



# **Market Operator Monthly Report**

## **December 2016**

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### Executive Summary

This Single Electricity Market Operator's (SEMO) report covers the month of operation of December 2016 and is published in accordance with the Single Electricity Market (SEM) Committee decision and Clause 2.144 of the Trading and Settlement Code.

During the month of December 2016, Settlements had zero late publications as per the Trading and Settlement code.

144 general queries were received in December 2016. During the same period 153 general queries were resolved.

There were 13 defaults by Participants during December 2016. The largest of these was an Energy Week 48 2016 Initial invoice for £6,658.90 which was remedied the same day.

Formal queries continue to be answered well within the timelines stipulated in the Trading and Settlement Code.

**Monthly Statistics**

**Trading and Settlement Code Breaches**

Breaches of the Trading and Settlement Code were noted in the following areas.

Trading and Settlement Code Breaches			
Area		Major	Minor
Data Providers		-	-
Market Participants	Pricing & Scheduling	-	-
	Settlement	-	-
	Funds Transfer	13	-
	Credit Risk Management	15	-
SEMO	Pricing & Scheduling	-	-
	Settlement	-	-
	Funds Transfer	-	-
	Credit Risk Management	-	-
	Other	-	-
<b>Total</b>		<b>28</b>	-

**Table 1 – Trading and Settlement Code Breaches**

Further details of each of the Trading and Settlement code breaches noted above are set out in Appendix A

Key:

- Major Breach - late publishing of invoices, default notices issued for non-payment or similar.
- Minor Breach - deadlines not met, but no financial implication to Participants. This includes late posting of pricing and settlement runs.

### ***Joining and Terminating Parties and Units***

No parties joined the Market in December 2016.

There were no terminating parties in December 2016.

The following units went effective in the Market in December 2016:

- PT\_500021 Airtricity Energy Supply NI Ltd Generation – GU\_501520 Ora More Windfarm
- PT\_400185 Dunman Energy Supply Limited – GU\_401950 Killaveenoge Windfarm
- PT\_400195 Gaelectric Sustainable Energy Supply 2 Ltd – SU\_400205 Gaelectric Sustainable Energy Supply 2
- PT\_400196 Budget Energy Limited (ROI) – SU\_400206 Budget Energy Limited (ROI)

No units de-registered from the Market in December 2016.

### ***Suspension of Participants***

No Suspension Orders were issued by the Market Operator in December 2016.

### ***Licence revocation***

On the 18<sup>th</sup> of December 2016, the Utility Regulator revoked Open Electric's licence to supply electricity to consumers in Northern Ireland and directed that any demand be met by a Supplier of Last Resort. In line with this decision, all of Open Electric's customers were transferred to Power NI, as the nominated Supplier of Last Resort under the contingency arrangements established by the Utility Regulator, Power NI and NIE Networks. Further information is available [here](#).

In January 2017, SEMO will liaise with the Utility Regulator to progress the termination of PT\_500082 Open Electric Limited – SU\_500081 Open Electric.

Financial Statistics

Total Charges for Each Currency

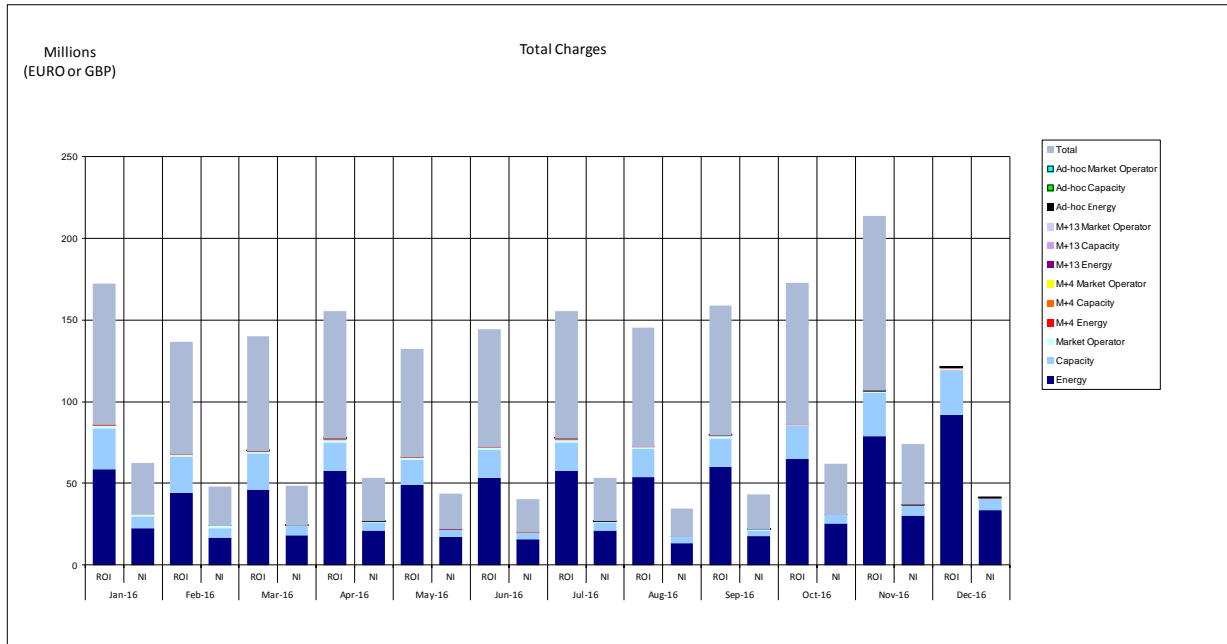


Figure 1 - Total Charges for Each Currency

Market	Dec 2016	
	ROI	NI
Energy	€91,892,863	£33,787,693
Capacity	€27,754,183	£6,963,653
Market Operator	€986,254	£260,894
M+4 Energy	€431,620	£238,762
M+4 Capacity	€110,272	£53,465
M+4 Market Operator	€6,056	£2,659
M+13 Energy	€98,070	£27,575
M+13 Capacity	€32,223	£12,837
M+13 Market Operator	€1,076	£304
Ad-hoc Energy	€505,300	£775
Ad-hoc Capacity	€0	£0
Ad-hoc Market Operator	€0	£0
<b>Total</b>	<b>€121,817,917</b>	<b>£41,348,616</b>

Table 2 - Total Charges for Each Currency

Notes relating to Table 2 and 3:

- Month of inclusion based on Invoice Date.
- Amounts are after application of Settlement Reallocations.
- Previous month's data is available in [Appendix G](#).

## Total Payments for Each Currency

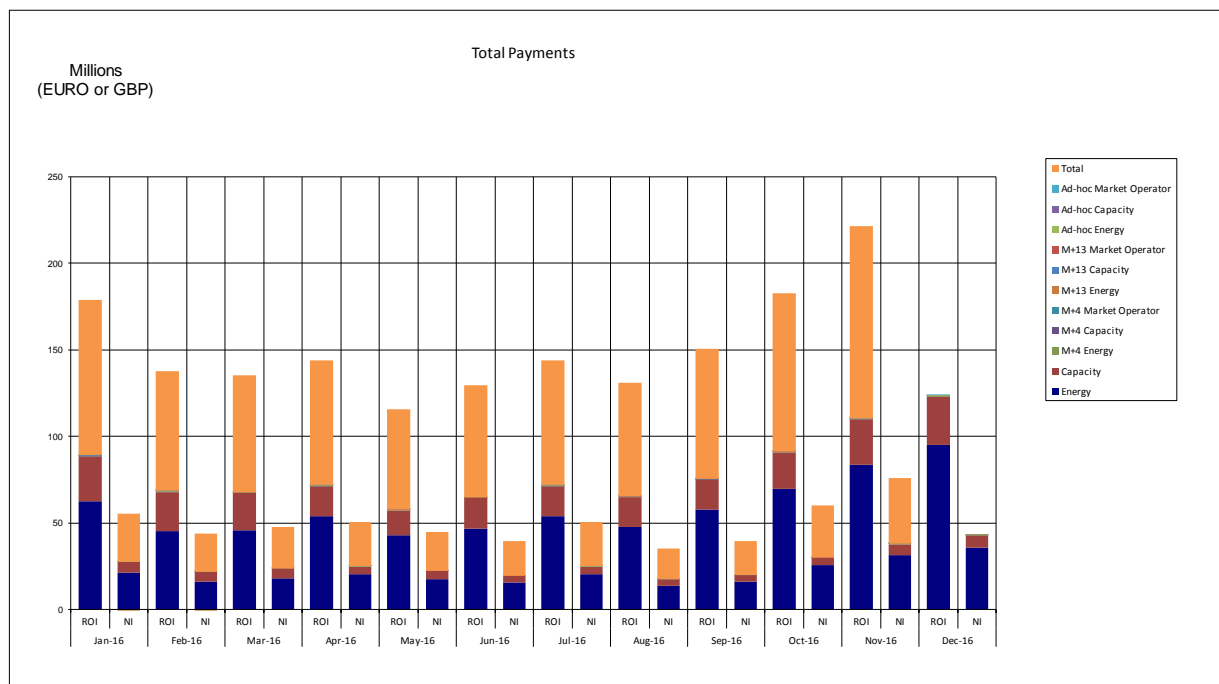


Figure 2 - Total Payments for Each Currency

Market	Dec 2016	
	ROI	NI
Energy	€95,266,582	£35,841,750
Capacity	€27,572,460	£6,989,191
M+4 Energy	€447,482	£197,538
M+4 Capacity	€114,737	£49,302
M+4 Market Operator	€6,025	£2,219
M+13 Energy	€97,017	£25,889
M+13 Capacity	€32,734	£12,310
M+13 Market Operator	€1,077	£304
Ad-hoc Energy	€496,715	£88
Ad-hoc Capacity	€0	£0
Ad-hoc Market Operator	€1,512	£0
<b>Total</b>	<b>€124,036,342</b>	<b>£43,118,591</b>

Table 3 - Total Payments for Each Currency

### Total Balancing Costs

Balancing Costs arise in the Energy and Capacity markets when the summed payments to the SEM from Participants in respect of their Supplier Units do not meet the summed payments to Participants from the SEM in respect of their Generator Units.



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Although, it is intended the Energy Payments and Energy Charges should be balanced through the mechanism of the Error Supplier Unit in each jurisdiction, because Energy Payments are made against Market Schedule Quantities while the Error Supplier Unit volumes are calculated against Metered Generation, the different application of Loss Factors means that there is frequently an imbalance between the Energy Payments and Energy Charges.

With regard to the Energy Settlement, the Balancing Costs have been calculated as follows for the entire month:

December 2016	
Imbalance (Energy Only)	-€3,080,290.45

Table 4 - Balancing Costs for Energy Settlement

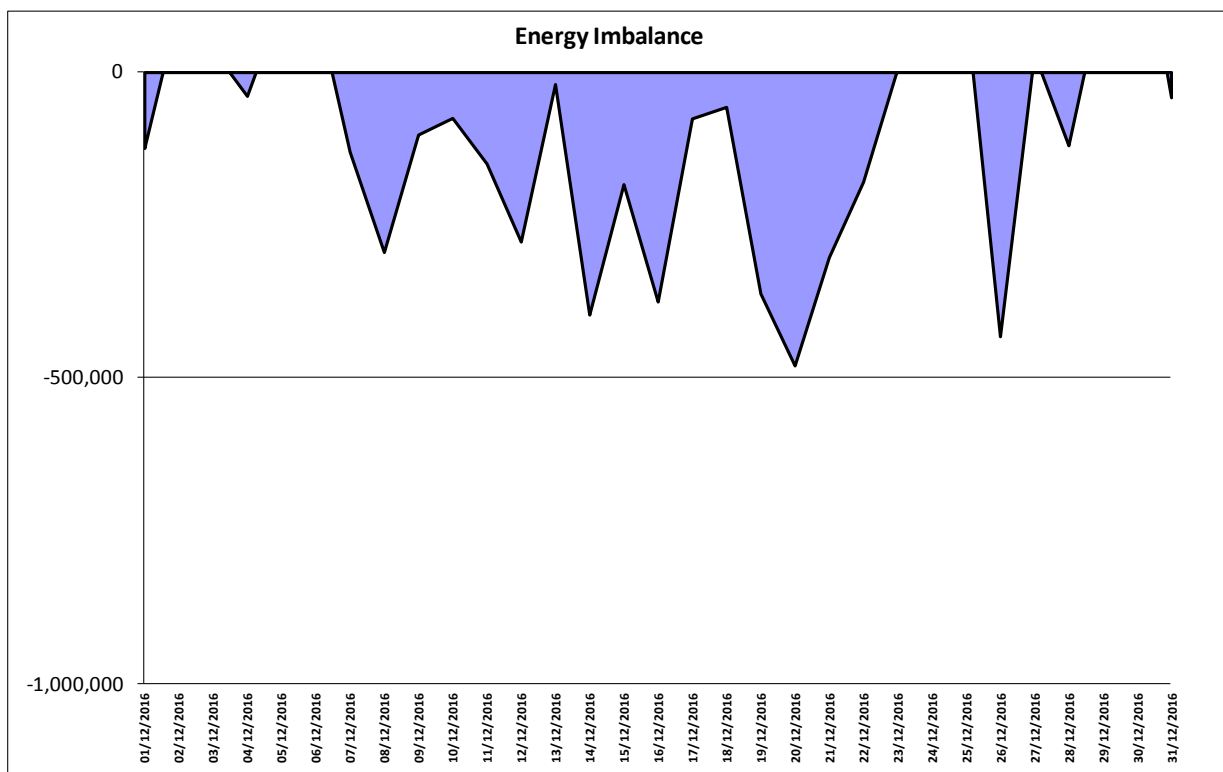


Figure 3 – Energy Imbalances

The full Balancing Cost of the SEM is determined by the summation of the daily payment amounts for Energy Imbalance, Constraint Payments, Uninstructed Imbalance Payments, and Imperfections Charges combined with the weekly Make Whole Payments and Testing Charges.

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Historical values for testing charges have been provided in [Appendix E](#) .

The figures for the full Balancing Cost of the SEM since the last Market Operator report are shown below, as well as the VAT Balancing Costs.

In tables 5 and 6 below:

- Positive values indicate Payments were greater than Charges.
- Negative values indicate Charges were greater than Payments.

Date Of Invoice	Week No	SEM Balancing Costs	VAT Balancing Costs
02/12/2016	47	€1,750,562.49	-€0
09/11/2016	48	€1,701,789.33	-€0
16/12/2016	49	€1,977,683.44	-€0
23/12/2016	50	€1,018,317.35	-€0
30/12/2016	51	€2,542,783.75	-€0

**Table 5 - Balancing Costs for Trading Payments and Charges**

SEM Balancing Costs are provided based on daily exchange rates, VAT Balancing Costs are based on the Invoicing day exchange rate. VAT Balancing costs exclude Currency Cost related VAT.

It is intended that the algorithms set out in the Trading and Settlement Code will lead to a balanced Capacity Market. However, rounding precisions within the systems may result in an imbalance being introduced into the equations. This imbalance may lead to funding requirements to ensure that all payments out are made as per the terms of the Trading and Settlement Code.

With regard to the Capacity Settlement, the Balancing Costs have been as follows:

December 2016	
Capacity Charges	-€52,171,463.89
Capacity Payments	€52,171,063.58
Balancing Costs	-400.31
VAT	€0

**Table 6 - Balancing Costs for Capacity Settlement**

## Market Operator Monthly Report

Historical figures, the current financial year full Balancing Costs for both Trading and Capacity are provided in [Appendix H](#). VAT Balancing costs exclude Currency Cost related VAT.

### Total Currency Costs

Currency Costs in the SEM are calculated with respect to the difference in Exchange Rates due to two components:

- 1) Invoice Currency Costs: - in respect of the difference between the Trading Day Exchange Rate (and Annual Capacity Exchange Rate in respect of Capacity Settlement) and the Exchange Rate on the Date of Invoice (being the date of issue of the Invoice) for Trading Payments and Charges.
- 2) Payment Period Currency Costs: - in respect of the difference between the Exchange Rates between the Date of Invoice and the Date of Payment.

Although the Trading and Settlement Code uses the term Currency Cost, the currency differences may end up as a benefit or a cost to the Participant depending on how the Exchange Rate fluctuates between the Billing Period, Invoice Date and Payment Date. In the table below, where this value is positive this means there was an overall benefit to Participants, negative values mean there was an overall cost to Participants resulting from trading in two currencies. Figures are shown in Sterling (£).

Last Date Of Billing Period	Date Of Invoice	Week No	Currency Costs For Energy Settlement (Invoice and Payment)	Currency Cost Adjustment for Inter-jurisdictional SRAs	Total Currency Cost
26/11/2016	02/12/2016	47	-£73,336.38	-£6,790.00	-£80,126.38
03/12/2016	09/12/2016	48	-£39,063.48	-£400.00	-£39,463.48
10/12/2016	16/12/2016	49	-£23,529.40	£0	-£23,529.40
17/12/2016	23/12/2016	50	-£42,987.68	£2,100.00	-£40,887.68
24/12/2016	30/12/2016	51	-£2,784.68	£1,860.00	-£924.68

Table 7 - Total Currency Costs for Trading Payments and Charges

The Total Currency Cost figures detailed above show the Currency Cost for each Billing Period including Invoice Currency Costs, Payment Period Currency Costs, and Inter-jurisdictional SRA Currency Costs.

Over the period of this report Currency Costs for each week represented a benefit to Participants of up to -£924.68 and a cost of -£80,126.38. Whether Currency Costs are a cost or benefit to Participants is directly related to whether the currency is rising or falling between the billing period, invoice date and payment dates.

Settlement Reallocation Agreements between the two currency zones continue to present volatility in the Currency Costs that appear in the Energy market each week. The value of these adjustments is detailed separately above in each Billing Period.

The Currency Costs, for the current financial year, with respect to Initial Capacity Settlement are set out below. Figures are shown in Sterling (£).

## Market Operator Monthly Report

Date Of Invoice	Capacity Month	Currency Costs For Capacity Settlement
11/01/2017	December 2016	£96,518.15

**Table 8 - Total Currency Costs for Capacity Payments and Charges**

### Cumulative Imperfections Costs Vs Budget

The value of Cumulative Imperfections Costs Vs Budget is calculated as the sum of Total Constraint Payments, Total Uninstructed Imbalance Payments, Total Testing Charges and Total Make Whole Payments, as compared against the Total Imperfections Charges, being the weekly budget for these Imperfections Costs.

These values have been collected across the months since the start of the new financial year, 1st October 2016. The values expressed in Euros are as follows.

