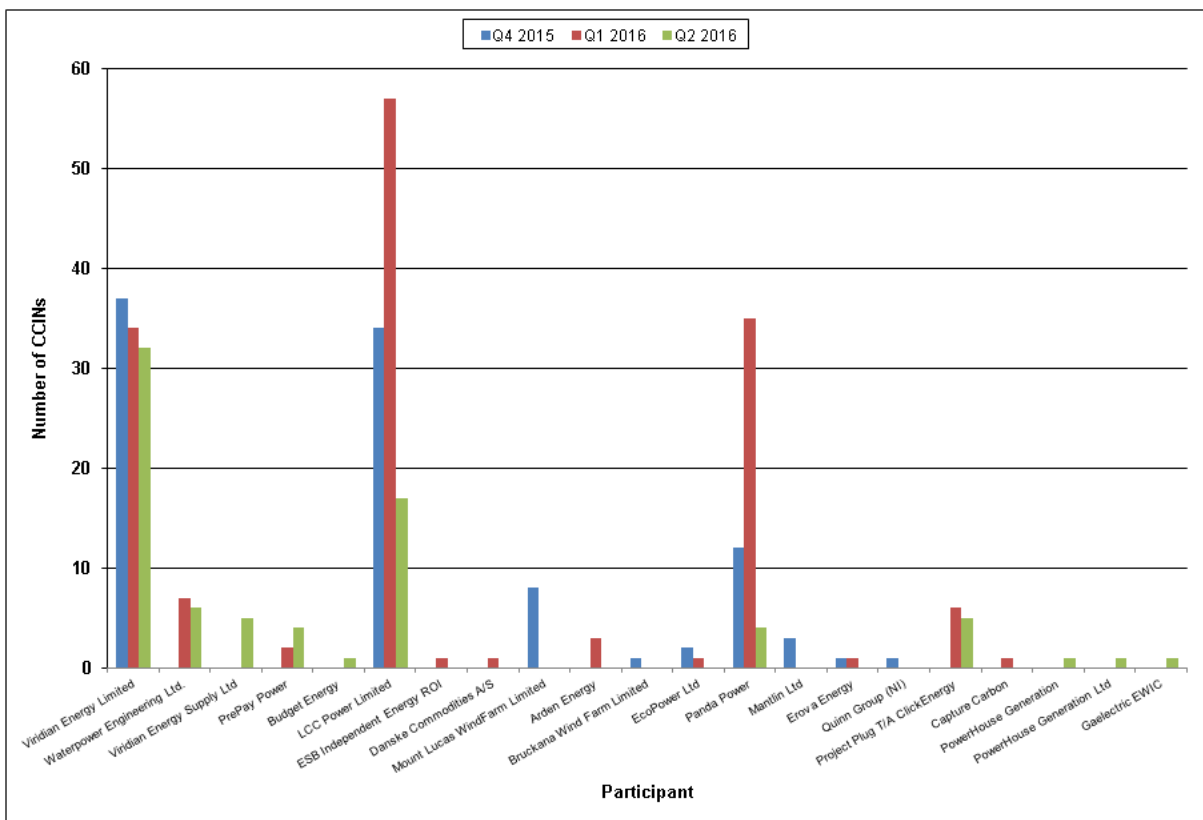


Figure 9 –Number of Credit Cover Increase Notices Issued

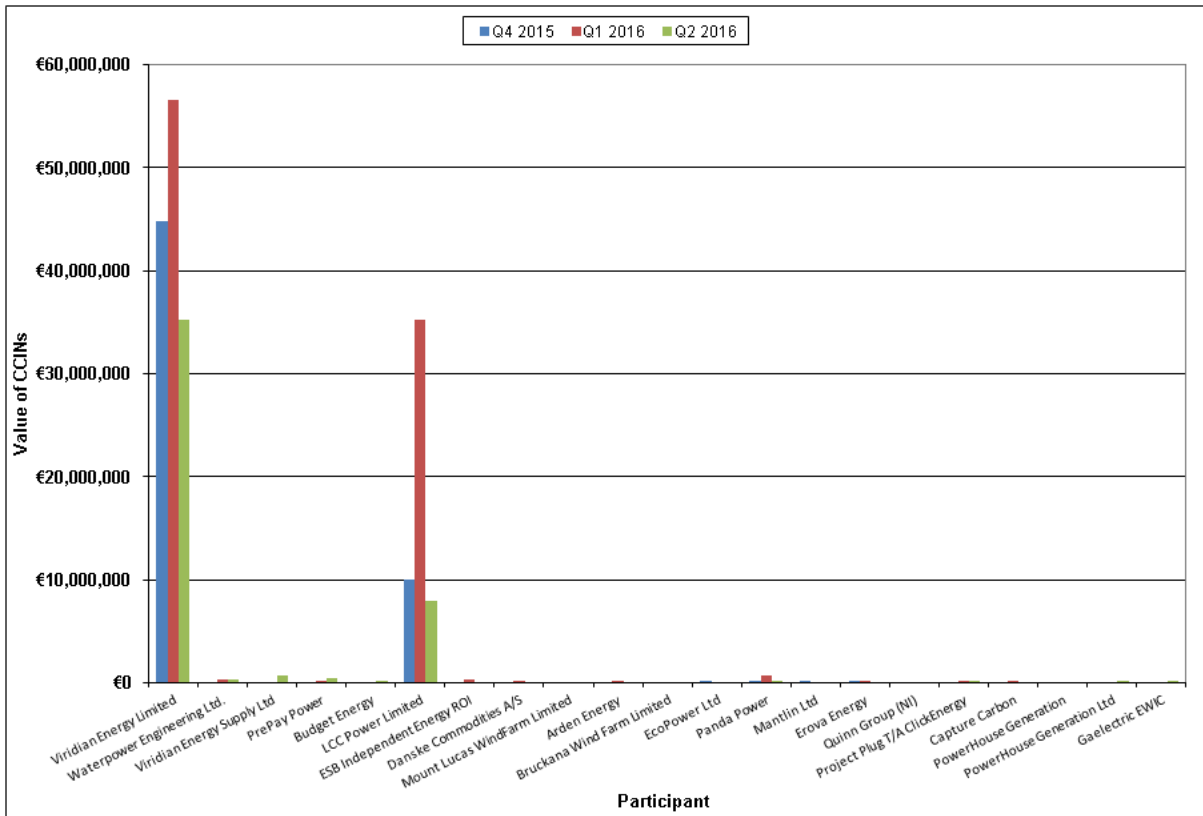


Figure 10 - Value of Credit Cover Increase Notices

The frequency of CCINs decreased in Q2 2016 compared to Q1 2016 (77 compared to 149 last quarter) with the greatest number of CCINs issued in January 2016 (31).

These CCINs were distributed across 11 Participants this quarter compared to 17 last quarters. The total value of the CCINs issued was just over €44 million compared to €87 million last quarter.

3.5 Breaches of the Trading and Settlement Code

There were 52 breaches of the Trading & Settlement Code in Q2 2016 that SEMO is aware of. This is up 4 from 48 in Q1 2016.

SEMO was responsible for a total of 10 breaches in this quarter; this is the same number of 10 in Q1 2016.

