P304 – WORKGROUP PAR350 ANALYSIS

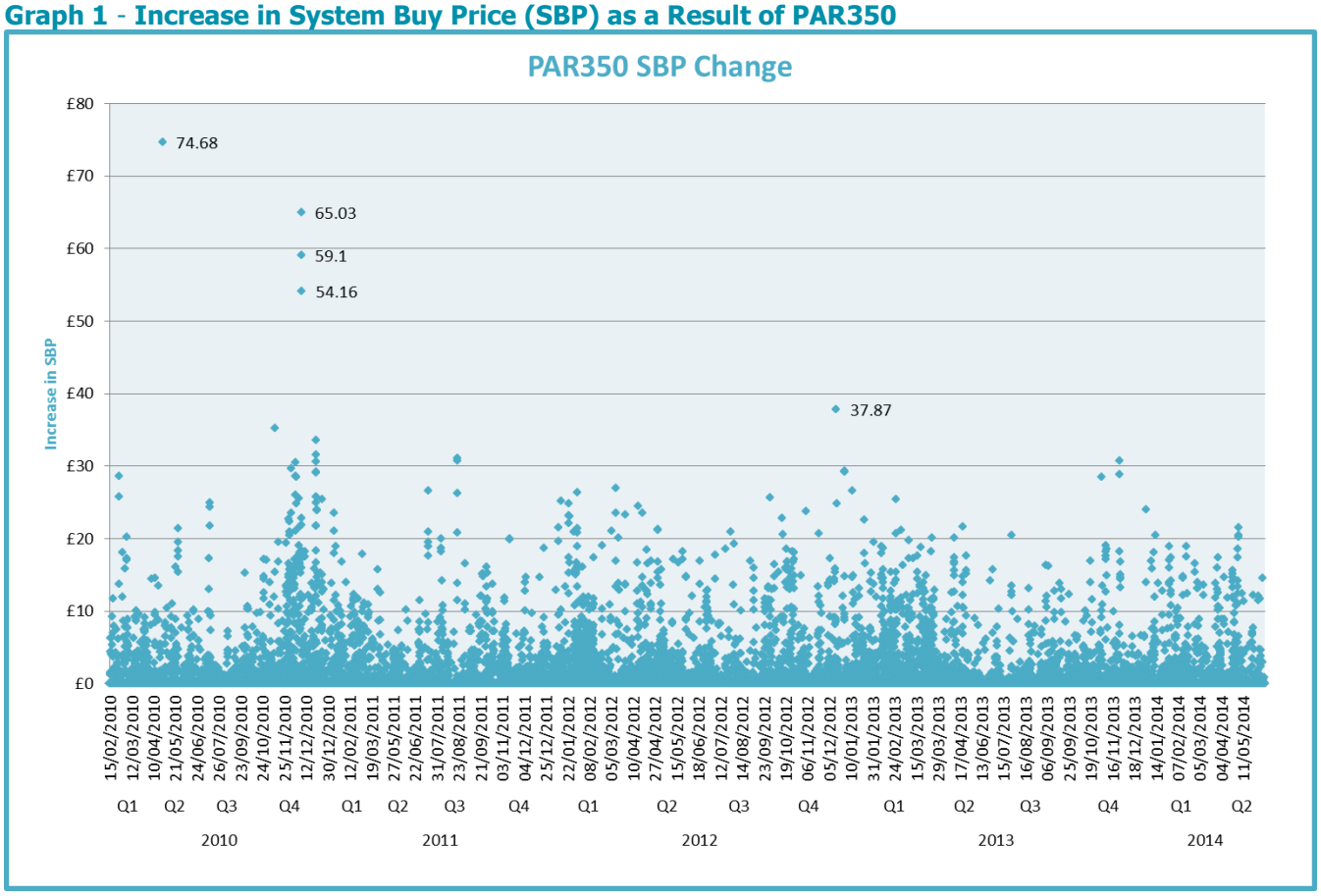
EXECUTIVE SUMMARY

P304 'Reduction in PAR from 500MWh to 250MWh' seeks to reduce the volume of Price Average Reference (PAR) to 250MWh to make System Prices (cash-out prices) more marginal when they are calculated using the Main Price (see Appendix 1 for the effect of PAR in the Main Price calculation). We provide this analysis to assess the impact of an alternative PAR volume – 350MWh on cash-out prices based on historical data starting from 2010 (post P217 implementation). We have also re-run the Settlement Trading Charge calculation using PAR350 cash-out prices to study the impacts to BSC Parties. Note that this analysis does not take into account behavioural changes as a result of PAR350. The full details of P304 can be found on the P304 page of the ELEXON website.

ELEXON's analysis shows that compared to PAR250, PAR350 will have a weaker effect on sharpening the Main Price when the period Net Imbalance Volume (NIV) is greater than 350MWh or less than -350MWh, i.e. increase System Buy Price (SBP) when the System is short and decrease System Sell Price (SSP) when the System is long. The Main Price will not be affected for Settlement Periods with a NIV between +/- 350MWh inclusive. This supports the intention of the EBSCR to make the Main Price a more accurate signal of scarcity on the system. We have applied PAR350 cash-out prices to BSC Parties' historical Imbalance Volumes to assess the impacts of Imbalance Charges and Residual Cashflow Reallocation Cashflow (RCRC) on BSC Parties. The findings are similar to that of PAR250 analysis, such that Parties with large Credited Energy Volumes will benefit from larger RCRC arising from PAR350 Main Price/Reverse Price spread. There is less impact to BSC Parties compared to PAR100/PAR250. Independent suppliers were more likely to be impacted by higher cash-out prices however the net daily impact is below £55 (about half of the impact of PAR250) for 97% of the suppliers.