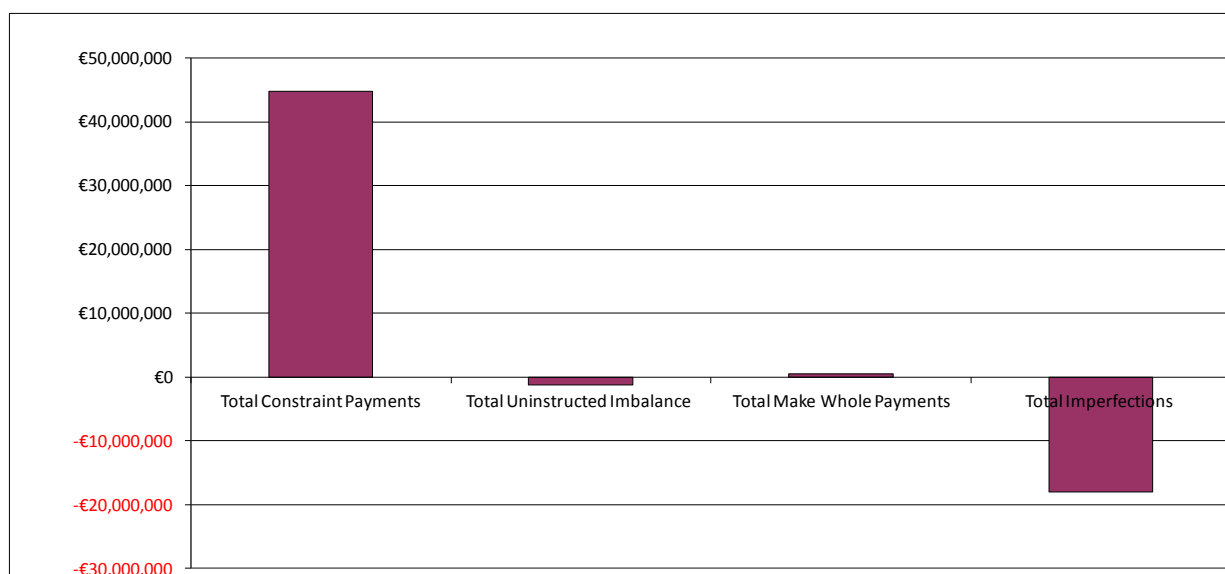
This table makes use of the values taken from the Initial Settlement Run of Trading payments and charges.

Total Constraint Payments	Total Uninstructed Imbalance	Total Make Whole Payments	Total Imperfections
€44,803,045.26	-€1,175,374.71	€483,271.81	-€18,050,955.03

**Table 9 – Cumulative Imperfections Costs Vs Budget**

Note: The Total Constraints Payment figure above has been updated to contain Interconnector Unit Gate variables.

This is demonstrated in the figure below.



**Figure 4 - Cumulative Imperfections Costs Vs Budget**

## Market Operator Monthly Report

The daily and weekly data that comprised these values is shown in [Appendix E](#).

### Financial Changes between Initial Settlement and Subsequent Reruns

The following graphs provide a breakdown of resettlement amounts for the M+4 resettlement period of August 2016 and M+13 resettlement period of November 2015 for Energy and Capacity.

#### 3.1.1 Energy Market

Note: - For Figure 6, 8, 9, net values are shown.

- Positive amounts indicate net additional payments by Participants (Charges).
- Negative amounts indicate net additional payment to be made to Participants (Payments).

The reverse is true for Figure 7 & 10

#### M+4 Resettlement

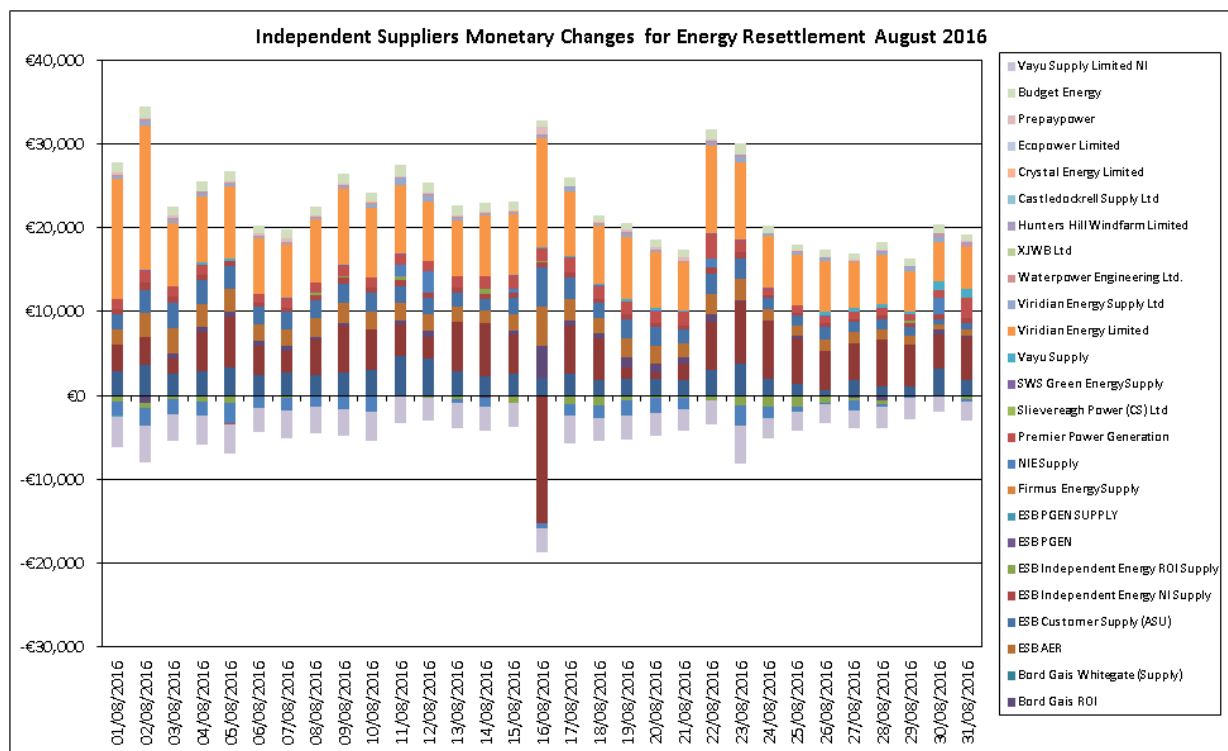


Figure 5 – Independent Suppliers Monetary Changes for Energy Resettlement – August 2016

The above variances relates purely to rounding for Participants between Initial and M+4 Resettlement.

# Market Operator Monthly Report

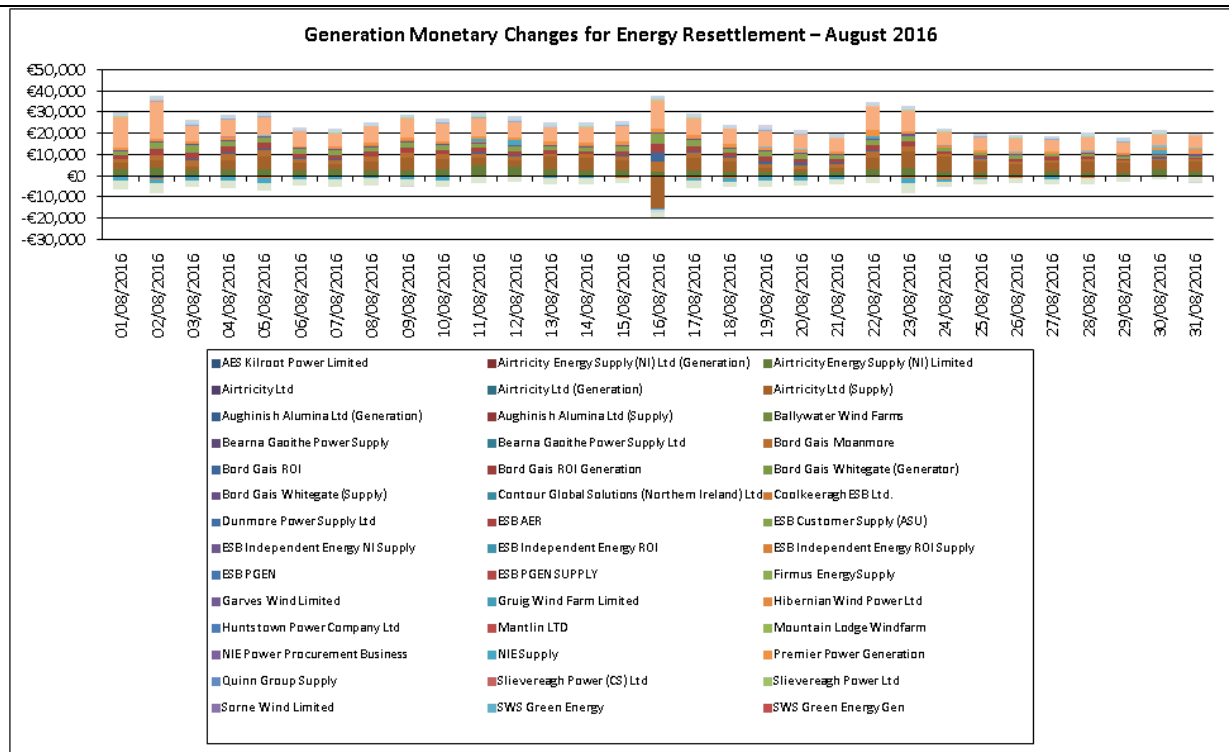


Figure 6 – Generation Monetary Changes for Energy Resettlement – August 2016

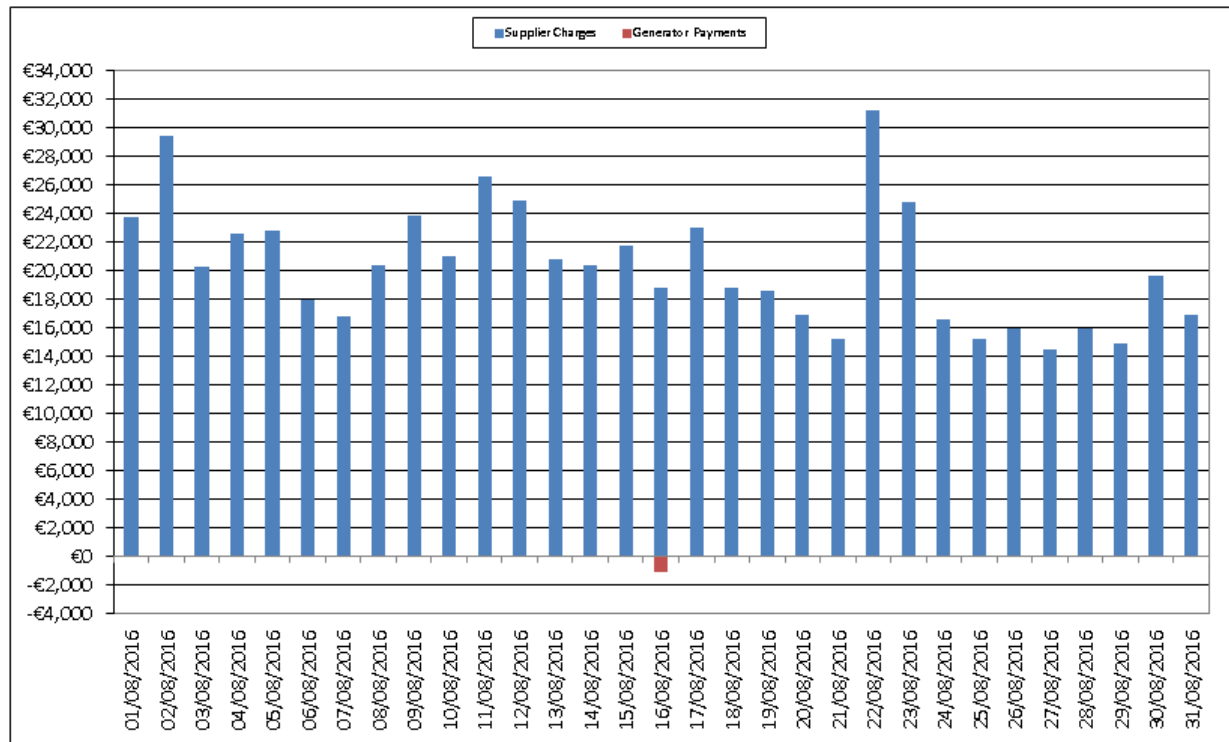


Figure 7 – Total Monetary Changes for Energy Resettlement – August 2016

M+13 Resettlement

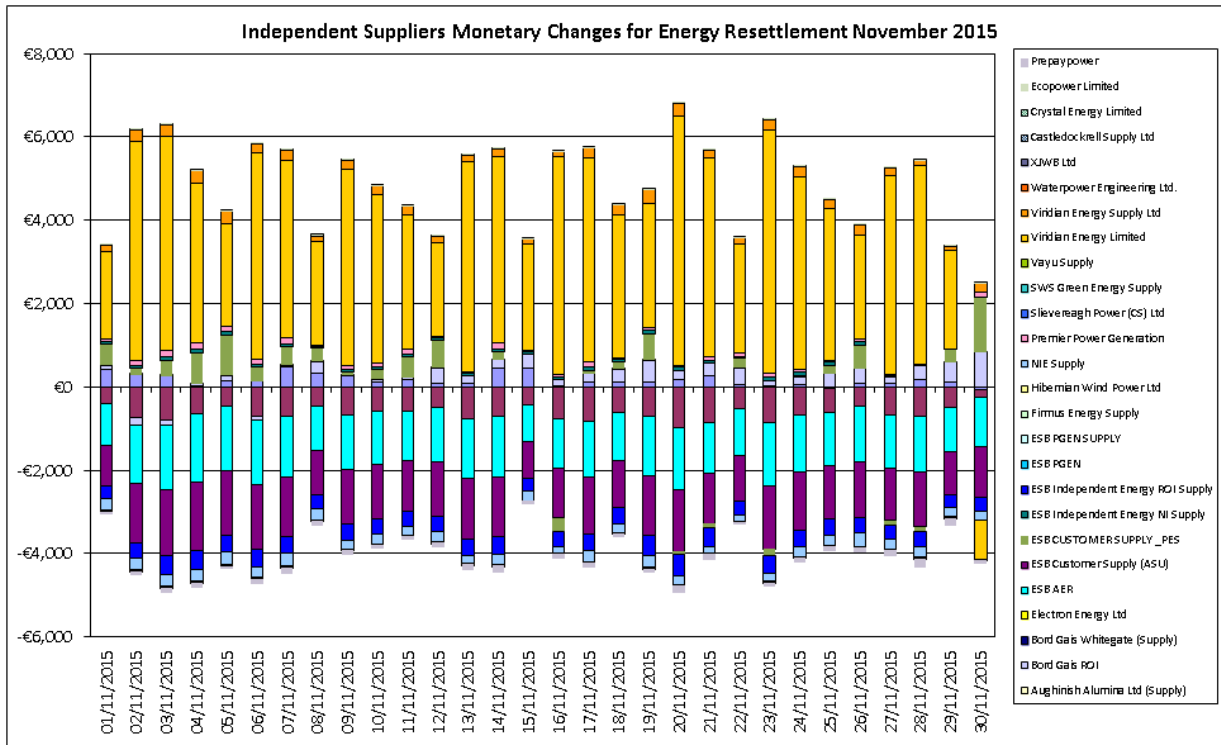


Figure 8 - Independent Suppliers Monetary Changes for Energy Resettlement – November 2015

The above variances relates purely to rounding for Participants between M+4 and M+13 Resettlement.

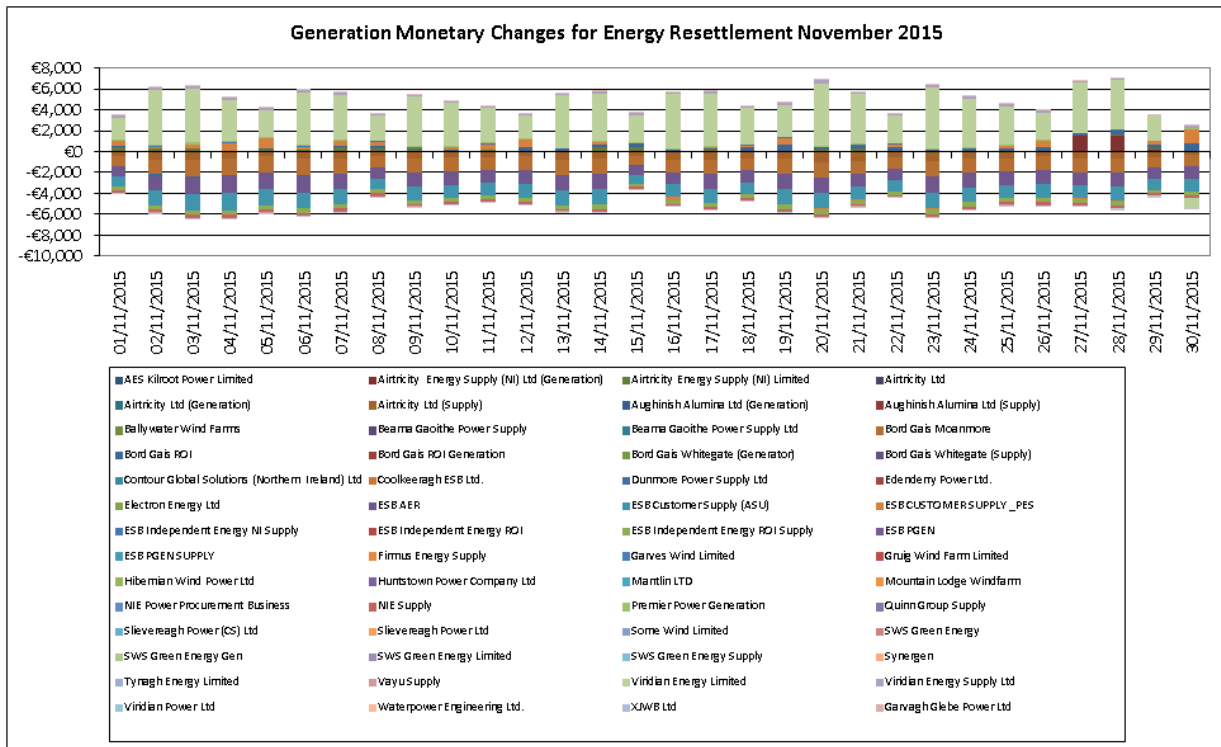


Figure 9 - Generation Monetary Changes for Energy Resettlement – November 2015

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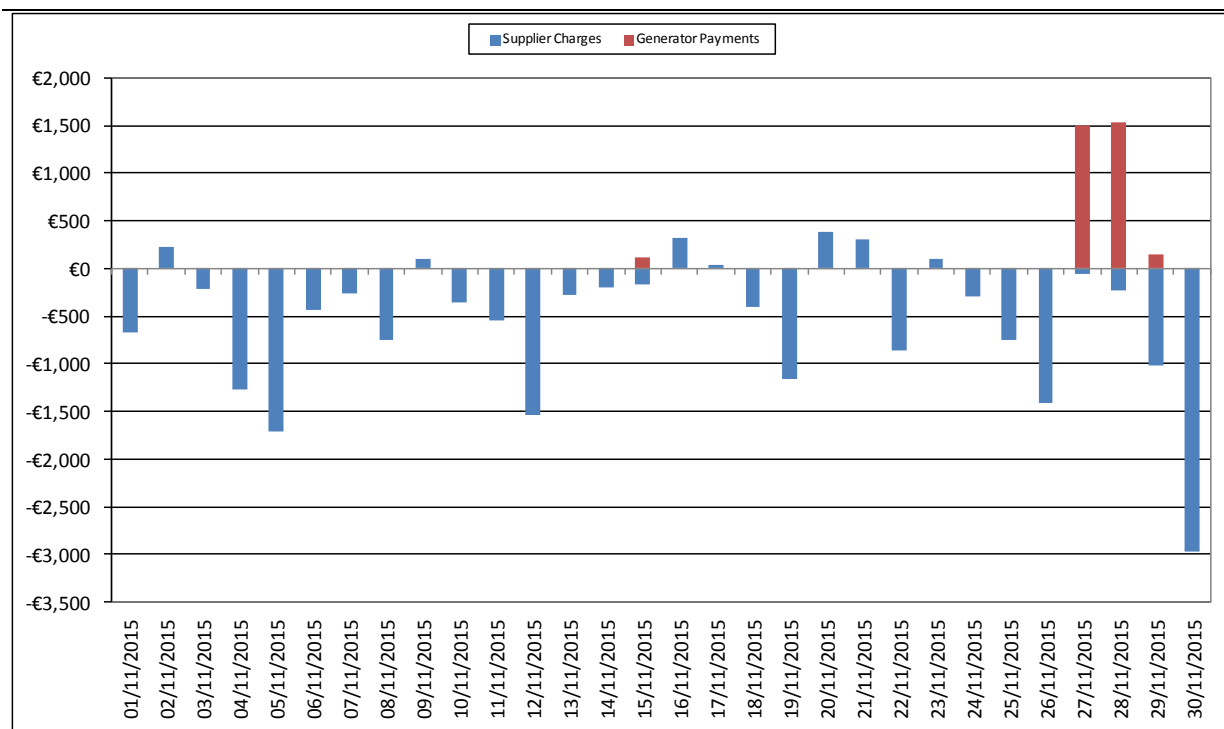


Figure 10 - Total Monetary Changes for Energy Resettlement – November 2015

### 3.1.2 Capacity Market

Note: - For Figure 12, 13 & 16 net values are shown.