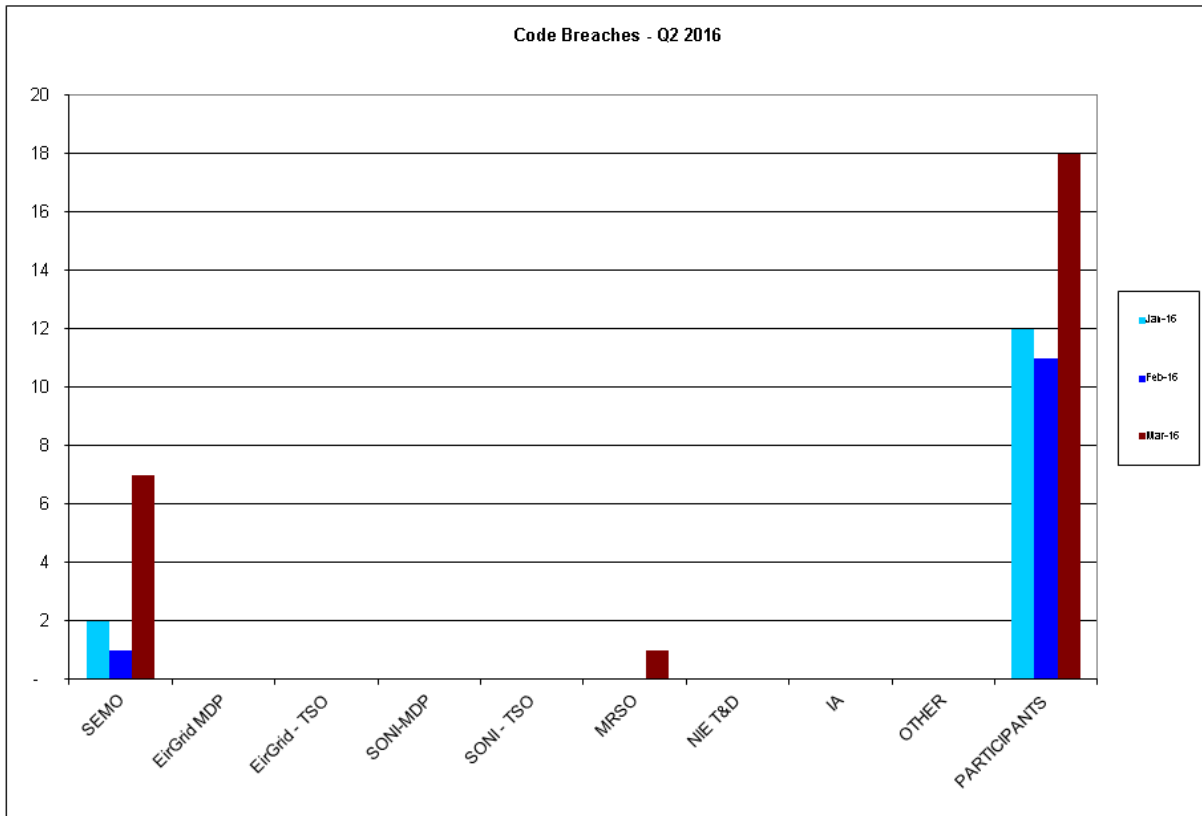


Figure 11 - Number of Trading and Settlement Code Breaches

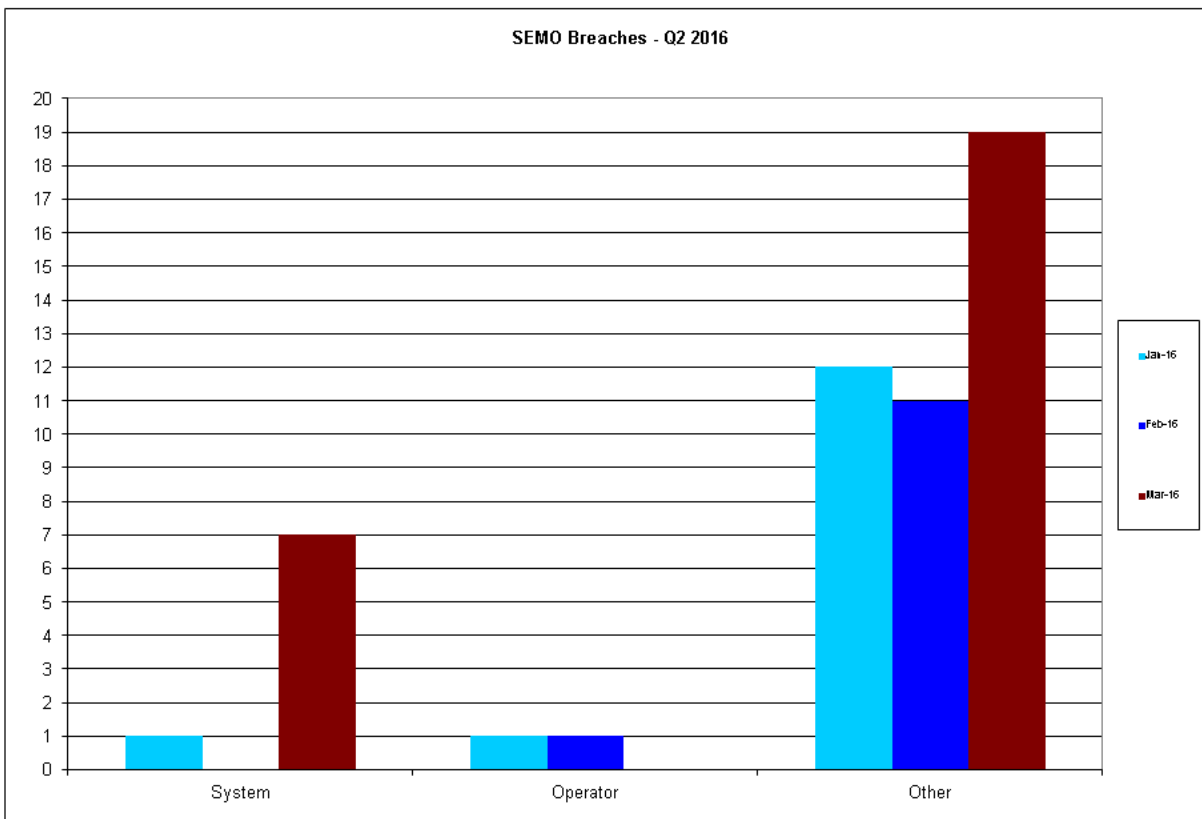


Figure 12 - Source of SEMO Trading and Settlement Code Breaches

4 Regulatory Affairs

No updates for the Regulatory Affairs sections on the period covered in this report.

5 Provide Information

The Trading and Settlement Code obligates SEMO to answer Data Queries and Settlement Queries within a given time line. Since 1st 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 two Disputes raised and resolved within 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 31/03/2016.

	Received	Resolved within the period	Not Resolved	Resolved in the period	Resolution Time (Working Days)
General	559	527	32	540	1.15
Urgent	6	6	0	6	0.44
Settlement	18	18	0	22	2.51
Dispute	2	2	0	2	10.70
Data Query	0	0	0	0	0
Total/Average	585	553	32	570	3.44