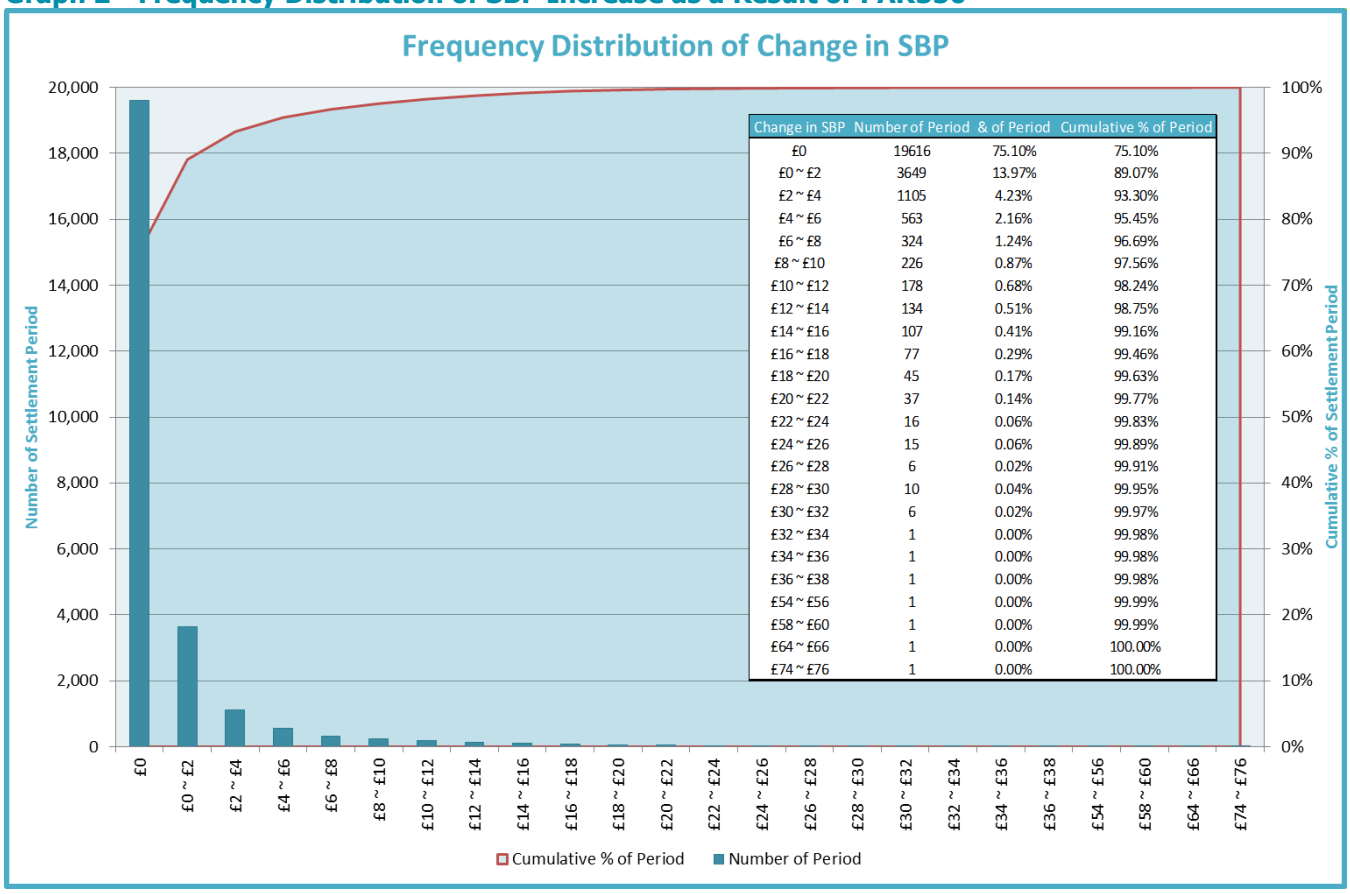
PAR350 MAIN PRICE IMPACT ANALYSIS

Graph 1 - Increase in System Buy Price (SBP) as a Result of PAR350



P304 – WORKGROUP PAR350 ANALYSIS

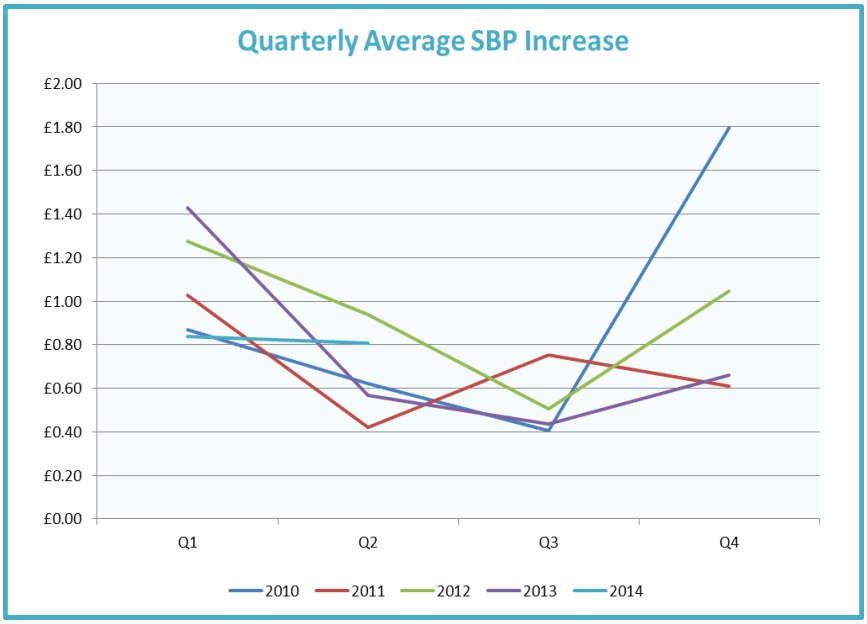
Graph 2 - Frequency Distribution of SBP Increase as a Result of PAR350



Change in SBP	Number of Period	& of Period	Cumulative % of Period
£0	19616	75.10%	75.10%
£0 ~ £2	3649	13.97%	89.07%
£2 ~ £4	1105	4.23%	93.30%
£4 ~ £6	563	2.16%	95.45%
£6 ~ £8	324	1.24%	96.69%
£8 ~ £10	226	0.87%	97.56%
£10 ~ £12	178	0.68%	98.24%
£12 ~ £14	134	0.51%	98.75%
£14 ~ £16	107	0.41%	99.16%
£16 ~ £18	77	0.29%	99.46%
£18 ~ £20	45	0.17%	99.63%
£20 ~ £22	37	0.14%	99.77%
£22 ~ £24	16	0.06%	99.83%
£24 ~ £26	15	0.06%	99.89%
£26 ~ £28	6	0.02%	99.91%
£28 ~ £30	10	0.04%	99.95%
£30 ~ £32	6	0.02%	99.97%
£32 ~ £34	1	0.00%	99.98%
£34 ~ £36	1	0.00%	99.98%
£36 ~ £38	1	0.00%	99.98%
£54 ~ £56	1	0.00%	99.99%
£58 ~ £60	1	0.00%	99.99%
£64 ~ £66	1	0.00%	100.00%
£74 ~ £76	1	0.00%	100.00%

Graph 1 shows that there were more Settlement Periods with large increases in SBP in 2010 especially during the winter. SBP increased less compared to PAR100/PAR250 with the maximum SBP increase being £74.68. Throughout the analysis period, SBP remained unchanged in 75.10% of the total Settlement Periods where SBP was the Main Price (short System). This percentage has increased by 13.12 percentage points compared to PAR250 suggesting that less Settlement Periods were affected when increasing PAR from 250MWh to 350MWh. Graph 2 shows the cumulative frequency distribution. Around 89% of the Periods were impacted by less than £2 and around 95% of the Periods were impacted by less than £6.