- Positive amounts indicate net additional payments by Participants (Charges).
- Negative amounts indicate net additional payment to be made to Participants (Payments)

The reverse is true for Figure 14 & 22.

The changes in Capacity are graphed below showing the variance in monetary terms as opposed to percentage terms. As the Jurisdictional Error Supply Units can be significantly affected by resettlement, this is more reflective of the monetary redistribution in M+4 and M+13. Please also note that as of June 2011 the Jurisdictional Error Supply Unit (ROI) is now a Retail Supply unit. The Jurisdictional Error Supply Unit (NI) is unchanged.

#### M+4 Resettlement

Under resettlement, charges originally attributed to the Jurisdictional Error Supplier Units, have now been redistributed among Market Participants.



# Market Operator Monthly Report

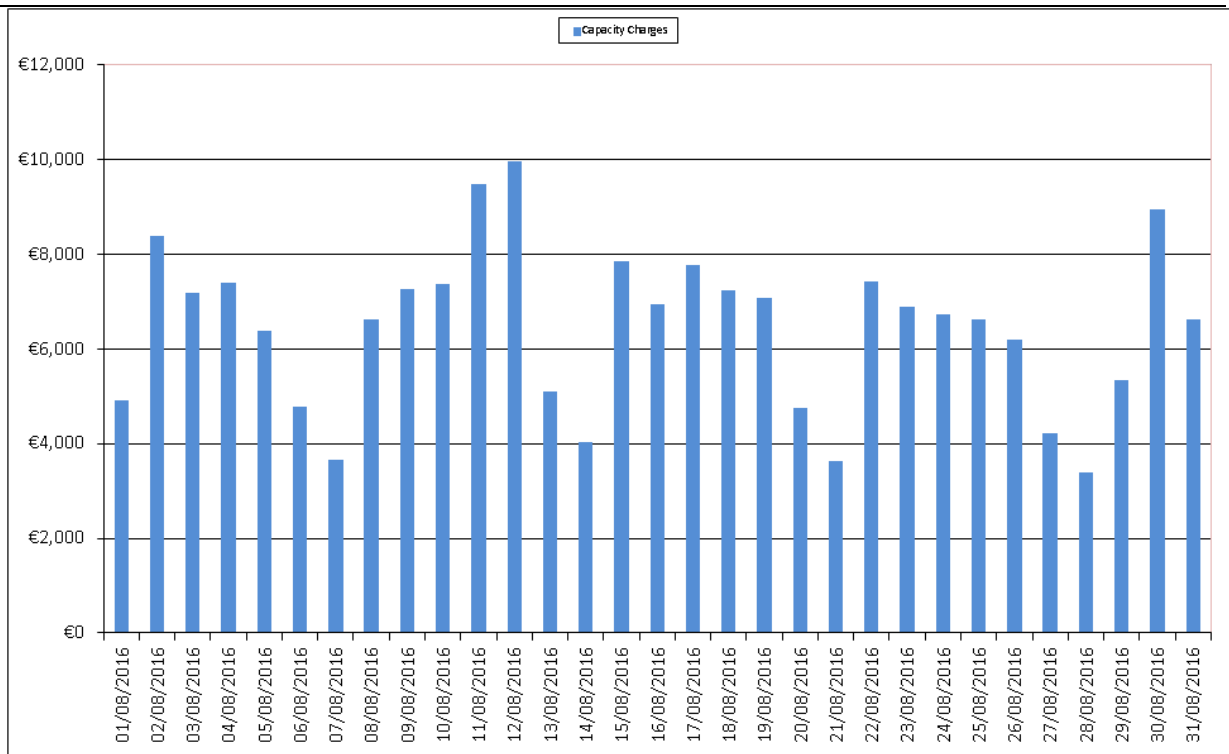


Figure 11 - Independent Suppliers Monetary Changes for Capacity Resettlement – August 2016

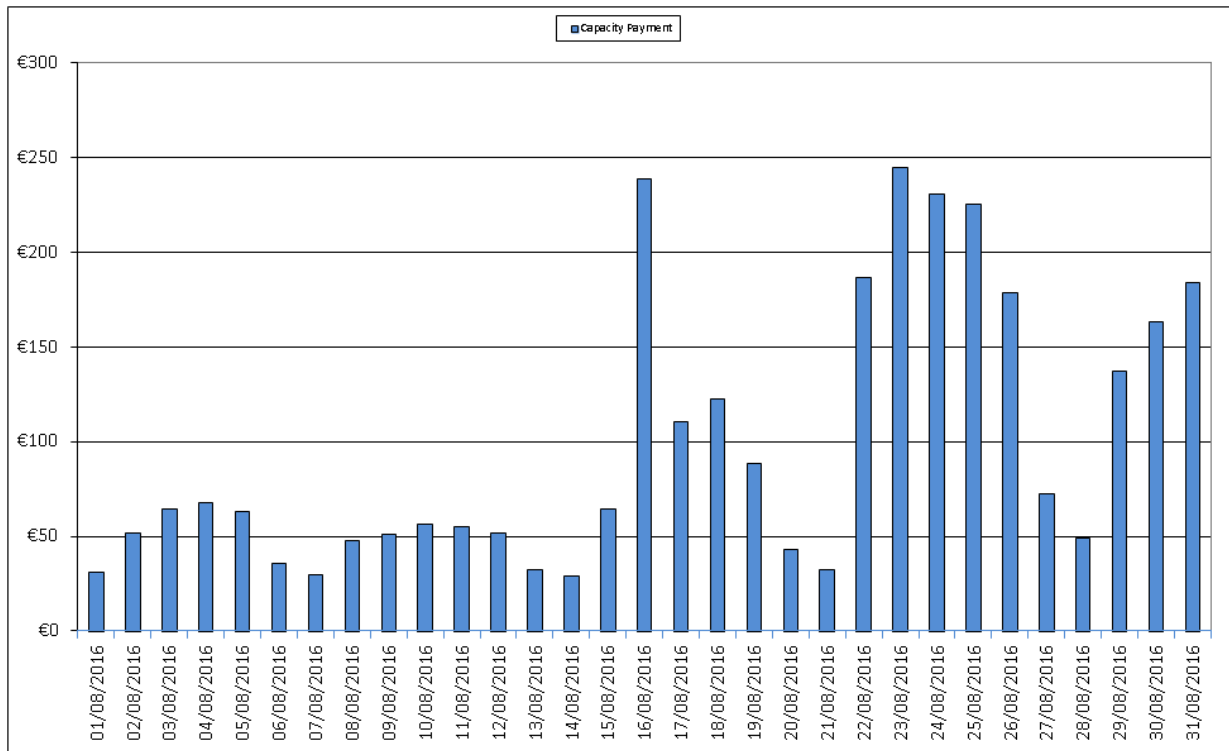
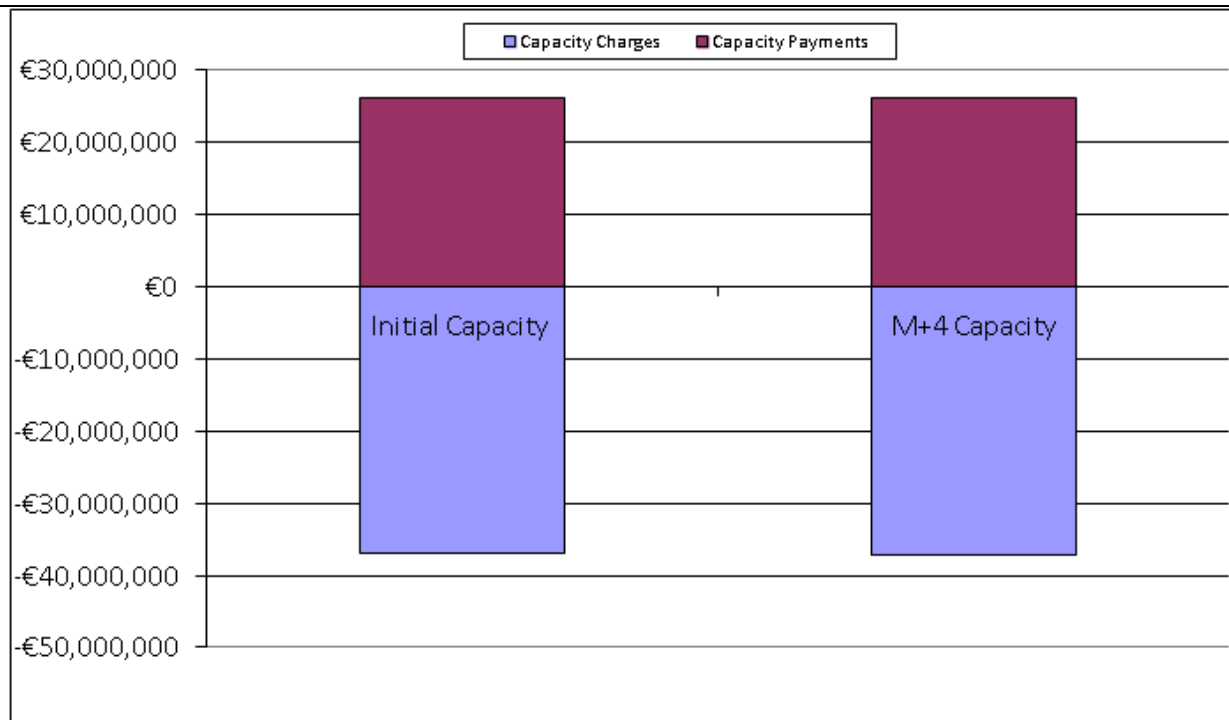


Figure 12 - All Generation Monetary Change for Capacity Resettlement – August 2016

The changes above are driven by updated meter data for Autonomous Price Taker Generators.

## Market Operator Monthly Report



**Figure 13 - Comparison of Distribution of Monetary Amounts between Capacity Initial and Resettlement August 2016**

The above graph demonstrates that due to all the individual changes to payment and charge amounts on a Supplier or Generator Unit basis, the overall Capacity Market resettlement Charge and Payment amounts have not changed due to resettlement.

M+13 Resettlement

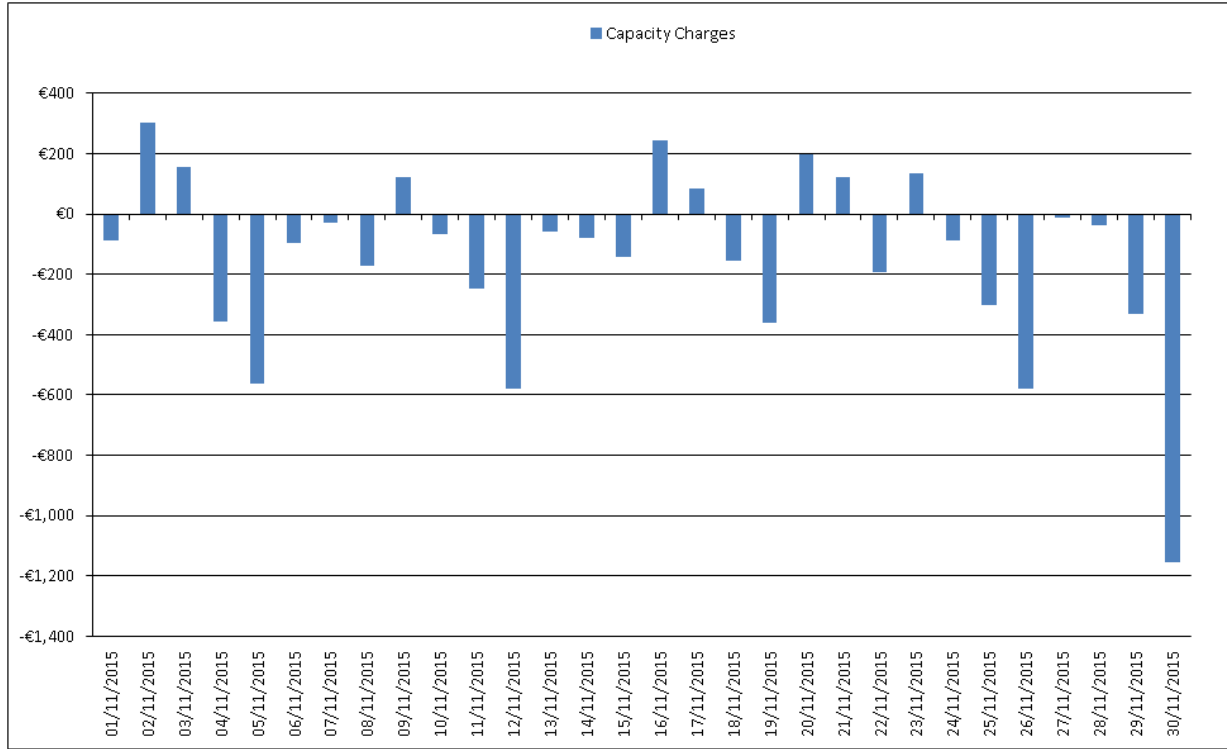


Figure 14 - Independent Suppliers Monetary Changes for Capacity Resettlement – November 2015

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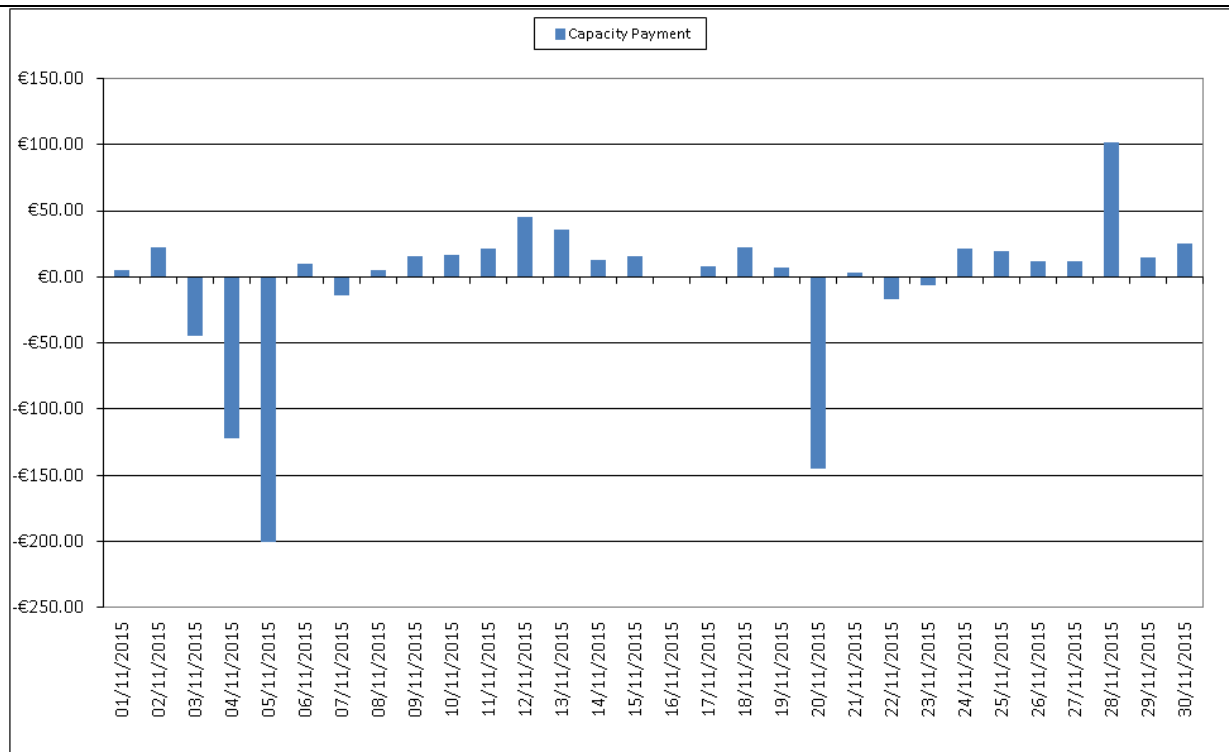


Figure 15 – All Generation Monetary Change for Capacity Resettlement – November 2015

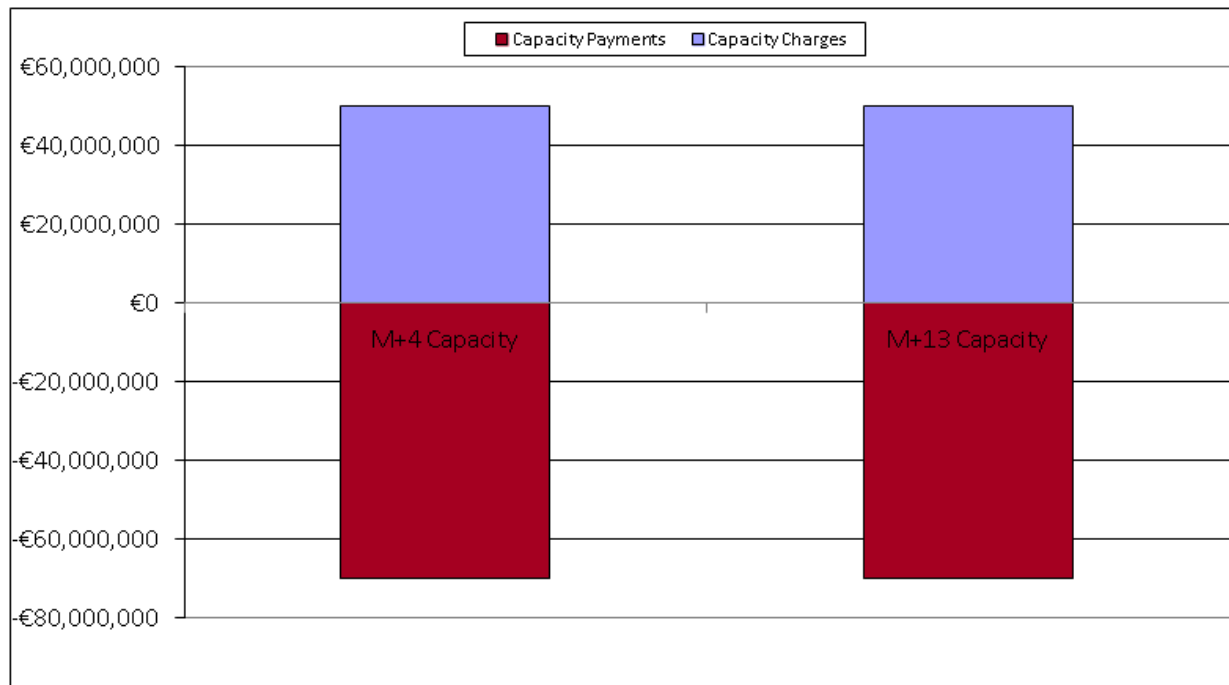


Figure 16 - Comparison of Distribution of Monetary Amounts between M+4 Capacity Resettlement and M+13 Capacity Resettlement – November 2015

## Market Operator Monthly Report

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The above graph demonstrates despite all the individual changes to payment and charge amounts on a Supplier or Generator Unit basis, the overall Capacity Market resettlement Charge and Payment amounts have not changed due to resettlement.