Table 2: Query Statistics for Quarter

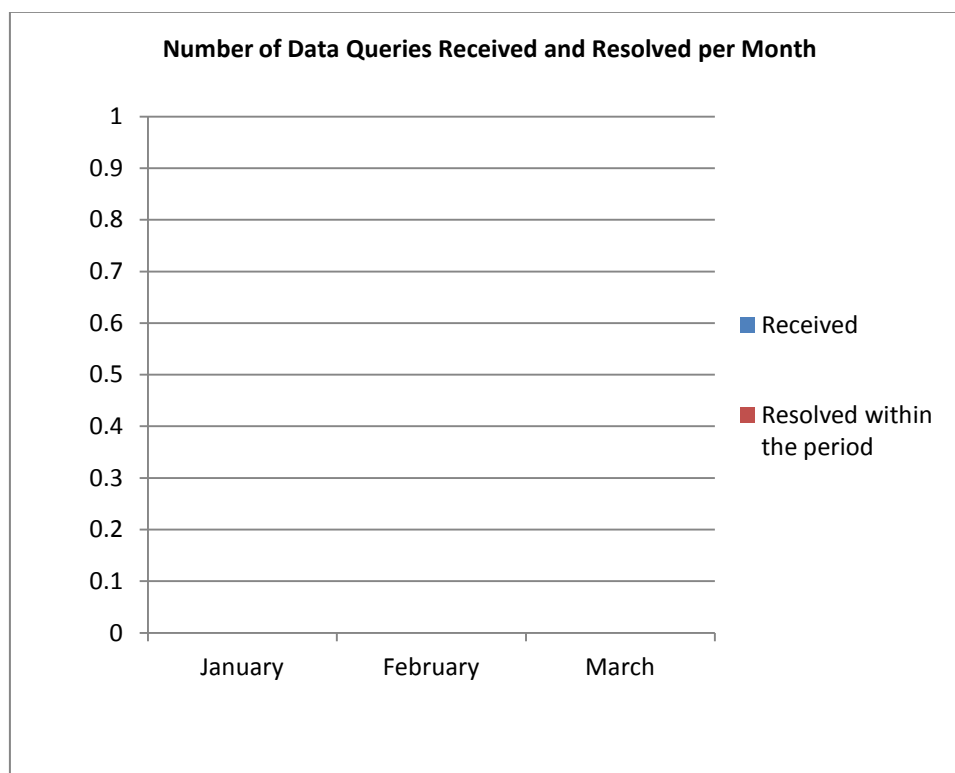


Figure 13 - Number of Data Queries submitted and Resolved per month

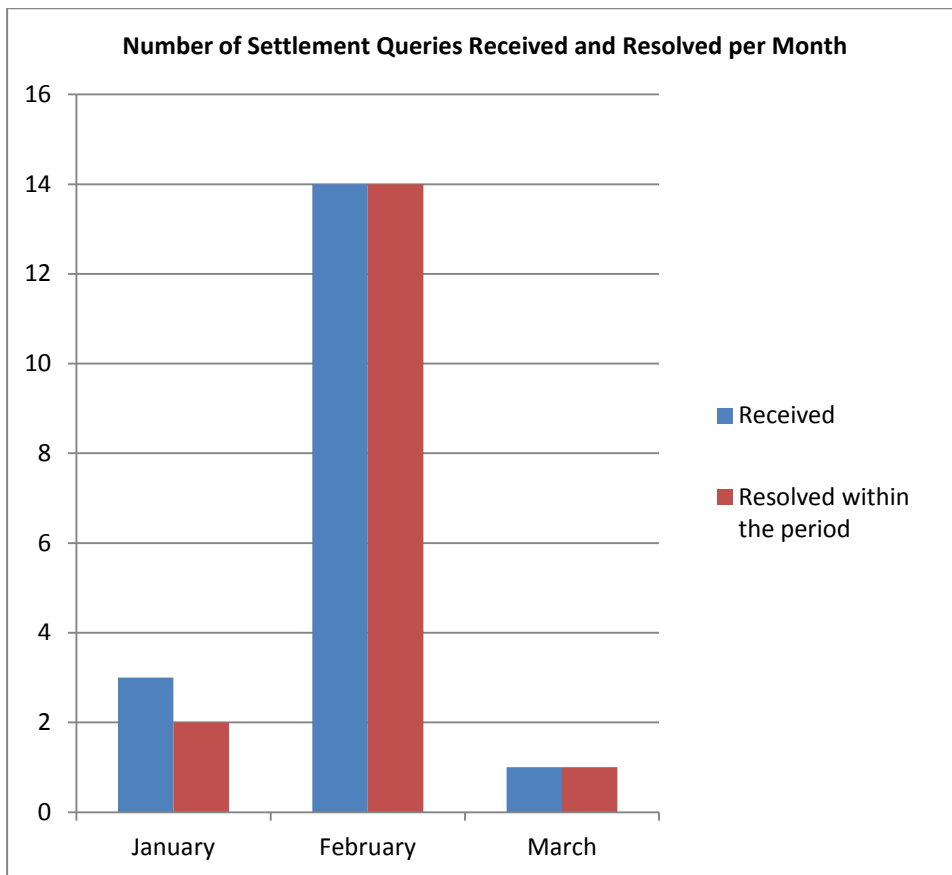


Figure 14 - Number of Settlement Queries submitted and resolved per month

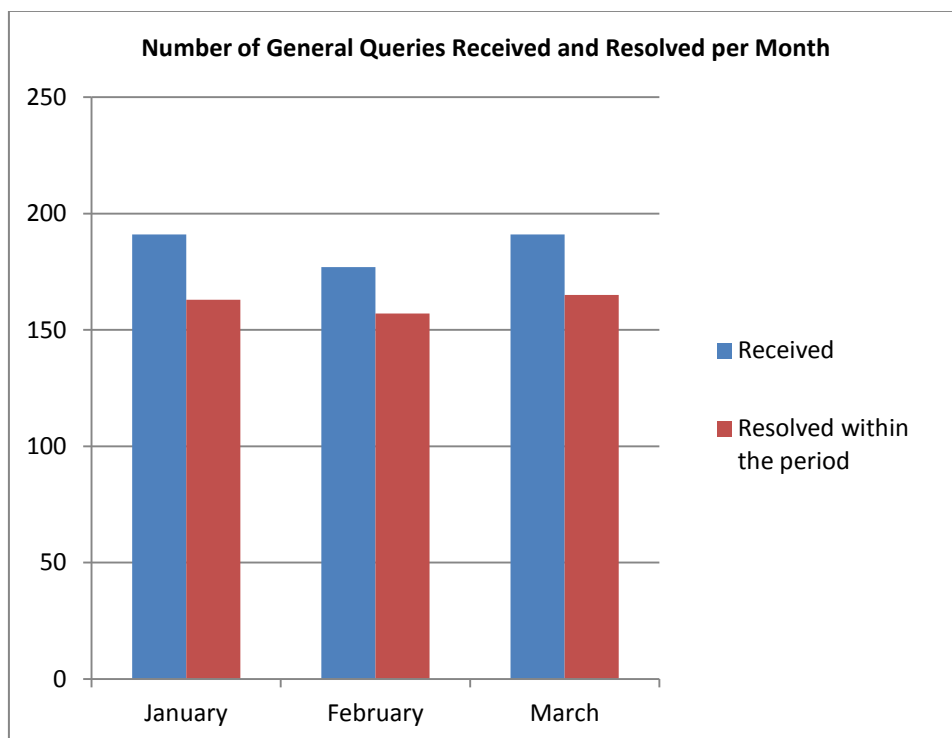


Figure 15 - Number of General Queries submitted and resolved per month

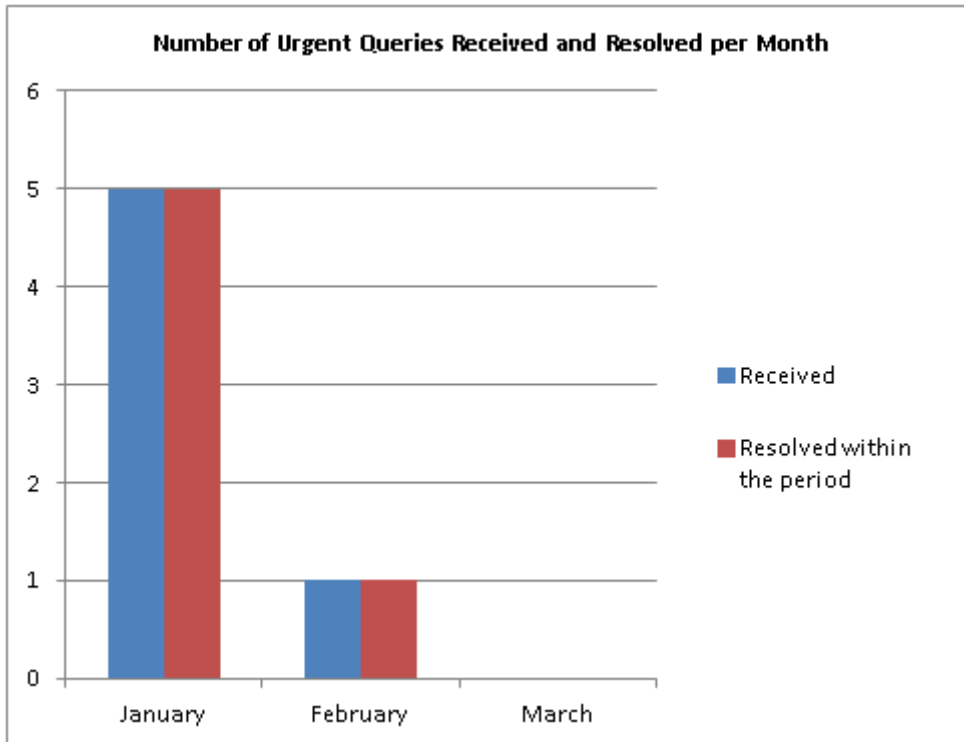