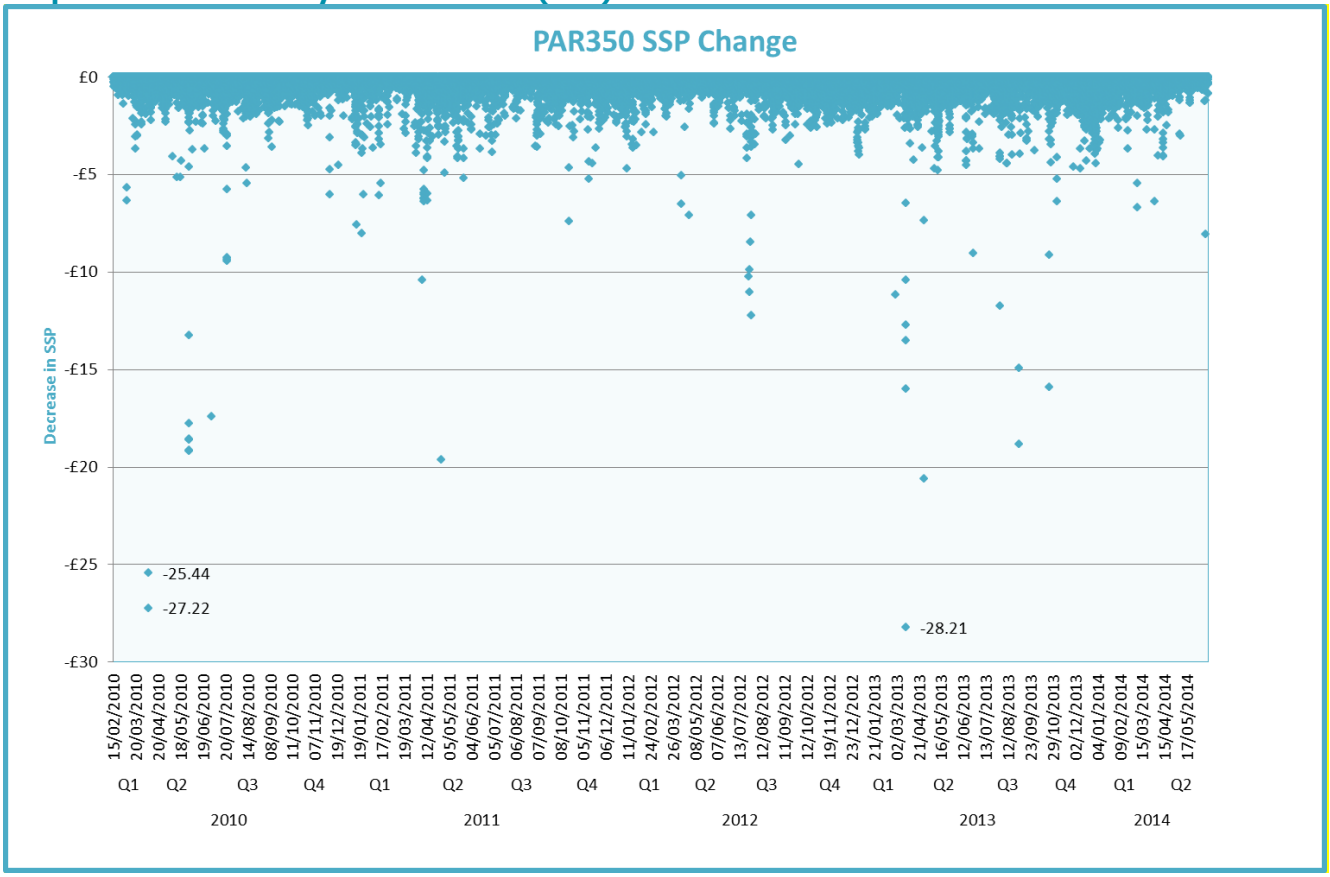
Graph 3 – Quarterly Average Increase in SBP



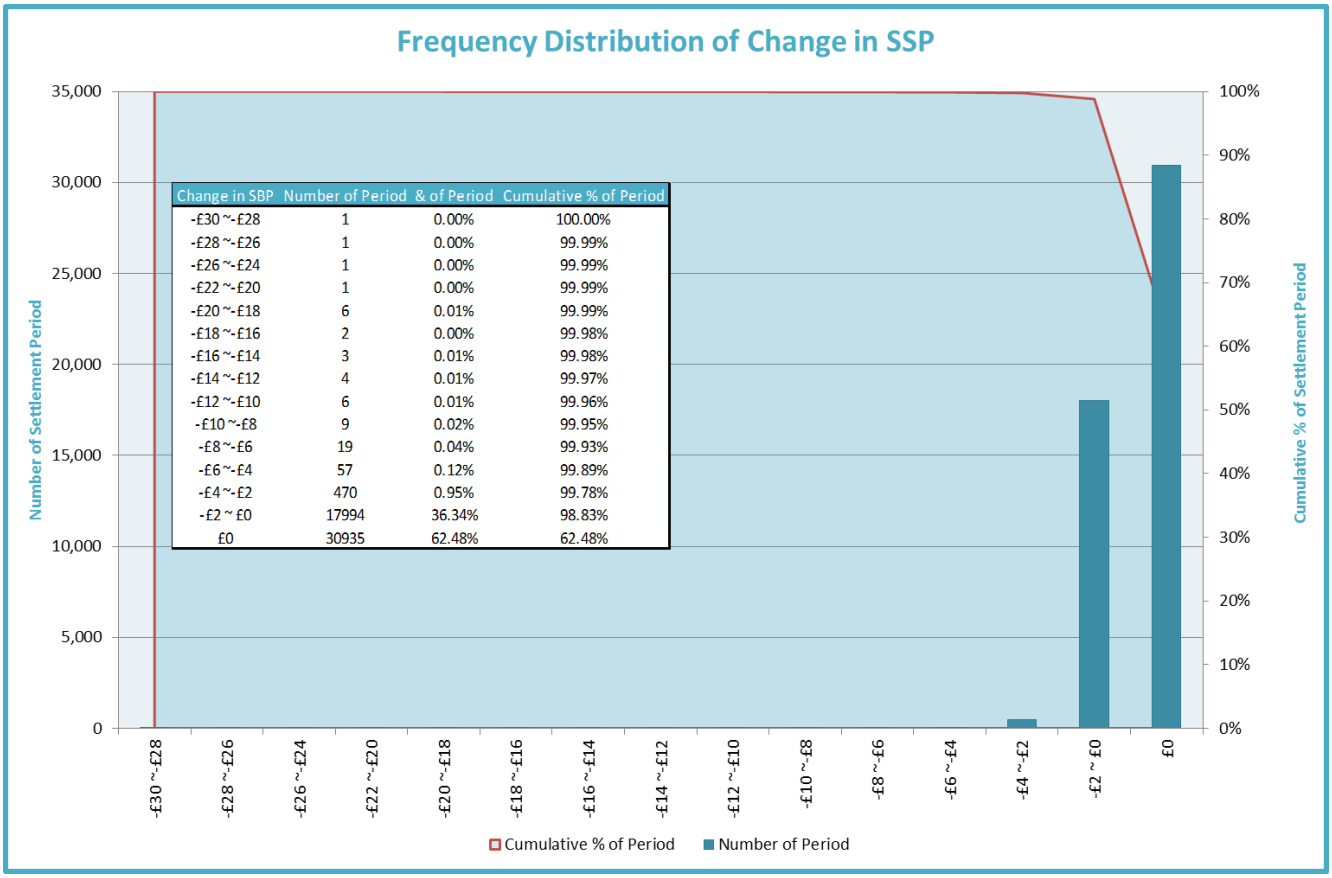
As shown in Graph 3, the average SBP increases in quarter 1 and quarter 4 (Calendar Year) were higher than those of other quarters in most of the years. The largest average SBP increase occurred in quarter 4 2010.