## Helpdesk Call Statistics

The statistics presented in Table 10 - Helpdesk Call Statistics covers the month of December 2016.

### Market Helpdesk Report: 01/12/16 to 31/12/16

	Received	Resolved within the period	Not Resolved	Resolved in the period	Resolution Time (Working Days)	Resolved On Time
Normal	143	128	15	152	1.19	146
Important	0	0	0	0	0.00	0
Urgent	1	1	0	1	0.51	1
Settlement	3	2	1	2	8.05	2
Credit	0	0	0	0	0.00	0
Dispute	0	0	0	0	0.00	0
Data	1	1	0	1	4.06	1
<b>Total/Average</b>	<b>148</b>	<b>132</b>	<b>16</b>	<b>156</b>	<b>2.76</b>	<b>150</b>

**Table 10 – Helpdesk Statistics**

#### Definitions:

- Resolved within the Period refers to queries raised and resolved within the calendar month of December 2016.
- Resolved in the Period refers to queries resolved within December 2016, and includes queries raised before this time.
- Resolution Time (Working Days) refers to average time to resolve, in working days, for this category of query. It is calculated based on all queries for the category, not just December 2016.
- Not Resolved refers to queries raised but not resolved within December 2016.
- Urgent are general queries which may have an impact on market operations. SEMO has an internal objective to resolve these within 3 working days; however, this is not a mandated service level under the Trading and Settlement Code.
- Disputes are where a dispute has been raised over the outcome of a data or settlement query.

The average resolution time for General Queries has decreased by 0.33 working days from 1.58 in November 2016 to 1.25 working days in December 2016. SEMO has a metric to resolve General Queries within 20 Working Days. These include queries received over the phone and e-mail.

Data and Settlement Queries generally continue to be responded to within the timelines required by the Trading and Settlement Code, i.e. one calendar month. No Formal Query timeline extensions were required during December 2016 with regard to formal Settlement Queries.

### Disputes and Queries

#### 5.1.1 Disputes

No Disputes were raised during the month of December 2016.

#### 5.1.2 Data Queries

There were no formal data queries raised during the month of December 2016.

#### 5.1.3 Settlement Queries

There were Four formal Settlement queries raised in December 2016. Three queries were upheld and have since been resolved.

Topic	Number Of Queries
Dispatch Instructions	1
Actual Availability	2

**Table 12b - Upheld Settlement Queries by Topic**

- One query relating to incorrect Dispatch Instructions raised, this was deemed to be of Low Materiality and will be corrected within M+4.
- Two queries relating to incorrect Actual Availability raised, both were deemed to be of Low Materiality and will be corrected within M+4 resettlement.

#### Unresolved Queries

There is one unresolved settlement queries as of the 17<sup>th</sup> January 2017.

A full list of all the Data and Settlement queries raised is contained in [Appendix B](#).

### Central Systems

#### 6.1 Proportion of Default Data Used

On review of the Commercial Offer Data used in the MSP runs, 64.93% of data used was submitted by Participants through the normal Bid-Offer process. 35.07% of the data used was based on Standing Commercial Offer Data. 0.0% of the data used was based on adjusted offer data. None of the data used was based on Default Commercial Offer Data (Default differs from Standing in that it is based on the initial Default data submitted during registration process and not on more recent Standing Data submitted by the Participant through the Market Participant Interface). Details by unit are provided in [Appendix F](#).

#### 6.2 Proportion of Estimated Meter Data used in Initial Settlement and Resettlement

This is not calculable presently.

#### 6.3 List of System Errors and Re-runs

Details are provided in Appendix C : List of All Systems Errors and Failures

##### 6.3.1 Re-Pricing / Resettlement Runs /MIUN Delays

There were no Re-Price runs carried out in December 2016.

There were 6 Ad hoc Re-Settlement run carried out in December 2016.

There was 1 MIUN Delay for Within Day 1 on trade date 22/12/2016.

##### 6.3.2 System Errors

There were no Market Application defects found in December 2016.

Details are provided in Appendix C : List of All Systems Errors and Failures

#### 6.4 Operational Timings

This section lists the operation timings of MSP software runs and Settlement runs.

There are five run types for MSP software,

- Ex-Ante 1 Indicative, run on Trading Day – 1 calendar day,
- Ex-Ante 2 Indicative, run on Trading Day – 1 calendar day,
- With In Day 1 Indicative, run on Trading Day,
- Ex-Post Indicative, run on Trading Day + 1 calendar day, and
- Ex-Post Initial, run on Trading Day + 4 calendar days.



## Market Operator Monthly Report

The following tables and graphs provide details for the postings of the MSP for December 2016.

### 1.4.1 MSP Postings December 2016

Process	On Time	< 1 hr late	> 1 hr late	Not done
Gate Close	30-30	0	0	0
Post EA1	30-30	0	0	0
Post EA2	30-30	0	0	0
Post WD1	30-30	0	0	0
Post EP1	30-30	0	0	0
Post EP2	30-30	0	0	0

**Table 13 - Operational Timings**

Process	On Time	< 1 hr late	> 1 hr late	Not done
Gate Close	100%	0%	0%	0%
Post EA1	100%	0%	0%	0%
Post EA2	100%	0%	0%	0%
Post WD1	100%	0%	0%	0%
Post EP1	100%	0%	0%	0%
Post EP2	100%	0%	0%	0%