Figure 16 - Number of Urgent Queries submitted and resolved per month

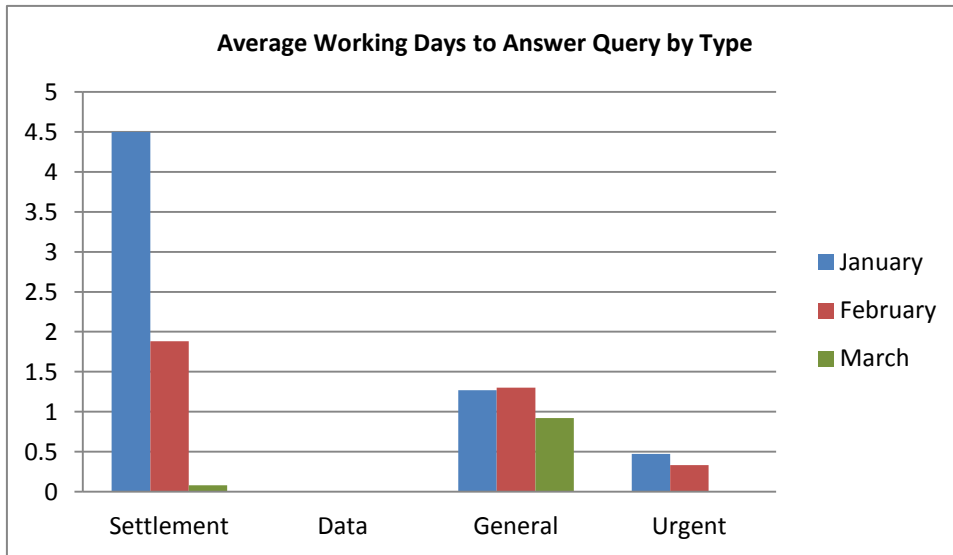


Figure 17 - Average Working Days to answer query type per month

5.1 Facilitate and Educate Participants to accede to the Code

No new Parties have acceded to the Code in this period:

5.2 Facilitate Interaction with Customers Stakeholder Events

SEMO organised individual stakeholder information meetings as requested during registration activities.