P304 – WORKGROUP PAR350 ANALYSIS

Graph 4 - Decrease in System Sell Price (SSP) as a Result of PAR350



Graph 5 - Frequency Distribution of SSP Decrease as a Result of PAR350



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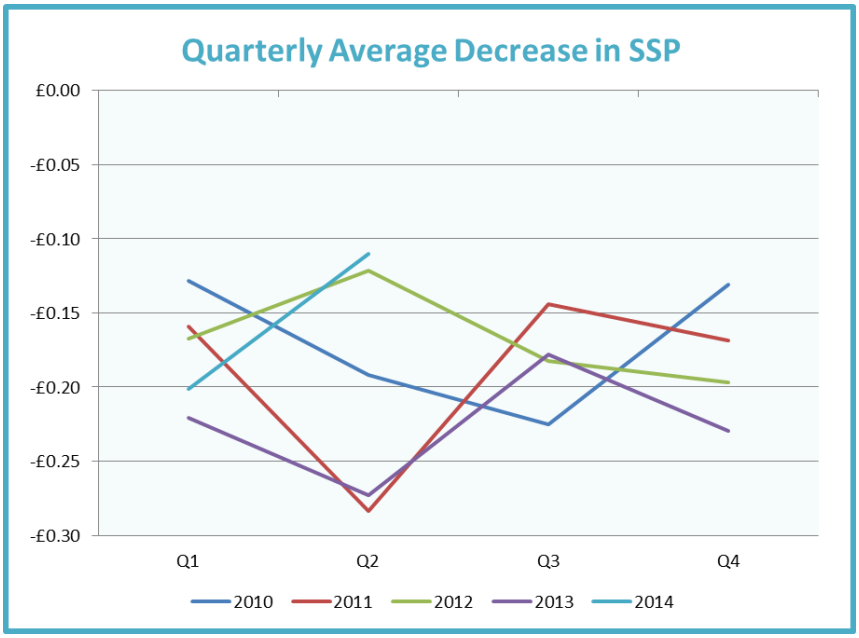
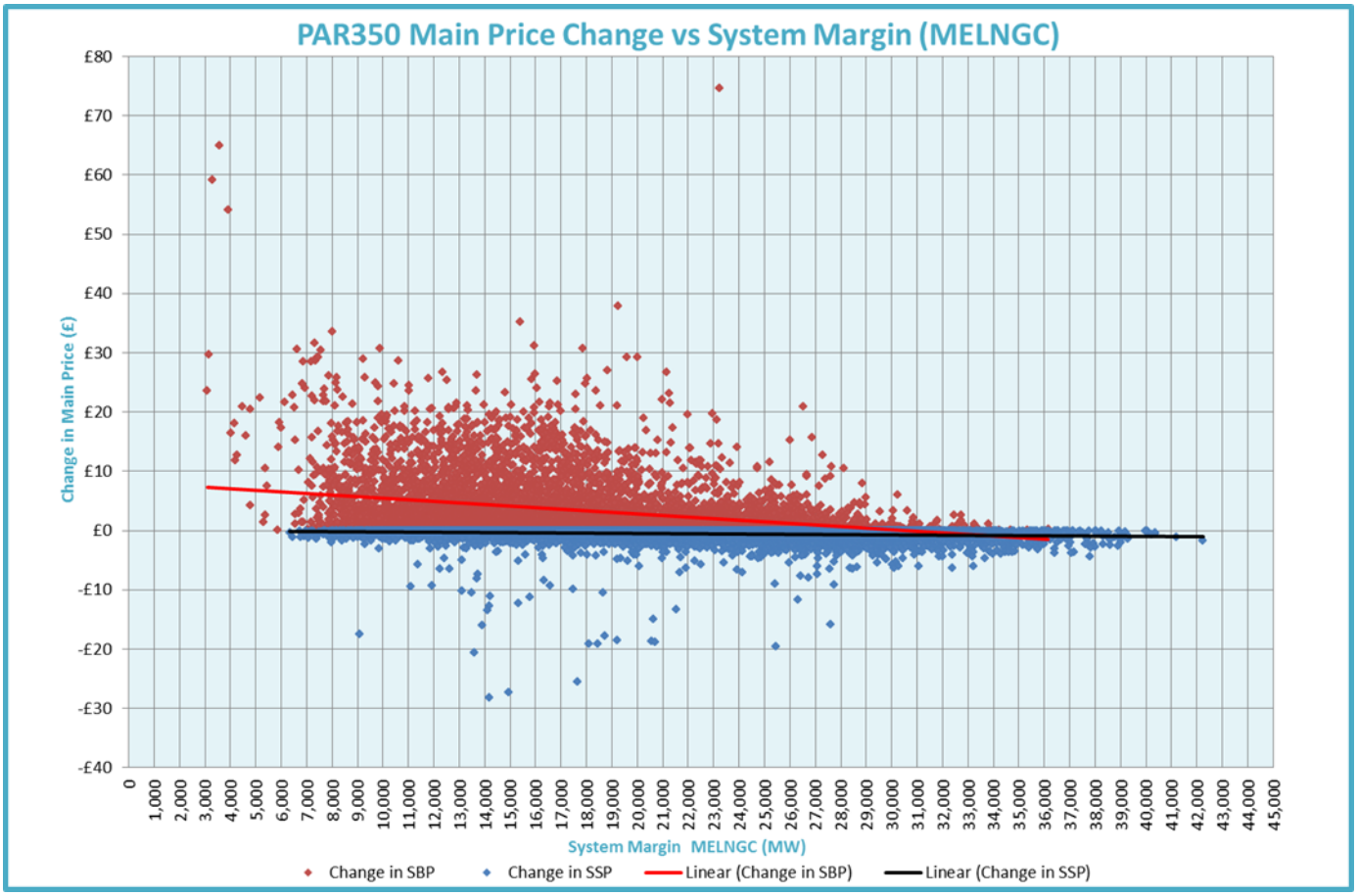
Graph 6 – Quarterly Average Decrease in SSP