**Table 14 - Operational Timings (% on time)**

# Market Operator Monthly Report

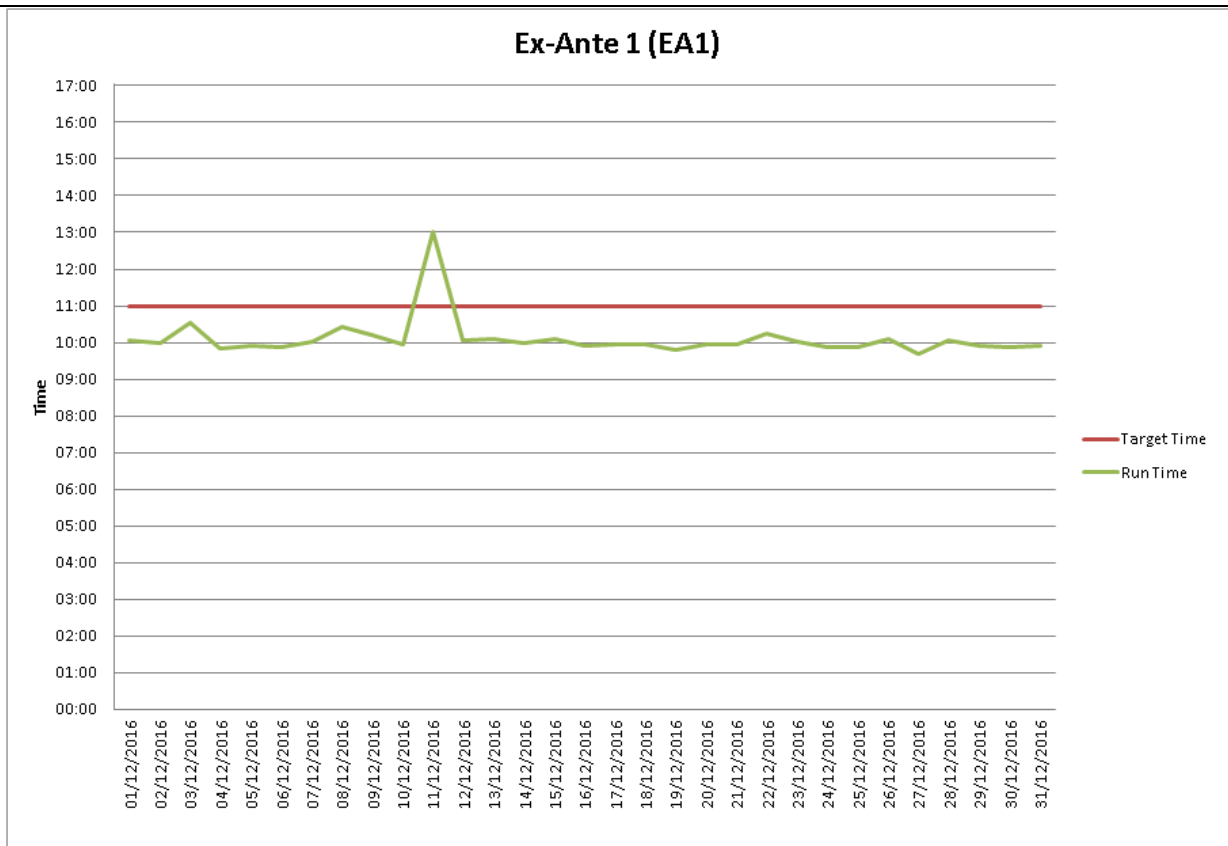


Figure 17 – Ex-Ante 1

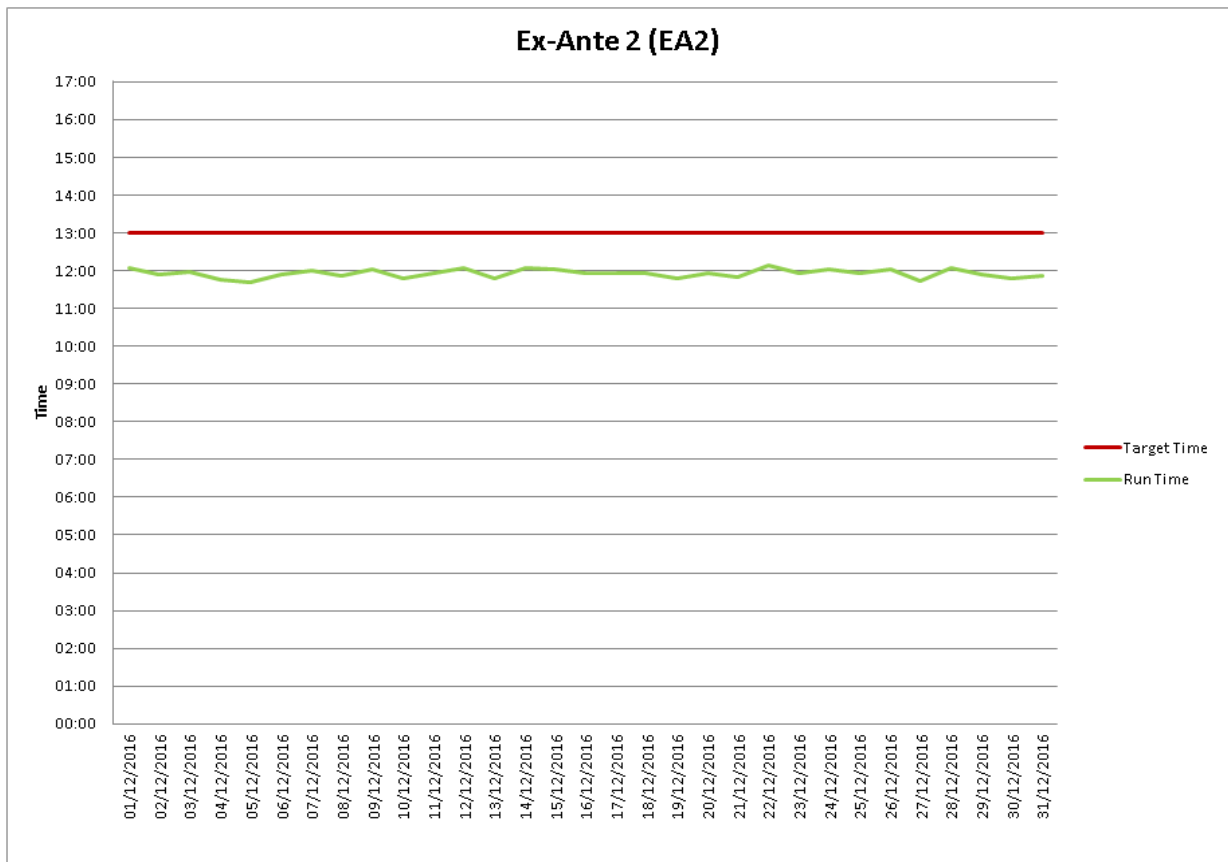


Figure 18 – Ex-Ante 2

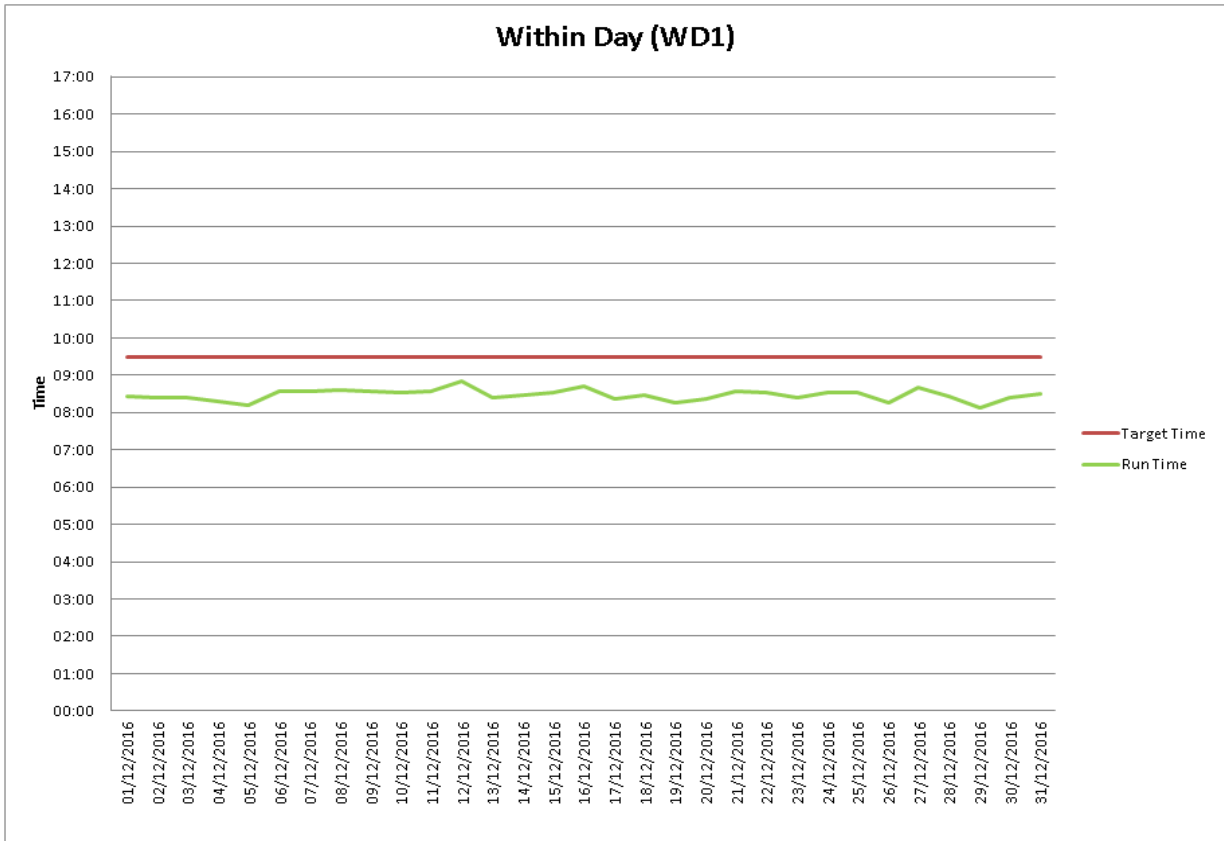


Figure 19 – Within Day 1

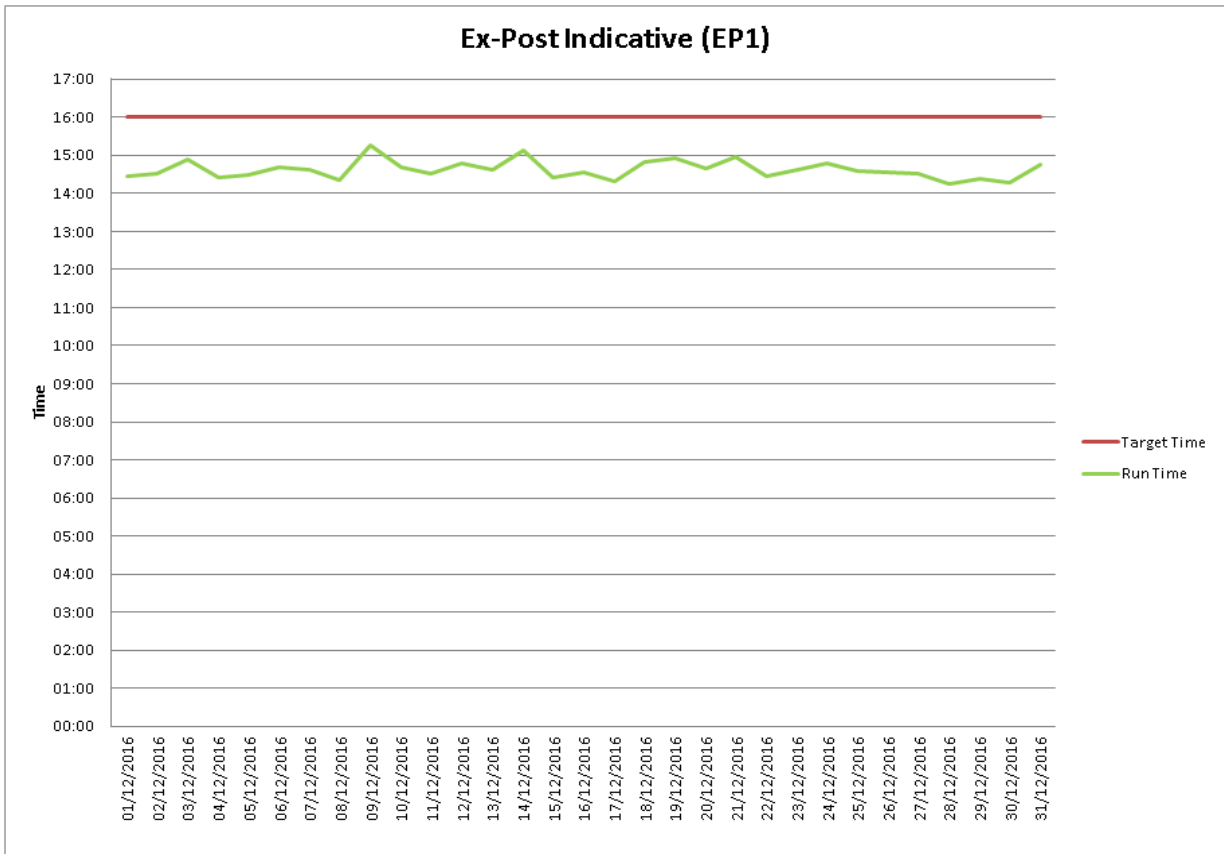


Figure 20 - Ex-Post Indicative

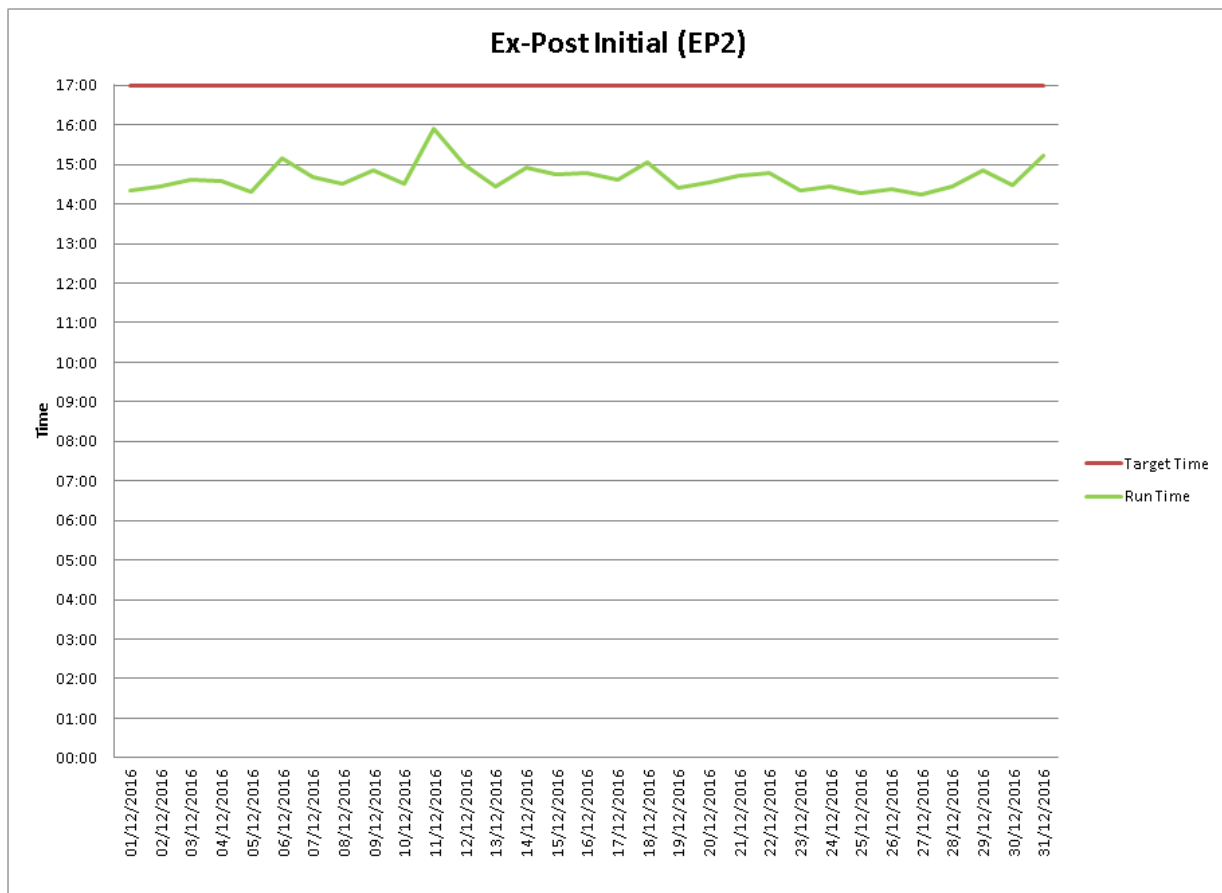


Figure 21 - Ex-Post Initial

Details of the operational timings of the Market System and Price (MSP) runs and Gate Closure are provided in [Appendix D](#).

### 6.4.2 MSP Algorithms

The Market Operator has two different certified solvers used to determine Unit Commitment. These solvers use the Lagrangian Relaxation (LR) and Mixed Integer Programming (MIP) methodologies.

The primary solver used in the SEM is Lagrangian Relaxation (LR). Under certain schedule outcomes where a significant pricing event is observed, the MSP software is re-run using the Mixed Integer Programming (MIP) solver. The outcomes of the two solvers are compared. Where solution determined using the MIP solver provides a better overall solution, this solution may be selected for publishing. An updated policy document on the use of MIP has been published and is available on the SEMO website [here](#).

In December 2016, there were 17 instance of publishing with the MIP solver.

A detail of historical runs and dates where the MIP algorithm has been used for published results is provided in [Appendix I](#).

1.4.1 Settlement Postings December 2016

The publication timings for Settlement runs are provided below.

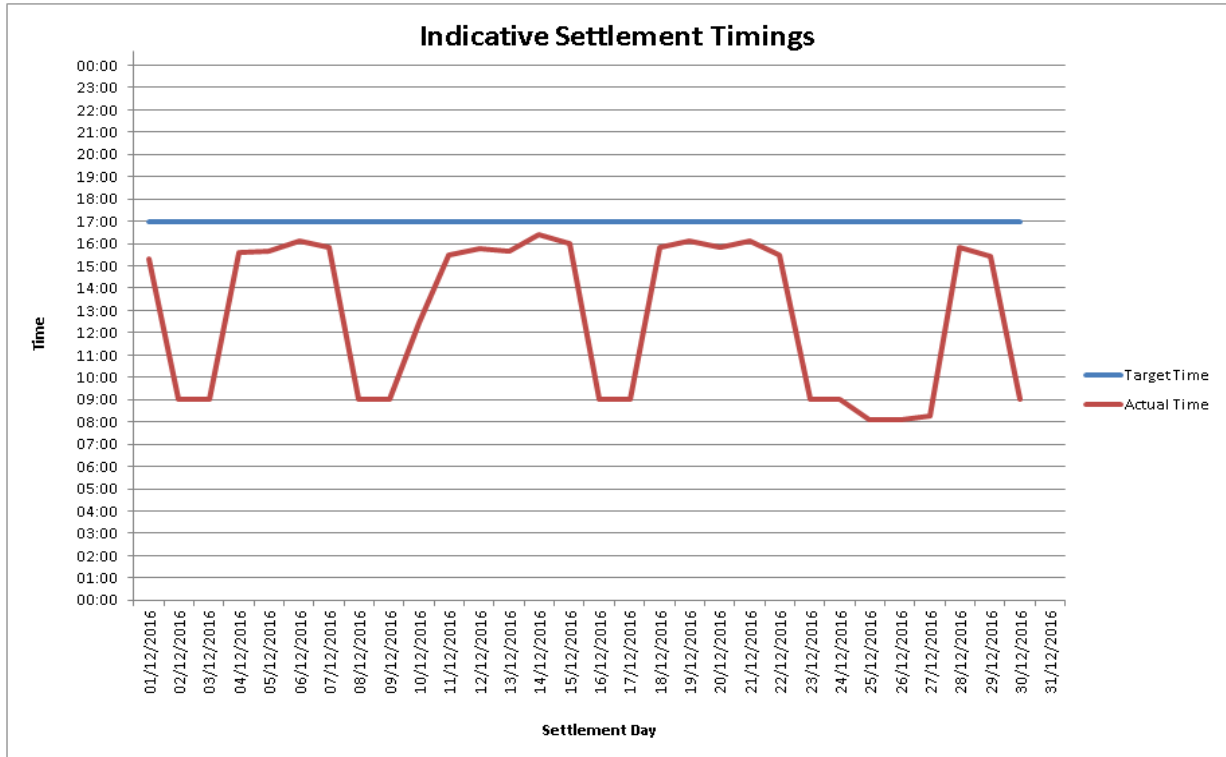
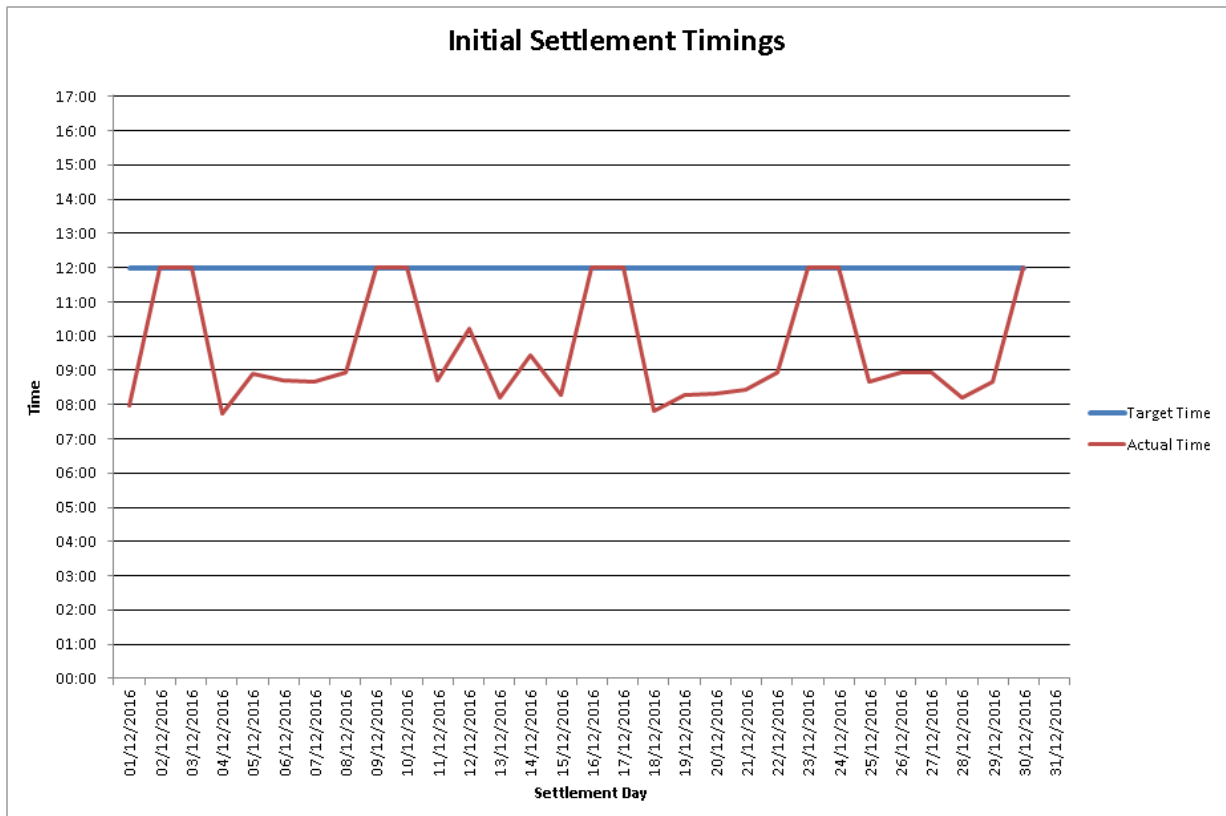


Figure 22 - Indicative Settlement Postings



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### Figure 23 - Initial Settlement Postings

Further details of any delays noted above are provided in [Appendix A](#)

#### **6.5.1 – No deployments in December 2016**

### **Occasional Components**

#### **7.1 Disaster Recovery/Business Continuity Tests**

There were no scheduled Business Continuity tests performed during December 2016.

#### **7.3 Communications or Systems Failures**

There were no Communications Failures in December 2016

#### **7.4 Denial of Service Attacks**

There was no Denial of Service Attacks during December 2016.

#### **7.5 Submission of Parameters to RAs for Approval**

There has been no requirement for submission of parameters in December 2016.

## Appendix A: Detail of Trading and Settlement Code Breaches

### Data Provider

There were no issues to report in December 2016.

### Market Participant

Ops Date Identified	Run Type	Quality or Timing	Party	Issue Type	Description	Cause	Resolution	T and SC Breach
01/12/2016	CRM	Timing	Participant	Credit	Open Electric (CP_500082) defaulted on a CCIN issued on 29/11/2016	CCIN was not resolved within the T&SC timeframes	Open Electric (CP_500082) paid an outstanding invoice and increased their cash collateral to close the outstanding CCIN	Major
06/12/2016	CRM	Timing	Participant	Credit	Open Electric (CP_500082) defaulted on a CCIN issued on 06/12/2016.	CCIN was not resolved within the T&SC timeframes	Open Electric (CP_500082) paid an outstanding invoice and made 2 collateral lodgments on 09/12/2016 which closed the CCIN.	Major
07/12/2016	Money In	Timing	Participant	Payment Default	Open Electric Ireland (PT_500082) defaulted on a Week 31 2016 M+4 Energy Invoice and on a Week 41 and 42 2016 Ad Hoc Energy Invoice.	Participant Error	A default letter was issued to the Participant.	Major
09/12/2016	CRM	Timing	Participant	Credit	Open Electric (CP_500082) defaulted on a CCIN issued on 09/12/2016.	CCIN was not resolved within the T&SC timeframes	CCIN is open and not resolved.	Major
09/12/2016	Money In	Timing	Participant	Payment Default	Martin Limited (PT_500039) defaulted on a FMOC November 2016 Initial Invoice.	Participant Error	A default letter was issued to the Participant.	Major
09/12/2016	Money In	Timing	Participant	Payment Default	Erova Energy Limited (PT_500083) defaulted on a FMOC November 2016 Initial Invoice.	Participant Error	A default letter was issued to the Participant.	Major
09/12/2016	Money In	Timing	Participant	Payment Default	Glencarby Supply Company Limited (PT_400189) defaulted on a FMOC November 2016 Initial Invoice.	Participant Error	A default letter was issued to the Participant.	Major
09/12/2016	Money In	Timing	Participant	Payment Default	G.A.E.L Force Power Ltd (PT_400069) defaulted on a FMOC November 2016 Initial Invoice.	Participant Error	A default letter was issued to the Participant.	Major
09/12/2016	Money In	Timing	Participant	Payment Default	Glencarby Supply Company Limited (PT_400191) defaulted on a FMOC November 2016 Initial Invoice.	Participant Error	A default letter was issued to the Participant.	Major
12/12/2016	CRM	Timing	Participant	Credit	Open Electric (CP_500082) defaulted on a CCIN issued on 12/12/2016.	CCIN was not resolved within the T&SC timeframes	CCIN is open and not resolved.	Major
13/12/2016	CRM	Timing	Participant	Credit	Open Electric (CP_500082) defaulted on a CCIN issued on 13/12/2016.	CCIN was not resolved within the T&SC timeframes	CCIN is open and not resolved.	Major
14/12/2016	CRM	Timing	Participant	Credit	Open Electric (CP_500082) defaulted on a CCIN issued on 14/12/2016.	CCIN was not resolved within the T&SC timeframes	CCIN is open and not resolved.	Major
14/12/2016	Money In	Timing	Participant	Payment Default	Open Electric Ireland (PT_500082) defaulted on an Energy Week 48 2016 Initial Invoice.	Participant Error	A default letter was issued to the Participant.	Major
14/12/2016	Money In	Timing	Participant	Payment Default	New Measured Power Limited TA Pinergy (PT_400173) defaulted on a Capacity November 2016 Initial Invoice.	Participant Error	A default letter was issued to the Participant.	Major
14/12/2016	Money In	Timing	Participant	Payment Default	New Measured Power Limited TA Pinergy (PT_400173) defaulted on an Energy Week 48 2016 Initial Invoice.	Participant Error	A default letter was issued to the Participant.	Major
14/12/2016	Money In	Timing	Participant	Payment Default	Castledockrell Wind Group Ltd (PT_400082) defaulted on an Energy Week 32 2016 M+4 Invoice.	Participant Error	A default letter was issued to the Participant.	Major
15/12/2016	CRM	Timing	Participant	Credit	Open Electric (CP_500082) defaulted on a CCIN issued on 15/12/2016.	CCIN was not resolved within the T&SC timeframes	CCIN is open and not resolved.	Major
16/12/2016	CRM	Timing	Participant	Credit	Open Electric (CP_500082) defaulted on a CCIN issued on 16/12/2016	CCIN was not resolved within the T&SC timeframes	CCIN is open and not resolved.	Major
16/12/2016	Money In	Timing	Participant	Payment Default	Open Electric Ireland (PT_500082) defaulted on a VMOC Week 48 2016 Initial and on a Week 32 and 33 2016 M+4 VMOC Invoices.	Participant Error	A default letter was issued to the Participant.	Major
19/12/2016	CRM	Timing	Participant	Credit	Open Electric (CP_500082) defaulted on a CCIN issued on 19/12/2016.	CCIN was not resolved within the T&SC timeframes	CCIN is open and not resolved.	Major
20/12/2016	CRM	Timing	Participant	Credit	Open Electric (CP_500082) defaulted on a CCIN issued on 20/12/2016.	CCIN was not resolved within the T&SC timeframes	CCIN is open and not resolved.	Major
21/12/2016	Money In	Timing	Participant	Payment Default	Open Electric Ireland (PT_500082) defaulted on a Week 49 2016 Initial Energy Invoice and on a Week 34 and 35 2016 M+4 Energy Invoices.	Participant Error	A default letter was issued to the Participant.	Major
21/12/2016	CRM	Timing	Participant	Credit	Open Electric (CP_500082) defaulted on a CCIN issued on 21/12/2016.	CCIN was not resolved within the T&SC timeframes	CCIN is open and not resolved.	Major
22/12/2016	CRM	Timing	Participant	Credit	Open Electric (CP_500082) defaulted on a CCIN issued on 22/12/2016.	CCIN was not resolved within the T&SC timeframes	CCIN is open and not resolved.	Major
23/12/2016	Money In	Timing	Participant	Payment Default	Open Electric Ireland (PT_500082) defaulted on a Week 49 2016 Initial VMOC Invoice and on a Week 34 and 35 2016 M+4 VMOC Invoices.	Participant Error	A default letter was issued to the Participant.	Major
23/12/2016	CRM	Timing	Participant	Credit	Open Electric (CP_500082) defaulted on a CCIN issued on 23/12/2016.	CCIN was not resolved within the T&SC timeframes	CCIN is open and not resolved.	Major
29/12/2016	CRM	Timing	Participant	Credit	Open Electric (CP_500082) defaulted on a CCIN issued on 29/12/2016.	CCIN was not resolved within the T&SC timeframes	CCIN is open and not resolved.	Major
30/12/2016	CRM	Timing	Participant	Credit	Open Electric (CP_500082) defaulted on a CCIN issued on 30/12/2016.	CCIN was not resolved within the T&SC timeframes	CCIN is open and not resolved.	Major

Table 15 – Trading and Settlement Code Breaches – Market Participants

### SEMO - Pricing and Scheduling

There were no issues to report in December 2016.