SEMO presented to Ho Chi Minh City Power Corporation during their visit to EirGrid.

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 19% of the time in Q2 2016. This showed a decrease of 5% compared against Q1 2016. This figure is lower than the long term average of 21% under-estimation since market start. It is equal to the values seen in the same quarter last year.
- The value of each occurrences of under-estimation has decreased from the previous quarter from 0.55% to 0.19%, lower than the long term average of 0.81%.
- In Q2 2016, where the RCC Coverage is not sufficient, the market is under-estimated by an average of approximately €243,000 on a total market exposure of just over €181million. The long term average equates to an under-estimation of approximately €1.9 million on a total average market exposure of €228 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 2016 period has seen the RCC under-estimated on 19% of credit cover calculations. There is no increase or decrease in value from the same period last year and a decrease of 5% from previous quarter reported. The average SMP price and the demand both decreased compared to the previous quarter.

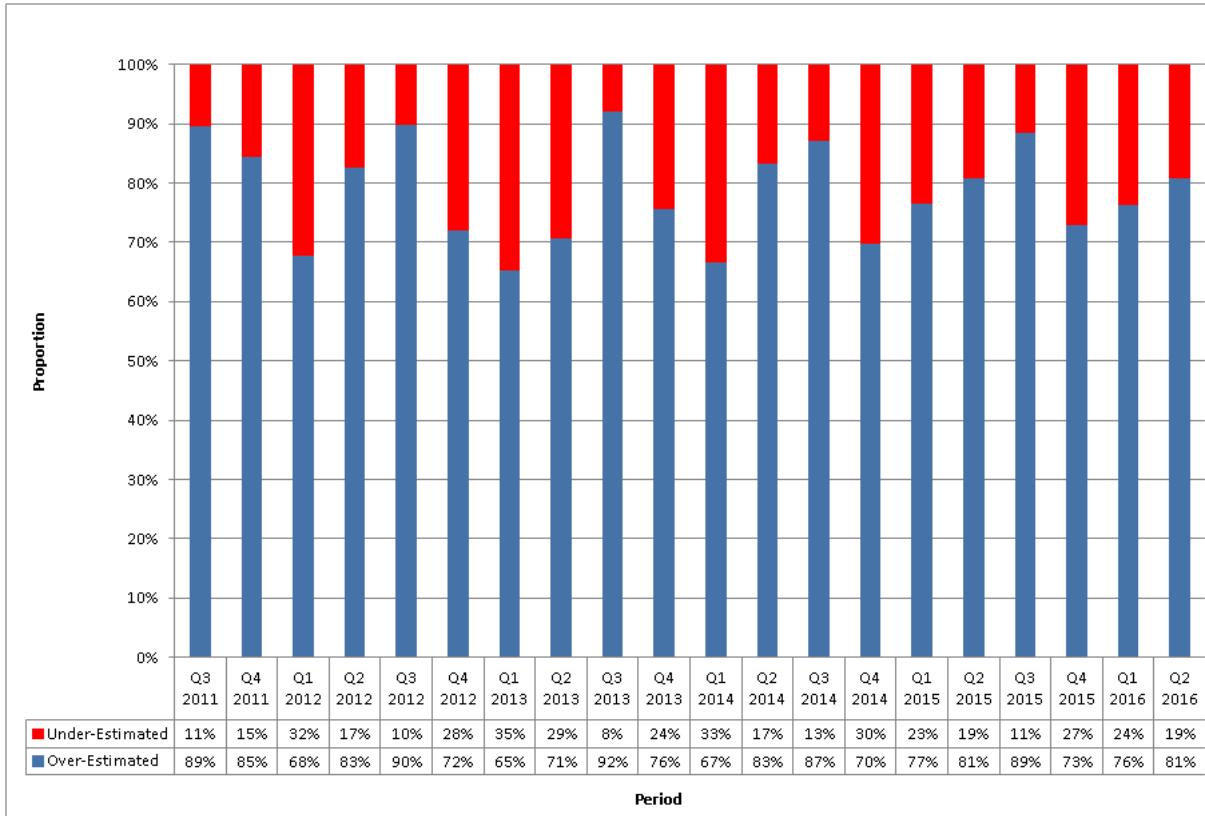


Figure 17- Occurrences of Under or Over Estimation

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 2016, the daily time weighted average was €38, which is lower than in Q1 2016 (€46). 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 Sept 2015. From this time on, we have seen SMP slightly decreasing in average value; however, there has been less deviation with higher peak prices being seen a few times in Q2 2016.

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 4% 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 2016.