Throughout the analysis period, SSP remained unchanged in 62.48% of the Settlement Periods where SSP was the Main Price (long System). This percentage has decreased by 15.4 percentage points compared to PAR250 showing that less Settlement Periods were affected when increasing PAR from 250MWh to 350MWh. The cumulative percentage suggests that around 98.83% of the Periods were impacted for less than -£2. The maximum decrease in SSP of -£28.21 occurred in Q1 2013. Graph 6 suggests that the average changes in SSP are more volatile in Q2.

PAR350 AGAINST SYSTEM MARGIN ANALYSIS

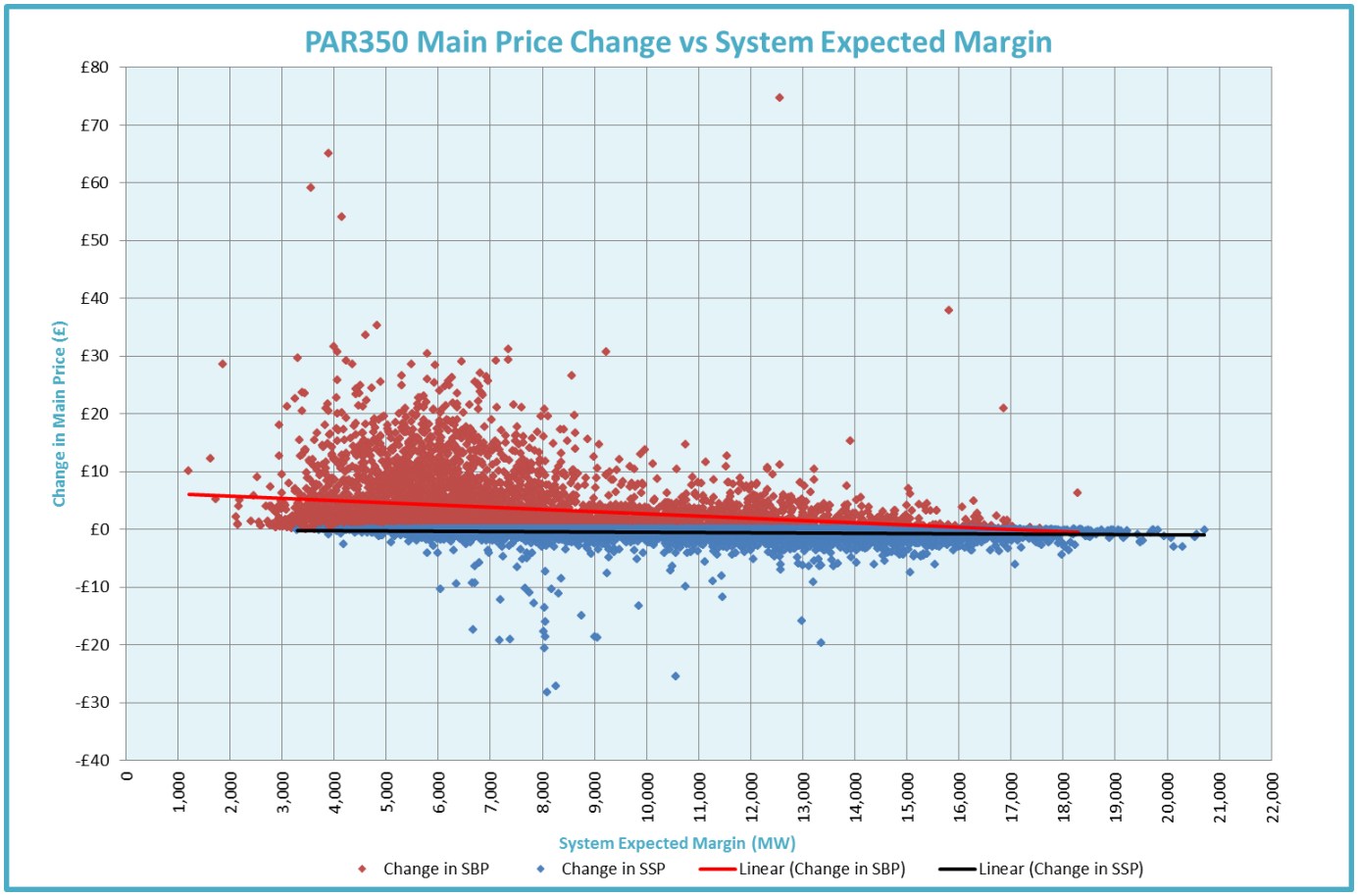
Graph 7 – Change in Main Price vs Transmission System Margin (MELNGC)