### SEMO – Settlements

There were no issues to report in December 2016.

### SEMO - Funds Transfer

There were no issues to report in December 2016.



## Market Operator Monthly Report

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### **SEMO - Credit Management**

There were no issues to report in December 2016.

### **SEMO – Other**

There were no issues to report in December 2016.

## Appendix B: List of Queries by Type

Summary Title	Description	ID	Logged On	Date sent to MP	Type
Actual Availabilities	From 21:30 on 17/10/2016 the EA for DSU_401590 does not match our declared values. The variance runs for the remainder of the trading day. According to our plant there was a declaration for 16MW missed at 21:31 on 17th October.	PT_400138	2016-12-01	2016-10-12	Settlement
Actual Availabilities	<p>PPB has requested that SONI submit a formal market query in relation to EDIL declarations for B10, B31 and B32. Please find email correspondence attached to support this.</p> <p>The query relates to EDIL declarations for B10 and B31 on 17th November 2016 and B32 for 18th November 2016. We have been asked to correct the time of and value of EDIL declarations that were incorrect for the above units for the dates advised above.</p> <p>PPB would like for us to submit the following changes:</p> <p>B10 1000 @ 93 MW changed to 0710 @ 93 MW            B31 1000 @ 244 MW changed to 0710 @ 242 MW            B32 1000 @ 244 MW changed to 0710 @ 238 MW</p> <p>Please confirm when we can submit the changes?</p>	TSO_SONI	2016-12-01	2016-10-06	Settlement
Dispatch Instructions	May I ask you to check the data for the following unit and date. B31 on 6th of October 2016. We have a query on the DQ and I have attached our calculations as an illustration. We believe the DQ of 60.45 MW for the PE 20:00 to be incorrect. Could you please check?	PT_500027	2016-12-01	2016-11-08	Settlement
Dispatch Instructions	<p>PPB has requested that SONI submit a formal market query in relation to EDIL Dispatch Instructions (DI's) for B10, B31 and B32. Please find email correspondence attached to support this.</p> <p>The query relates to EDIL DI's for B31 on 17th November 2016 and B32 for 18th November 2016. We have been asked to correct the time of and value of EDIL DI's arising from the actual availability market query for the above units for the dates advised above.</p> <p>PPB would like for us to submit the following changes:</p> <p>B10 17/11/2016 0710 DI - 97MW change to B10 17/11/2016 0710 DI - 93MW            B31 17/11/2016 0808 DI - 247MW change to B31 17/11/2016 0808 DI - 236MW            B32 18/11/2016 0908 DI - 240MW change to B32 18/11/2016 0908 DI - 230MW</p> <p>Please confirm when we can submit the changes?</p> <p>*Please note that this query is linked to previously logged query ref F0069597*</p>	TSO_SONI	2016-12-21	2016-10-20	Settlement

**Table 16 - Formal Queries**

### 9. Appendix C: List of All System Errors and Failures

The definitions of the statuses used for the List of All System Errors and Failures are:

- In Progress: Fix being identified and implemented.
- Resolved: Fix has been implemented, but reruns have not been performed.
- Closed: Required reruns have been performed and error-failure has been completely rectified.

Note: Items in the List of All System Errors and Failures that have status 'Closed' in this month's report will not appear in subsequent Monthly Market Operator Reports as they are no longer open issues.

There were no Market Application defects found in December 2016.

Issue No.	Description	Effect	Fixed from	Re-Pricing	Resettlement	Status
-	-	-	-	-	-	-

**Table 17 - List of System Errors and Failures**

## Appendix D: Details of Operational Timings

### Market Schedule and Price Runs

Operational Day	EA1 Postings		EA2 Postings		WD1 Postings		EP1 Postings		EP2 Postings	
	Target	Actual	Target	Actual	Target	Actual	Target	Actual	Target	Actual
01/12/2016	11:00	10:04	13:00	12:04	09:30	08:26	16:00	14:28	17:00	14:21
02/12/2016	11:00	10:00	13:00	11:53	09:30	08:23	16:00	14:31	17:00	14:26
03/12/2016	11:00	10:32	13:00	11:59	09:30	08:24	16:00	14:53	17:00	14:37
04/12/2016	11:00	09:51	13:00	11:45	09:30	08:17	16:00	14:25	17:00	14:34
05/12/2016	11:00	09:55	13:00	11:42	09:30	08:11	16:00	14:29	17:00	14:18
06/12/2016	11:00	09:53	13:00	11:54	09:30	08:34	16:00	14:41	17:00	15:09
07/12/2016	11:00	10:01	13:00	12:00	09:30	08:35	16:00	14:37	17:00	14:40
08/12/2016	11:00	10:26	13:00	11:51	09:30	08:37	16:00	14:21	17:00	14:30
09/12/2016	11:00	10:13	13:00	12:02	09:30	08:35	16:00	15:16	17:00	14:51
10/12/2016	11:00	09:56	13:00	11:48	09:30	08:33	16:00	14:41	17:00	14:30
11/12/2016	11:00	13:01	13:00	#N/A	09:30	08:35	16:00	14:32	17:00	15:55
12/12/2016	11:00	10:03	13:00	12:05	09:30	08:51	16:00	14:48	17:00	14:59
13/12/2016	11:00	10:05	13:00	11:48	09:30	08:25	16:00	14:37	17:00	14:27
14/12/2016	11:00	10:00	13:00	12:05	09:30	08:28	16:00	15:08	17:00	14:56
15/12/2016	11:00	10:05	13:00	12:03	09:30	08:33	16:00	14:26	17:00	14:46
16/12/2016	11:00	09:55	13:00	11:56	09:30	08:42	16:00	14:33	17:00	14:48
17/12/2016	11:00	09:57	13:00	11:56	09:30	08:22	16:00	14:19	17:00	14:37
18/12/2016	11:00	09:56	13:00	11:57	09:30	08:29	16:00	14:50	17:00	15:03
19/12/2016	11:00	09:49	13:00	11:48	09:30	08:15	16:00	14:56	17:00	14:24
20/12/2016	11:00	09:57	13:00	11:57	09:30	08:22	16:00	14:40	17:00	14:33
21/12/2016	11:00	09:56	13:00	11:49	09:30	08:34	16:00	14:58	17:00	14:43
22/12/2016	11:00	10:14	13:00	12:08	09:30	08:32	16:00	14:28	17:00	14:47
23/12/2016	11:00	10:01	13:00	11:56	09:30	08:25	16:00	14:38	17:00	14:20
24/12/2016	11:00	09:52	13:00	12:03	09:30	08:32	16:00	14:47	17:00	14:26
25/12/2016	11:00	09:52	13:00	11:56	09:30	08:33	16:00	14:36	17:00	14:16
26/12/2016	11:00	10:05	13:00	12:03	09:30	08:15	16:00	14:34	17:00	14:23
27/12/2016	11:00	09:41	13:00	11:44	09:30	08:40	16:00	14:31	17:00	14:15
28/12/2016	11:00	10:04	13:00	12:05	09:30	08:26	16:00	14:14	17:00	14:27
29/12/2016	11:00	09:54	13:00	11:54	09:30	08:08	16:00	14:24	17:00	14:52
30/12/2016	11:00	09:53	13:00	11:48	09:30	08:25	16:00	14:17	17:00	14:28
31/12/2016	11:00	09:54	13:00	11:52	09:30	08:31	16:00	14:46	17:00	15:13

Table 18 – MSP Runs

## Market Operator Monthly Report

### Settlement Runs

Indicative				Initial			
Trading	Actual	Target	Actual	Trading	Actual	Target	Actual
Day	Date	Time	Time	Day	Date	Time	Time
01/12/2016	02/12/2016	17:00	15:19	01/11/2016	08/11/2016	12:00	08:24
02/12/2016	05/12/2016	17:00	10:59	02/11/2016	09/11/2016	12:00	08:50
03/12/2016	05/12/2016	17:00	12:00	03/11/2016	10/11/2016	12:00	07:56
04/12/2016	05/12/2016	17:00	15:36	04/11/2016	11/11/2016	12:00	12:00
05/12/2016	06/12/2016	17:00	15:39	05/11/2016	11/11/2016	12:00	12:00
06/12/2016	07/12/2016	17:00	16:08	06/11/2016	11/11/2016	12:00	08:06
07/12/2016	08/12/2016	17:00	15:49	07/11/2016	14/11/2016	12:00	08:59
08/12/2016	09/12/2016	17:00	15:26	08/11/2016	15/11/2016	12:00	07:41
09/12/2016	12/12/2016	17:00	11:08	09/11/2016	16/11/2016	12:00	08:26
10/12/2016	12/12/2016	17:00	12:26	10/11/2016	17/11/2016	12:00	08:55
11/12/2016	12/12/2016	17:00	15:30	11/11/2016	18/11/2016	12:00	12:00
12/12/2016	13/12/2016	17:00	15:46	12/11/2016	18/11/2016	12:00	12:00
13/12/2016	14/12/2016	17:00	15:39	13/11/2016	18/11/2016	12:00	07:41
14/12/2016	15/12/2016	17:00	16:24	14/11/2016	21/11/2016	12:00	08:59
15/12/2016	16/12/2016	17:00	16:00	15/11/2016	22/11/2016	12:00	08:46
16/12/2016	19/12/2016	17:00	11:39	16/11/2016	23/11/2016	12:00	09:09
17/12/2016	19/12/2016	17:00	13:48	17/11/2016	24/11/2016	12:00	08:58
18/12/2016	19/12/2016	17:00	15:51	18/11/2016	25/11/2016	12:00	12:00
19/12/2016	20/12/2016	17:00	16:08	19/11/2016	25/11/2016	12:00	12:00
20/12/2016	21/12/2016	17:00	15:50	20/11/2016	25/11/2016	12:00	08:45
21/12/2016	22/12/2016	17:00	16:06	21/11/2016	28/11/2016	12:00	09:14
22/12/2016	23/12/2016	17:00	15:29	22/11/2016	29/11/2016	12:00	07:48
23/12/2016	26/12/2016	17:00	07:57	23/11/2016	30/11/2016	12:00	08:55
24/12/2016	26/12/2016	17:00	07:58	24/11/2016	01/12/2016	12:00	08:18
25/12/2016	26/12/2016	17:00	08:07	25/11/2016	02/12/2016	12:00	12:00
26/12/2016	27/12/2016	17:00	08:07	26/11/2016	02/12/2016	12:00	12:00
27/12/2016	28/12/2016	17:00	08:16	27/11/2016	02/12/2016	12:00	08:02
28/12/2016	29/12/2016	17:00	15:51	28/11/2016	05/12/2016	12:00	09:05
29/12/2016	30/12/2016	17:00	15:26	29/11/2016	06/12/2016	12:00	07:23
30/12/2016	02/01/2017	17:00	07:41	30/11/2016	07/12/2016	12:00	08:50
31/12/2016	02/01/2017	17:00	07:43	30/11/2016	07/12/2016	12:00	08:50

Table 19 – Settlement Runs

### Appendix E: Imperfections Charge

This appendix provides daily data for the Constraint Payments, Uninstructed Imbalance Payments and Imperfections Charges, and as well as the weekly values of Make Whole Payments and Testing Charges.

The following table is updated to take account of the values calculated in the Initial Settlement runs only.

Historical information will be shown in Appendix E until completion of the current financial year. Information prior to that can be found in previous Monthly Market Operator Reports.

Date	Constraint Payments	Uninstructed Imbalance Payments	Imperfections Charges
01/10/2016	€588,508.40	-€8,918.87	-€171,588.78
02/10/2016	€695,496.65	-€14,324.68	-€158,400.40
03/10/2016	€851,843.59	€2,513.28	-€172,492.23
04/10/2016	€1,458,136.05	-€34,126.64	-€183,940.10
05/10/2016	€1,034,632.58	€28,642.11	-€182,957.87
06/10/2016	€501,418.38	-€23,710.92	-€183,057.63
07/10/2016	€768,598.93	-€12,609.20	-€187,080.24
08/10/2016	€764,269.17	€15,163.35	-€176,626.63
09/10/2016	€694,695.21	€184.58	-€170,378.25
10/10/2016	€528,141.01	€25,875.53	-€191,875.15
11/10/2016	€284,246.21	-€13,606.74	-€187,454.92
12/10/2016	€447,514.99	-€30,842.25	-€192,961.10
13/10/2016	€151,134.33	-€13,355.34	-€195,221.64
14/10/2016	€430,183.76	-€22,566.32	-€191,485.94
15/10/2016	€300,656.23	-€29,668.35	-€175,296.27
16/10/2016	€468,094.80	-€16,032.98	-€158,815.86
17/10/2016	€438,579.40	-€37,843.71	-€183,515.17
18/10/2016	€342,696.70	€3,554.83	-€190,005.81
19/10/2016	€146,197.27	-€20,059.24	-€202,058.88
20/10/2016	€258,466.43	-€48,963.68	-€204,159.57
21/10/2016	€249,643.69	-€14,592.68	-€201,002.64
22/10/2016	€530,986.82	-€15,298.38	-€177,531.31
23/10/2016	€561,694.17	-€26,065.05	-€164,730.74
24/10/2016	€401,362.80	€4,719.88	-€196,833.81
25/10/2016	€391,214.46	-€62,462.63	-€206,345.53
26/10/2016	€287,150.00	-€33,111.56	-€199,012.87
27/10/2016	€218,712.06	-€10,630.05	-€193,358.45
28/10/2016	€292,296.47	-€28,006.72	-€199,180.70
29/10/2016	€307,630.66	-€17,377.78	-€178,068.51
30/10/2016	€227,610.21	-€16,193.66	-€177,139.60
31/10/2016	€252,091.74	-€21,699.82	-€178,099.86
01/11/2016	€293,474.45	-€67,609.76	-€192,085.13
02/11/2016	€254,535.38	-€13,376.75	-€206,892.91
03/11/2016	€376,079.69	-€28,308.61	-€204,403.02
04/11/2016	€701,523.69	-€41,594.81	-€198,063.82
05/11/2016	€387,249.31	-€5,984.13	-€175,157.62
06/11/2016	€514,425.63	-€11,534.84	-€169,837.55
07/11/2016	€1,127,011.52	€6,794.54	-€209,253.46
08/11/2016	€1,021,388.24	-€39,628.91	-€212,137.87
09/11/2016	€921,181.60	-€27,519.93	-€209,544.14

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10/11/2016	€310,229.18	-€55,721.01	-€206,766.44
11/11/2016	€506,203.82	-€43,946.39	-€204,980.25
12/11/2016	€414,326.65	-€19,769.46	-€187,189.37
13/11/2016	€257,734.16	-€18,328.87	-€179,141.49
14/11/2016	€368,139.79	-€5,955.88	-€198,410.11
15/11/2016	€528,083.74	-€35,284.03	-€203,149.83
16/11/2016	€411,276.23	-€38,193.18	-€197,590.61
17/11/2016	€788,278.79	-€49,085.05	-€208,289.70
18/11/2016	€358,565.21	-€18,943.55	-€211,003.95
19/11/2016	€564,213.97	-€17,743.72	-€198,319.19
20/11/2016	€675,744.97	-€21,901.30	-€194,169.93
21/11/2016	€779,665.98	-€35,682.18	-€214,687.03
22/11/2016	€656,315.79	-€12,939.39	-€212,700.96
23/11/2016	€344,337.98	-€19,727.41	-€225,407.06
24/11/2016	€282,546.78	-€16,647.67	-€224,027.98
25/11/2016	€252,998.24	-€9,616.94	-€221,510.91
26/11/2016	€376,722.73	-€5,239.17	-€203,512.05
27/11/2016	€432,458.81	€4,094.90	-€191,553.33
28/11/2016	€528,694.39	-€19,113.09	-€219,070.96
29/11/2016	€470,092.65	-€25,198.34	-€224,612.99
30/11/2016	€415,589.69	-€19,310.35	-€225,474.43
01/12/2016	€408,948.37	-€12,732.88	-€230,421.75
02/12/2016	€497,830.59	-€60,142.90	-€225,150.09
03/12/2016	€610,505.74	-€11,456.99	-€202,187.74
04/12/2016	€404,764.82	-€2,491.96	-€186,982.40
05/12/2016	€778,207.55	-€30,306.36	-€220,530.59
06/12/2016	€471,985.61	-€8,839.10	-€210,873.61
07/12/2016	€435,371.82	-€17,466.17	-€204,878.32
08/12/2016	€513,133.29	-€32,325.91	-€212,111.27
09/12/2016	€440,687.82	-€18,965.70	-€200,154.69
10/12/2016	€508,736.96	-€38,877.82	-€190,400.53
11/12/2016	€403,593.17	-€15,511.77	-€186,371.67
12/12/2016	€273,272.43	-€10,779.62	-€215,955.84
13/12/2016	€310,257.18	-€27,025.44	-€209,918.81
14/12/2016	€504,679.48	-€137,587.45	-€217,740.30
15/12/2016	€373,881.10	-€1,369.73	-€211,907.78
16/12/2016	€289,939.72	€16,965.47	-€217,179.12
17/12/2016	€518,752.27	-€24,932.22	-€196,743.72
18/12/2016	€434,322.58	€7,475.92	-€186,979.77
19/12/2016	€305,425.08	€112,377.94	-€219,034.39
20/12/2016	€513,521.68	€340,981.84	-€219,720.76
21/12/2016	€387,903.90	€105,050.72	-€212,157.72
22/12/2016	€307,063.91	€2,260.95	-€207,229.89
23/12/2016	€801,538.29	€1,250.56	-€192,113.57
24/12/2016	€644,176.34	-€3,819.60	-€179,510.27
25/12/2016	€646,312.60	€6,531.08	-€160,276.79
26/12/2016	€491,051.80	-€10,272.32	-€165,567.66
27/12/2016	€280,684.38	-€21,663.23	-€176,704.18
28/12/2016	€531,636.61	-€22,317.02	-€186,871.14
29/12/2016	€812,015.00	-€33,779.04	-€189,186.96
30/12/2016	€326,483.33	-€2,252.78	-€182,059.26
31/12/2016	€383,369.61	-€18,924.22	-€174,413.93