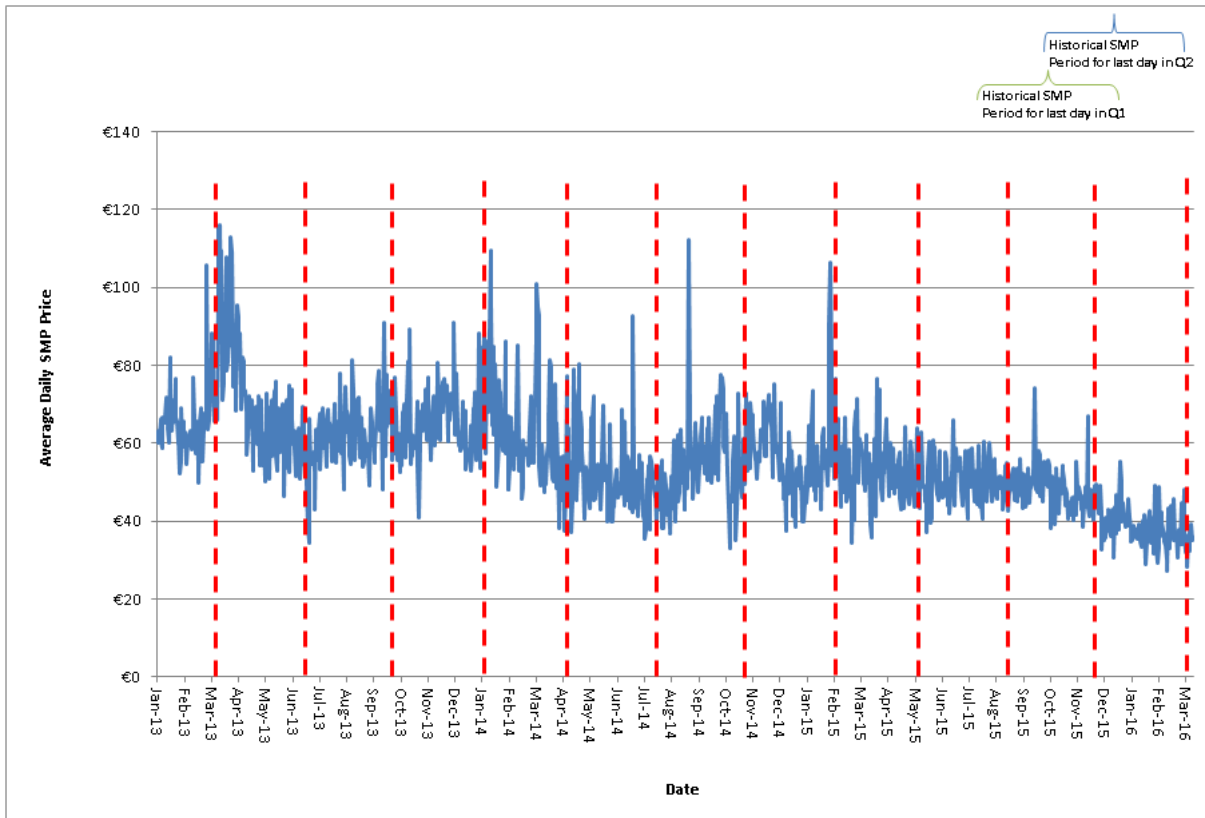


Figure 18- Trend in Average Daily SMP

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.

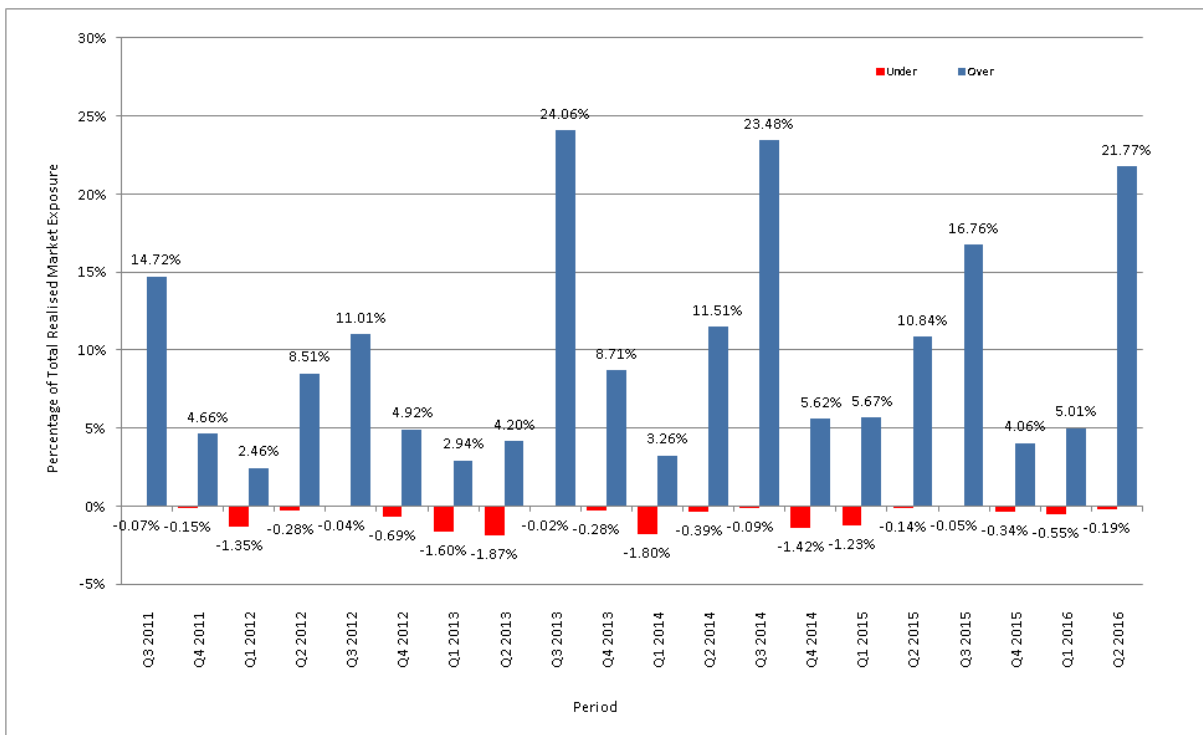


Figure 19 – Extent of Under or Over Estimation when Under or Over Estimation Occurs