P304 – WORKGROUP PAR350 ANALYSIS

The objective of P304 is to calculate more marginal cash-out prices when System margins are tight. MELNGC is the indicated margin forecast for each Settlement Period and is the difference between the sums of the MELs submitted for that period and the National Demand Forecast made by the System Operator. (The greater the value, the higher the margin between available generation capacity and forecast demand).

Graph 8 – Change in Main Price vs Transmission System Expected Margin

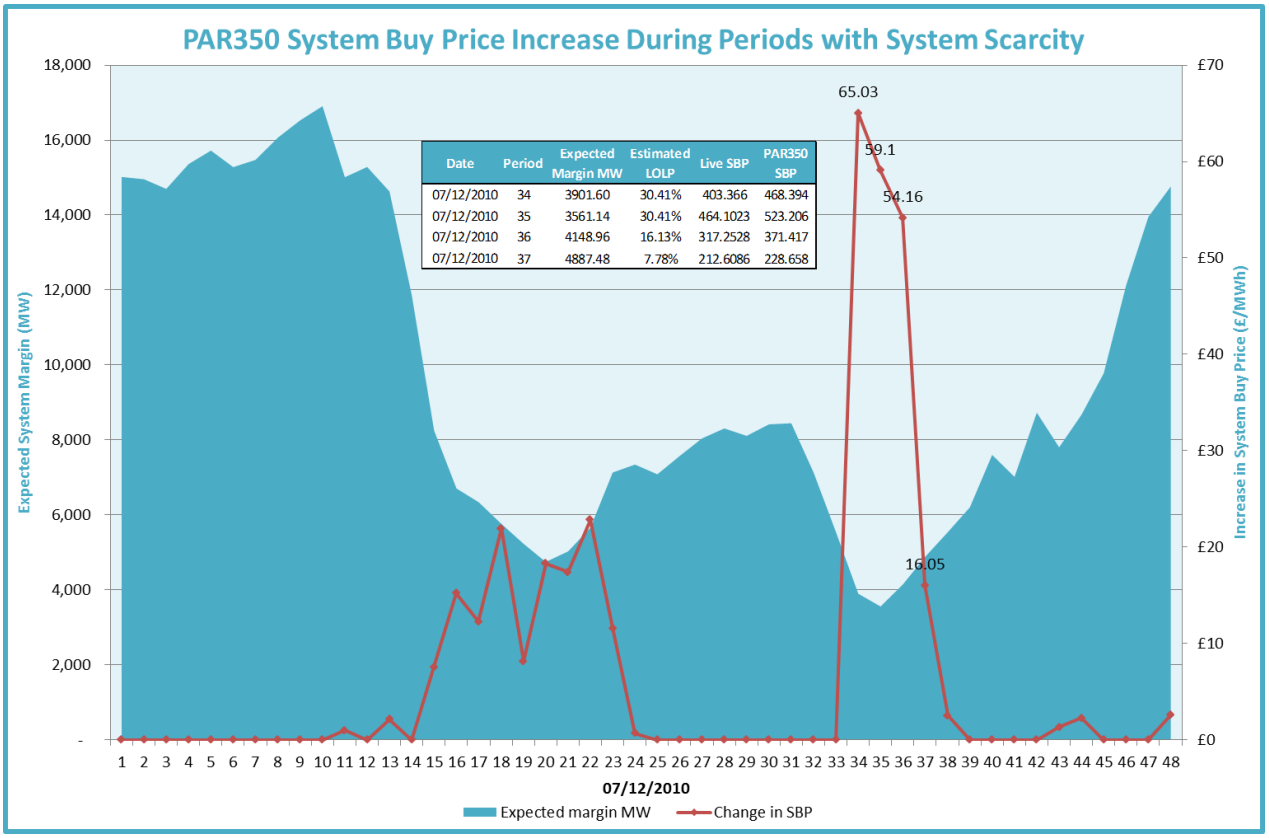


Another measure of System margin is its expected margin which is used by Ofgem in modelling Loss of Load Probability (LOLP). System expected margin is defined as: Available capacity - Demand + Interconnector flow + 900 (Non BM reserve).