Table 20 - Constraint Payments, Uninstructed Imbalance Payments, and Imperfections Charges

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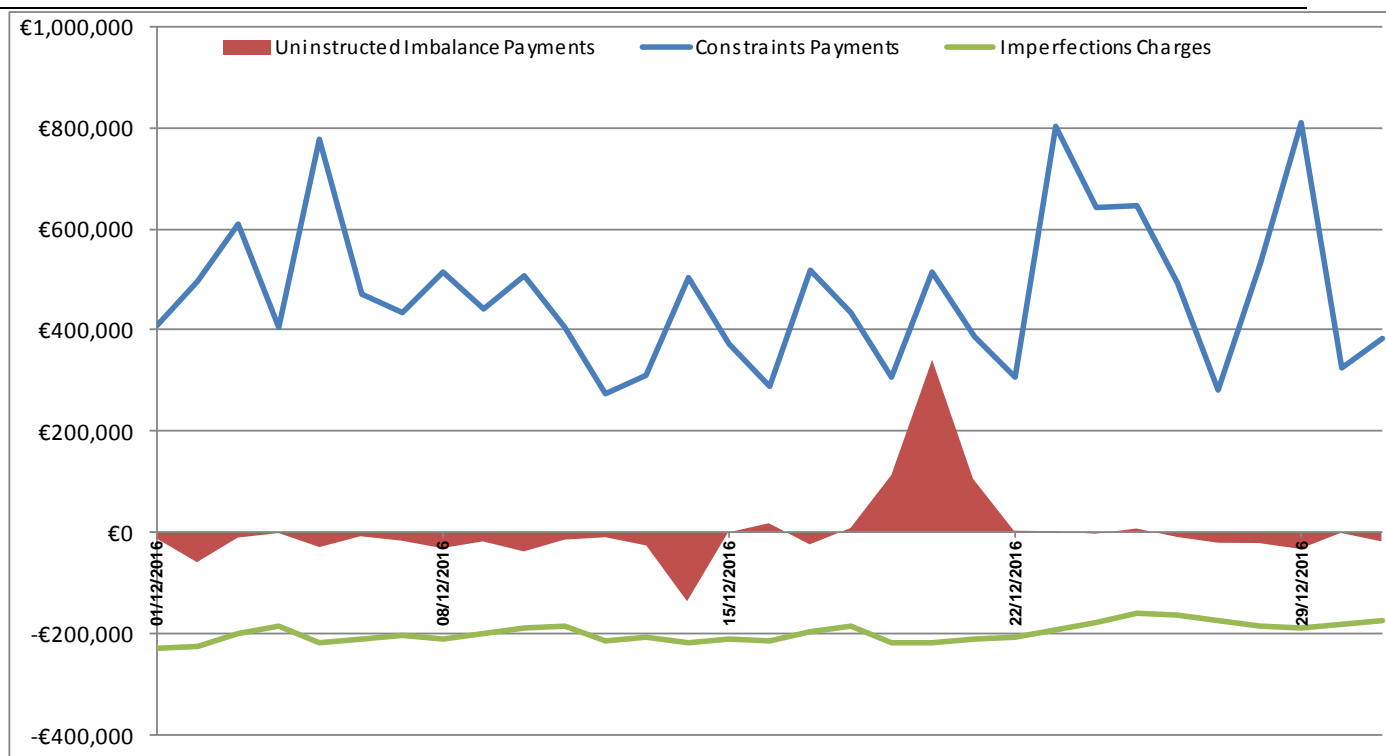


Figure 24 - Constraint Payments, Uninstructed Imbalance Payments, and Imperfections Charges

Week No	Make Whole Payments
38	€156,663.13
39	€99,549.05
40	€104,371.05
41	€9,305.58
42	€17,237.57
43	€18,614.74
44	€23,589.25
45	€5,513.20
46	€17,624.74
47	€27,403.03
48	€98,619.60
49	€82,787.86
50	€82,380.81
51	€68,751.08
52	€17,797.93
1	€71,533.60
2	€71,588.15
3	€22,455.89
4	€73,659.85
5	€44,834.21
6	€94,935.70
7	€71,991.91
8	€89,850.72
9	€187.41
10	€57,226.62
11	€24,353.24
12	€17,519.03



13	€18,413.95
14	€99,351.71
15	€67,571.67
16	€51,800.46
17	€44,459.11
18	€90,358.30
19	€18,448.89
20	€6,824.56
21	€131,010.25
22	€102,162.37
23	€125,869.44
24	€84,547.01
25	€111,163.70
26	€93,228.84
27	€120,087.37
28	€111,064.38
29	€87,089.42
30	€120,954.18
31	€48,552.68
32	€83,561.36
33	€100,430.47
34	€314,113.57
35	€45,208.88
36	€60,068.39
37	€9,584.60
38	€13,717.29
39	€9,584.60
40	€13,717.29
41	€114,729.43
42	€3,055.91
43	€71,345.79
44	€40,053.00
45	€12,438.62
46	€50,083.01
47	€26,750.89
48	€6,581.31
49	€49,551.52
50	€48,136.44
51	€6.21
52	€46,822.40

**Table 21 - Make Whole Payments**

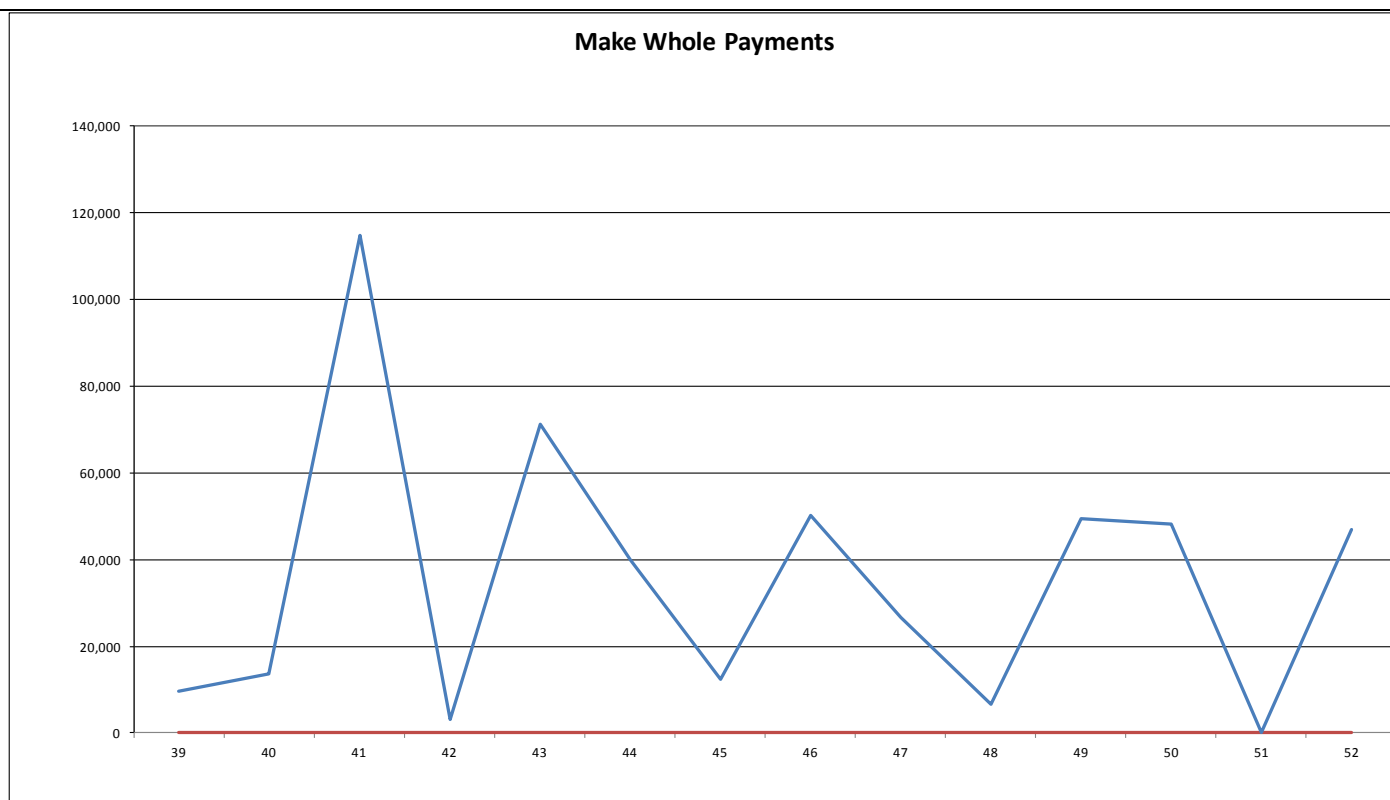


Figure 25 - Make Whole Payments

Week No	Testing Charges
38	-€12,688.71
39	-€1,257.57
40	-€19,812.53
41	-€21,021.55
42	-€10,419.94
43	-€13,069.61
44	-€16,635.14
45	-€16,770.11
46	-€27,151.66
47	€69,699.23
48	€0.00
49	-€13,909.92
50	-€740.68
51	-€353.00
52	-€456.00
1	-€470.00
2	-€582.00
3	€0.00
4	€0.00
5	€0.00
6	€0.00
7	-€4,381.00
8	-€313.00
9	€0.00
10	-€85,485.01
11	-€187,782.43
12	-€5,476.37
13	€0.00

14	-€904.60
15	-€95,270.20
16	€0.00
17	-€16,655.87
18	€0.00
19	€0.00
20	-€843.00
21	€0.00
22	€0.00
23	-€10,166.13
24	€0.00
25	€17,762.06
26	€0.00
27	-€789.58
28	-€134,653.05
29	-€87,783.63
30	-€175,504.34
31	-€2,364.71
32	€0.00
33	-€59,190.05
34	€0.00
35	€0.00
36	-€5,559.69
37	-€65,398.63
38	€0.00
39	-€65,398.63
40	€0.00
41	€0.00
42	-€6,444.66
43	-32739.69
44	106,406.47
45	-177,289.91
46	€0.00
47	€0.00
48	€0.00
49	€0.00
50	-€86,316.91
51	-€39,716.49
52	€0.00

**Table 22 - Testing Charges**

### Testing Charges

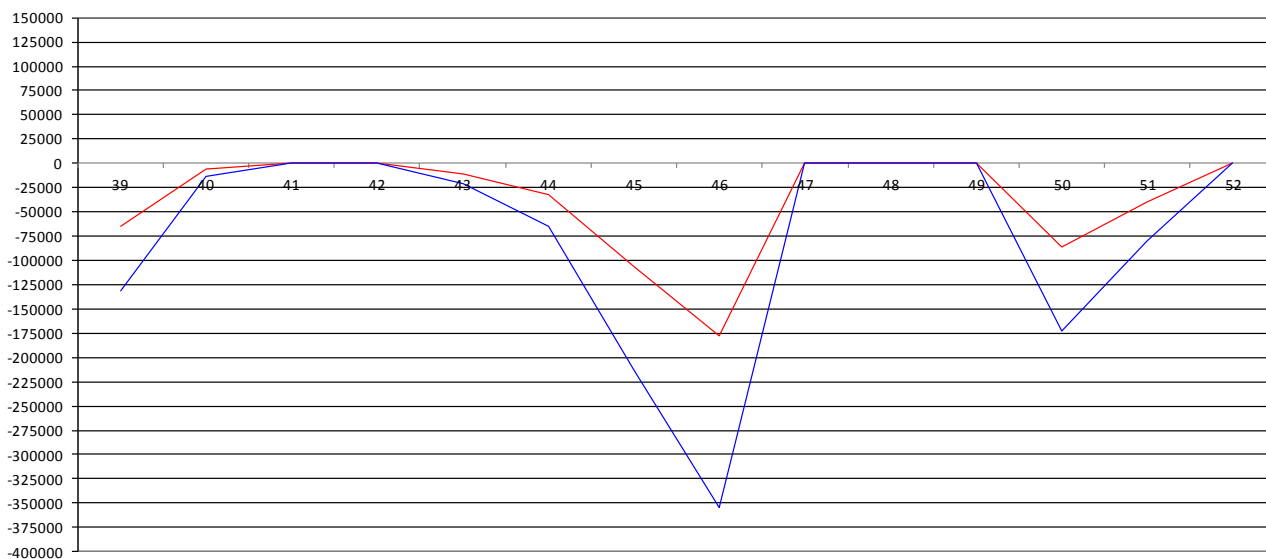


Figure 26 - Testing Charges

**Appendix F: Default Commercial Offer Data Used**

The table below lists for each unit the number of times in operations during December 2016 where the Commercial Offer Data was based on a Participant submission within the Market window, or based on Standing Data or Default Data submitted.

PNAME	RNAME	Manual	Adjusted	Standing	COUNT
PT_400024	GU_400120	31			31
PT_400024	GU_400121	31			31
PT_400030	GU_400180	37			37
PT_400030	GU_400181	38			38
PT_400030	GU_400182	38			38
PT_400030	GU_400183	38			38
PT_400030	GU_400200	38			38
PT_400030	GU_400201	40			40
PT_400030	GU_400202	37			37
PT_400030	GU_400203	39			39
PT_400030	GU_400210	33			33
PT_400030	GU_400211	33			33
PT_400030	GU_400220	33			33
PT_400030	GU_400221	33			33
PT_400030	GU_400240	33			33
PT_400030	GU_400250	33			33
PT_400030	GU_400251	33			33
PT_400030	GU_400252	33			33
PT_400030	GU_400260	33			33
PT_400030	GU_400270	38			38
PT_400030	GU_400271	33			33
PT_400030	GU_400272	33			33
PT_400030	GU_400280	33			33
PT_400030	GU_400281	33			33
PT_400030	GU_400290	33			33
PT_400030	GU_400300	37			37
PT_400030	GU_400311	37			37
PT_400030	GU_400324	37			37
PT_400030	GU_400325	37			37
PT_400030	GU_400360	33			33
PT_400030	GU_400361	33			33
PT_400030	GU_400362	33			33
PT_400030	GU_400363	33			33
PT_400030	GU_400370	33			33
PT_400030	GU_400850	37			37
PT_400032	GU_400430	31			31
PT_400034	GU_400940	31			31
PT_400034	GU_401090	31			31
PT_400034	GU_401440	31			31
PT_400034	GU_401680	31			31
PT_400035	GU_400480	56			56
PT_400037	GU_400500	33			33
PT_400041	GU_400530	55			55
PT_400044	GU_400540	56			56
PT_400054	GU_400620	31			31
PT_400055	GU_400630	31			31

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PT_400064	GU_400750	31		31
PT_400064	GU_400751	31		31
PT_400064	GU_400752	31		31
PT_400064	GU_400753	31		31
PT_400064	GU_400762	31		31
PT_400064	GU_400770	31		31
PT_400064	GU_400771	31		31
PT_400064	GU_400780	31		31
PT_400064	GU_400781	31		31
PT_400075	GU_400930	65		65
PT_400077	GU_400950	31		31
PT_400078	GU_401010	31		31
PT_400078	GU_401011	31		31
PT_400172	GU_401860	31		31
PT_500024	GU_500040	37		37
PT_500024	GU_500041	31		31
PT_500027	GU_500130	89		89
PT_500027	GU_500131	89		89
PT_500027	GU_500140	89		89
PT_500034	GU_501350	32		32
PT_500040	GU_500281	63		63
PT_500040	GU_500282	63		63
PT_500040	GU_500283	32		32
PT_500040	GU_500284	32		32
PT_500045	GU_500820	32		32
PT_500045	GU_500821	32		32
PT_500045	GU_500822	32		32
PT_500045	GU_500823	32		32
PT_500045	GU_500824	32		32
PT_500045	GU_500825	32		32
PT_500048	GU_500904	47		47
PT_500050	GU_501040	31		31
PT_500050	GU_501050	31		31
PT_500050	GU_501150	31		31
PT_500050	GU_501190	31		31
PT_500053	GU_501130	31		31
PT_500066	GU_501210	31		31
PT_500073	GU_501230	3		3
PT_400090	DSU_401610	32		32
PT_400138	DSU_401590	31		31
PT_400090	DSU_401620	31		31
PT_400116	DSU_401400	31		31
PT_500098	DSU_501450	4		4
PT_500067	DSU_501380	21		21
PT_400106	DSU_401330	30		30
PT_400090	DSU_401270	31		31
PT_400124	DSU_401490	32		32
PT_500083	I_NIMOYLE	90		90
PT_400021	I_ROIEWIC	9		9
PT_500021	I_NIMOYLE	30		30
PT_500075	I_NIMOYLE	79		79
PT_500024	I_NIMOYLE	31		31
PT_400163	I_ROIEWIC	27		27
PT_500031	I_NIMOYLE	31		31