The majority of under-estimation, since the start of the market, is below 1%. Q2 2016 is lower with a figure of 0.19%.

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 21.77% compared to 5.03% in the previous quarter. This is higher than the long term average of 8.89%.

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 2016, from an average exposure of the market of just over €228 million, the market has had an average RCC under-estimation of just over €1.9million and an average RCC over-estimation of €28million on any given day.

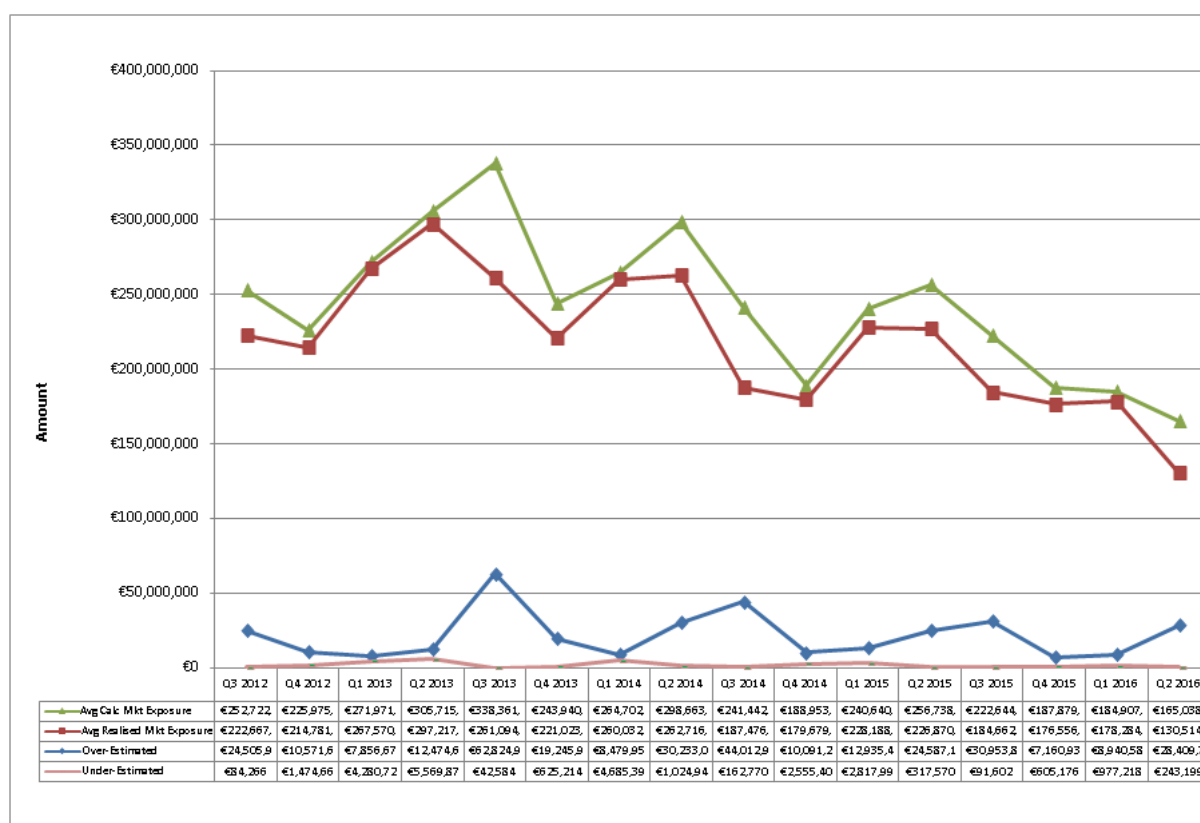


Figure 20 – Monetary Exposure due to Accuracy of Credit Cover Calculations

6.6 All Quarters Summary

For the SEM as a whole, from market start to the end of Sept 2015, RCC has been under-estimated 21% 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 €1.9million out of a total average realised market exposure of € 228million.

With regard to over-estimation, the SEM as a whole has been over-estimated 79% of the time with the over-estimation as a percentage of the total realised market exposure being on average 9.22%, or €21million out of a total average realised market exposure of €228million.

7 Appendix A: Required Credit Cover Coverage

a) *Required Credit Cover Coverage Modeling 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 12th April 2016. The value was 0.8073 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 2016
- 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 Mar 2016).
 - 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 2015 financial year, is typically 81% of total market exposure, while Capacity is 19% of total market exposure. This is based on the figures for the period Oct 2014 to Sep 2015, of operation of the market, in which the Energy market was approximately €2billion and a Capacity market of approximately €573 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 1st 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).