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PT_500069	I_NIMOYLE	90		90
PT_400157	I_ROIEWIC	2		2
PT_400096	I_ROIEWIC	26		26
PT_500037	I_NIMOYLE	22		22
PT_400115	I_ROIEWIC	31		31
PT_400136	I_ROIEWIC	10		10
PT_500081	I_NIMOYLE	28		28
PT_500070	I_NIMOYLE	63		63
PT_400108	I_ROIEWIC	19		19
PT_400170	I_ROIEWIC	9		9
PT_400171	I_ROIEWIC	8		8
PT_400164	I_ROIEWIC	1		1
PT_500092	I_NIMOYLE	34		34
PT_400030	I_ROIEWIC	9		9
PT_500088	I_NIMOYLE	57		57
PT_500085	I_NIMOYLE	16		16
PT_400021	GU_400021		31	31
PT_400021	GU_400050		31	31
PT_400021	GU_400060		31	31
PT_400021	GU_400070		31	31
PT_400021	GU_400080		31	31
PT_400021	GU_400591		31	31
PT_400021	GU_400600		31	31
PT_400021	GU_400910		31	31
PT_400021	GU_400920		31	31
PT_400021	GU_401080		31	31
PT_400021	GU_401380		31	31
PT_400021	GU_401600		31	31
PT_400021	GU_401640		31	31
PT_400025	GU_400130		31	31
PT_400032	GU_400430		1	1
PT_400034	GU_400940		1	1
PT_400034	GU_401090		1	1
PT_400034	GU_401440		1	1
PT_400034	GU_401680		1	1
PT_400038	GU_400550		31	31
PT_400050	GU_400650		31	31
PT_400050	GU_400660		31	31
PT_400050	GU_401000		31	31
PT_400050	GU_401060		31	31
PT_400050	GU_401150		31	31
PT_400050	GU_401240		31	31
PT_400050	GU_401250		31	31
PT_400050	GU_401280		31	31
PT_400050	GU_401290		31	31
PT_400050	GU_401360		31	31
PT_400050	GU_401790		31	31
PT_400054	GU_400620		1	1
PT_400055	GU_400630		1	1
PT_400062	GU_400730		31	31
PT_400062	GU_400731		31	31
PT_400062	GU_400840		31	31
PT_400066	GU_401540		31	31
PT_400066	GU_401820		31	31

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PT_400077	GU_400950			1	1
PT_400082	GU_401100			31	31
PT_400087	GU_401230			31	31
PT_400148	GU_401690			31	31
PT_400150	GU_401700			31	31
PT_400151	GU_401770			31	31
PT_400151	GU_401780			31	31
PT_400152	GU_401710			31	31
PT_400152	GU_401720			31	31
PT_400152	GU_401730			31	31
PT_400152	GU_401740			31	31
PT_400152	GU_401750			31	31
PT_400152	GU_401760			31	31
PT_400162	GU_401830			31	31
PT_500021	GU_500010			31	31
PT_500021	GU_500740			31	31
PT_500021	GU_501160			31	31
PT_500032	GU_500211			31	31
PT_500032	GU_501120			31	31
PT_500032	GU_501280			31	31
PT_500032	GU_501290			31	31
PT_500032	GU_501300			31	31
PT_500032	GU_501400			31	31
PT_500039	GU_500270			31	31
PT_500044	GU_500720			31	31
PT_500047	GU_500790			31	31
PT_500050	GU_501040			1	1
PT_500050	GU_501050			1	1
PT_500050	GU_501150			1	1
PT_500050	GU_501190			1	1
PT_500061	GU_501170			31	31
PT_500062	GU_501180			31	31
PT_500066	GU_501210			1	1
PT_500073	GU_501230			29	29
PT_500074	GU_501250			31	31
PT_500089	GU_501360			31	31
PT_400144	DSU_401660			31	31
PT_400090	DSU_401850			31	31
PT_400090	DSU_401800			31	31
PT_500078	DSU_501330			31	31
PT_400111	DSU_401390			31	31
PT_500067	DSU_501380			10	10
PT_400106	DSU_401330			1	1
PT_400116	DSU_401870			31	31
PT_400124	DSU_401880			31	31
PT_400133	DSU_401530			31	31
PT_500098	DSU_501450			28	28
	<b>Total</b>	<b>4052</b>	<b>0</b>	<b>2189</b>	<b>6241</b>
	<b>Percentage</b>	<b>64.93%</b>	<b>0.00%</b>	<b>35.07%</b>	<b>100.00%</b>

Table 24 – Commercial Offer Data Used



## **Appendix G: Total Charges and Payments Data**

The tables below list historical values for Total Charges and Total Payments in the SEM by month and currency since start of the SEM.

- Month of inclusion based on invoice date.
- Amounts are after application of Settlement Reallocation.





## Appendix H: Full Balancing Costs

Historical figures for full Balancing Costs of both the Trading and Capacity Markets, for the current financial year (October to September), are provided below. Information related to periods before this is available in previous Monthly Market Operator Reports.

- Positive values indicate Payments were greater than Charges.
- Negative values indicate Charges were greater than Payments.

### Trading Market

Date Of Invoice	Week No	SEM Balancing Costs	VAT Balancing Costs
02/10/2015	38	-€1,655,942.38	€ 162,994.80
09/10/2015	39	-€1,135,216.68	€177,381.90
16/10/2015	40	€507,903.08	€106,382.04
23/10/2015	41	€681,099.48	€131,096.53
30/10/2015	42	€405,933.93	-€25,867.40
06/11/2015	43	€559,788.60	€38,427.78
13/11/2015	44	-€49,013.58	€13,013.70
20/11/2015	45	€760,249.70	€98,639.75
27/11/2015	46	€808,399.38	€71,687.58
04/12/2015	47	€466,243.69	-€300,749.94
11/12/2015	48	€897,437.38	-€534,740.45
18/12/2015	49	€141,592.08	-€388,379.01
30/12/2015	50	€878,459.85	-€160,949.17
05/01/2016	51	€838,626.05	-€0
08/01/2016	52	€1,134,591.97	-€0
03/01/2016	1	€615,047.23	-€0
22/01/2016	2	€1,273,552.21	-€0
29/01/2016	3	€1,174,521.30	-€0
05/02/2016	4	€504,528.98	-€0
12/02/2016	5	€856,861.27	-€0
19/02/2016	6	€92,167.26	-€0
26/02/2016	7	€255,104.63	-€0
04/03/2016	8	-€265,963.47	-€0
11/03/2016	9	€256,130.58	-€0
21/03/2016	10	-€13,382.85	-€0
25/03/2016	11	€531,976.18	-€0
01/04/2016	12	-€35,023.74	-€0
08/04/2016	13	-€2,353.02	-€0
15/04/2016	14	-€1,306,455.65	-€0
22/04/2016	15	-€1,078,232.88	-€0
29/04/2016	16	-€316,904.19	-€0
06/05/2016	17	€225,399.35	-€0
13/05/2016	18	-€852,085.24	-€0
20/05/2016	19	-€1,030,542.65	-€0
27/05/2016	20	-€835,814.27	-€0
03/06/2016	21	-€1,224,851.34	-€0
10/06/2016	22	-€1,362,326.06	-€0
17/06/2016	23	-€334,215.24	-€0
24/06/2016	24	-€735,443.16	-€0
01/07/2016	25	-€875,900.06	-€0
08/07/2016	26	-€911,184.06	-€0
15/07/2016	27	-€1,059,451.72	-€0

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Date Of Invoice	Week No	SEM Balancing Costs	VAT Balancing Costs
22/07/2016	28	-€859,485.92	-€0
29/07/2016	29	-€407,934.96	-€0
05/08/2016	30	-€186,586.75	-€0
12/08/2016	31	-€117,429.10	-€0
19/08/2016	32	-€511,694.11	-€0
26/08/2016	33	-€338,852.43	-€0
02/09/2016	34	-€945,476.51	-€0
09/09/2016	35	-€544,556.24	-€0
16/09/2016	36	-€636,434.36	-€0
23/09/2016	37	-€1,029,609.73	-€0
30/09/2016	38	€15,000.54	-€0
7/10/2016	39	€224,128.80	-€0
14/10/2016	40	€4,791,387.54	-€0
21/10/2016	41	€1,447,919.59	-€0
28/10/2016	42	€968,340.03	-€0
04/11/2016	43	€949,596.13	-€0
11/11/2016	44	€965,954.97	-€0
18/11/2016	45	€3,223,731.55	-€0
25/11/2016	46	€1,696,852.72	-€0
02/12/2016	47	€1,750,562.49	-€0
09/11/2016	48	€1,701,789.33	-€0
16/12/2016	49	€1,977,683.44	-€0
23/12/2016	50	€1,018,317.35	-€0
30/12/2016	51	€2,542,783.75	-€0

**Table 26 – Full Balancing Costs for Trading Charges and Payments**

Note: SEM Balancing Costs are provided based on daily exchange rates; VAT Balancing Costs are based on the Invoicing Date Trading Day exchange rate. VAT Balancing costs exclude Currency Cost related VAT.

### Capacity Market

Invoice Month	SEM Balancing Costs	VAT Balancing Costs
October 2015	-€340.35	-€ 7,800.91
November 2015	-€386.53	€20,938.81
December 2015	-€421.62	€0
January 2016	-€365.96	€0
February 2016	-€324.58	€0
March 2016	-€349.99	€0
April 2016	-€246.89	€0
May 2016	-€232.99	€0
June 2016	-€251.6	€0
July 2016	-€202.38	€0
August 2016	-€250.61	€0

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Invoice Month	SEM Balancing Costs	VAT Balancing Costs
September 2016	-€263.46	€0
October 2016	-€373.17	€0
November 2016	-€395.27	€0
December 2016	-400.31	€0

**Table 27 - Balancing Costs for Capacity Settlement**

Note: SEM Capacity Balancing Costs and VAT Balancing Costs are provided based on Annual Capacity exchange rate. VAT Balancing costs exclude Currency Cost related VAT.

### Appendix I: MSP Algorithms

The Market Operator has two different certified solvers used to determine Unit Commitment. These solvers use the Lagrangian Relaxation (LR) and Mixed Integer Programming (MIP) methodologies.

The primary algorithm used in the SEM is Lagrangian Relaxation (LR). Under certain schedule outcomes this solution is compared to results achieved using MIP. The SEMO policy on the use of MIP has been updated and is available from the SEMO website [here](#).

Historical information on runs and dates where the MIP algorithm has been used for published results is provided below.

Month	Ex-Ante	Ex-Ante 2	Ex-Post Indicative	Ex-Post Initial	Within Day
<u>October 2015</u>	=	=	=	=	<u>04/10/2015</u>
<u>November 2015</u>	<u>16/11/2015</u>	<u>30/11/2015</u>	<u>26/11/2015</u>	=	=
<u>December 2015</u>	=	<u>08/12/2015</u> <u>17/12/2015</u> <u>21/12/2015</u>	<u>08/12/2015</u> <u>10/12/2015</u> <u>11/12/2015</u> <u>14/12/2015</u>	<u>14/12/2015</u> <u>17/12/2015</u>	=
<u>January 2016</u>	=	<u>05/02/2016</u> <u>13/01/2016</u>	<u>07/01/2016</u> <u>08/01/2016</u>	<u>08/02/2016</u> <u>26/01/2016</u>	=
<u>February 2016</u>	=	=	=	=	<u>10/02/2016</u>
<u>March 2016</u>	=	<u>28/03/2016</u>	<u>10/03/2016</u>	<u>10/03/2016</u>	=
<u>April 2016</u>	=	=	=	=	=
<u>May 2016</u>	=	=	=	=	=

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Month	Ex-Ante	Ex-Ante 2	Ex-Post Indicative	Ex-Post Initial	Within Day
<u>June 2016</u>	-	-	-	<u>15/06/2016</u>	-
<u>July 2016</u>	-	-	-	-	-
<u>Aug 2016</u>	-	-	-	<u>16/08/2016</u>	-
<u>Sept 2016</u>	-	<u>10/09/2016</u> <u>11/09/2016</u> <u>14/09/2016</u>	-	<u>04/09/2016</u> <u>11/09/2016</u>	<u>11/09/2016</u> <u>24/09/2016</u>
<u>Oct 2016</u>	-	<u>03/10/2016</u> <u>26/10/2016</u>	<u>02/10/2016</u> <u>12/10/2016</u> <u>24/10/2016</u> <u>28/10/2016</u>	<u>04/10/2016</u> <u>07/10/2016</u> <u>08/10/2016</u> <u>24/10/2016</u> <u>25/10/2016</u>	<u>01/10/2016</u> <u>25/10/2016</u> <u>26/10/2016</u> <u>28/10/2016</u>
<u>Nov 2016</u>	-	<u>25/11/2016</u>	-	<u>01/11/2016</u> <u>17/11/2016</u>	<u>10/11/2016</u> <u>23/11/2016</u> <u>29/11/2016</u> <u>30/11/2016</u>
<u>Dec 2016</u>	<u>08/12/2016</u>	<u>06/12/2016</u> <u>08/12/2016</u> <u>13/12/2016</u> <u>15/12/2016</u> <u>21/12/2016</u>	<u>01/12/2016</u> <u>12/12/2016</u> <u>15/12/2016</u> <u>15/12/2016</u>	<u>04/12/2016</u> <u>16/12/2016</u> <u>18/12/2016</u> <u>20/12/2016</u> <u>22/12/2016</u>	<u>08/12/2016</u> <u>09/12/2016</u>

Table 28 - MIP Algorithms

Operational Date	Trade Date	Run Type	LR Peak SMP	MIP Peak SMP	Published
08/10/2015	04/10/2015	EP2	€1,000	€71.89	MIP
15/11/2015	16/11/2015	EA1	€524.42	€207.35	MIP
27/11/2015	26/11/2015	EP1	€1,000	€219.39	MIP
29/11/2015	30/11/2015	EA2	€1,000	€169.45	MIP
07/12/2015	08/12/2015	EA2	€1,000	€279.06	MIP
09/12/2015	08/12/2015	EP1	€1,000	€238.81	MIP
11/12/2015	10/12/2015	EP1	€1,000	€279.06	MIP
12/12/2015	11/12/2015	EP1	€1,000	€255.40	MIP
15/12/2015	14/12/2015	EP1	€1,000	€279.06	MIP
16/12/2015	17/12/2015	EA2	€1,000	€203.01	MIP
18/12/2015	14/12/2015	EP2	€1,000	€435.61	MIP
20/12/2015	21/12/2015	EA2	€1,000	€151.53	MIP



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21/12/2015	17/12/2015	EP2	€513.81	€412.60	MIP
04/01/2016	05/01/2016	EA2	€1,000	€1,000	MIP
08/01/2016	07/01/2016	EP1	€1,000	€207.75	MIP
09/01/2016	08/01/2016	EP1	€1,000	€279.06	MIP
12/01/2016	13/01/2016	EA2	€1,000	€170.51	MIP
12/01/2016	08/01/2016	EP2	€1,000	€279.06	MIP
30/01/2016	26/01/2016	EP2	€1,000	€207.85	MIP
10/02/2016	10/02/2016	WD1	€1,000	€176.75	MIP
11/03/2016	10/03/2016	EP1	€1,000	€179.85	MIP
14/03/2016	10/03/2016	EP2	€1,000	€179.38	MIP
27/03/2016	28/03/2016	EA2	€1,000	€114.04	MIP
19/06/2016	15/06/2016	EP2	€1,000	€279.06	MIP
20/08/2016	16/08/2016	EP2	€1,000	€97.16	MIP
08/09/2016	04/09/2016	EP2	(€100)	€37.82	MIP
09/09/2016	10/09/2016	EA2	€548.34	€1,000.00	MIP
10/09/2016	11/09/2016	EA2	(€100)	€28.68	MIP
11/09/2016	11/09/2016	WD1	(€100)	€67.67	MIP
13/09/2016	14/09/2016	EA2	€1,000	€46.98	MIP
15/09/2016	11/09/2016	EP2	(€100)	€189.67	MIP
24/09/2016	24/09/2016	WD1	(€100)	€79.61	MIP
01/10/2016	01/10/2016	WD1	€629.67	€174.47	MIP
02/10/2016	03/10/2016	EA2	(€100)	€213.50	MIP
03/10/2016	02/10/2016	EP1	(€100)	€67.66	MIP
08/10/2016	04/10/2016	EP2	€670.56	€530.47	MIP
11/10/2016	07/10/2016	EP2	€779.29	€279.06	MIP
12/10/2016	08/10/2016	EP2	€761.10	€271.73	MIP
13/10/2016	12/10/2016	EP1	€536.13	€536.13	MIP
25/10/2016	26/10/2016	EA2	€1,000	€176.89	MIP
25/10/2016	24/10/2016	EP1	€778.40	€542.17	MIP
25/10/2016	25/10/2016	WD1	€780.67	€184.41	MIP
26/10/2016	26/10/2016	WD1	€520.07	€520.07	MIP
28/10/2016	24/10/2016	EP2	€778.25	€542.17	MIP
28/10/2016	28/10/2016	WD1	€523.46	€185.11	MIP
29/10/2016	28/10/2016	EP1	€514.56	€226.86	MIP
29/10/2016	25/10/2016	EP2	€780.46	€436.68	MIP
05/11/2016	01/11/2016	EP2	€512.48	€218.59	MIP
10/11/2016	10/11/2016	WD1	€536.74	€190.70	MIP
21/11/2016	17/11/2016	EP2	€531.95	€227.60	MIP
23/11/2016	23/11/2016	WD1	€536.74	€228.93	MIP
24/11/2016	23/11/2016	EA2	€1,000	€373.29	MIP
29/11/2016	29/11/2016	WD1	€541.87	€541.87	MIP
30/11/2016	29/11/2016	EA2	€552.76	€181.28	MIP
30/11/2016	29/11/2016	EP1	€541.87	€270.18	MIP
01/12/2016	30/11/2016	EP1	€541.59	€207.75	MIP
04/12/2016	30/11/2016	EP2	€541.59	€207.75	MIP

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06/12/2016	07/12/2016	EA1	€1,000	€111.24	MIP
08/12/2016	08/12/2016	WD1	(€100)	€191.23	MIP
08/12/2016	09/12/2016	EA1	€940.08	€213.49	MIP
08/12/2016	09/12/2016	EA2	€1,000	€227.15	MIP
09/12/2016	09/12/2016	WD1	€544.89	€226.90	MIP
12/12/2016	13/12/2016	EP1	€550.08	€550.08	MIP
13/12/2016	14/12/2016	EA2	€1,000	€221.53	MIP
15/12/2016	16/12/2016	EA2	€1,000	€97.99	MIP
15/12/2016	14/12/2016	EP1	€551.72	€257.90	MIP
15/12/2016	14/12/2016	EP1	€577.68	€557.94	MIP
16/12/2016	12/12/2016	EP2	€564.56	€550.08	MIP
18/12/2016	14/12/2016	EP2	€551.72	€551.72	MIP
20/12/2016	16/12/2016	EP2	€1,000	€551.25	MIP
21/12/2016	22/12/2016	EA2	€1,000	€188.21	MIP
22/12/2016	18/12/2016	EP2	€552.30	€375.21	MIP

**Table 29 - MIP Vs LR Peak Price Comparison**