Graph 7 & 8 provide the assessment of effectiveness of PAR350 (i.e. sharpen Main Price) when System margin is tight based on MELNGC and expected margin respectively. The best fit line of SBP suggests that SBP increases when System margin is low.

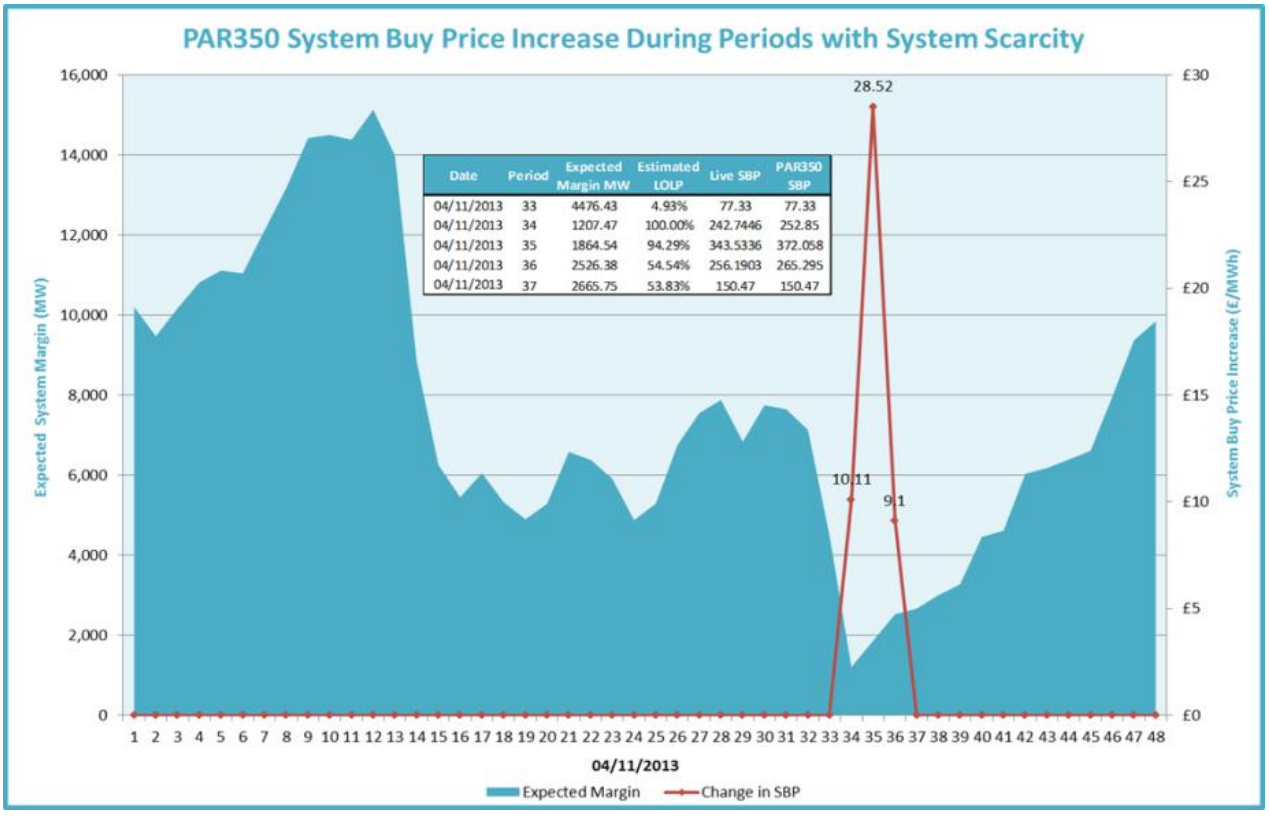
P304 – WORKGROUP PAR350 ANALYSIS

Graph 9 – PAR350 Largest System Buy Price Increase vs System margin on 7/12/2010



Date	Period	Expected Margin MW	Estimated LOLP	Live SBP	PAR350 SBP
07/12/2010	34	3901.60	30.41%	403.366	468.394
07/12/2010	35	3561.14	30.41%	464.1023	523.206
07/12/2010	36	4148.96	16.13%	317.2528	371.417
07/12/2010	37	4887.48	7.78%	212.6086	228.658

Graph 10 – PAR350 System Buy Price Increase vs Highest System Scarcity on 4/11/2013



Date	Period	Expected Margin MW	Estimated LOLP	Live SBP	PAR350 SBP
04/11/2013	33	4476.43	4.93%	77.33	77.33
04/11/2013	34	1207.47	100.00%	242.7446	252.85
04/11/2013	35	1864.54	94.29%	343.5336	372.058
04/11/2013	36	2526.38	54.54%	256.1903	265.295
04/11/2013	37	2665.75	53.83%	150.47	150.47

P304 – WORKGROUP PAR350 ANALYSIS

Graph 9 picks up the Periods with largest increase in SBP and determines whether such Periods reflect tight System margins. Graph 10 picks up the Periods where the level of System scarcity is high (high LOLP) and determines whether PAR350 would sharpen the SBP in these Periods. Both graphs show good relationship between SBP increase and high level of System scarcity such that that PAR350 would increase SBP when the System margin is exceptionally tight. This supports the intention to of PAR350.

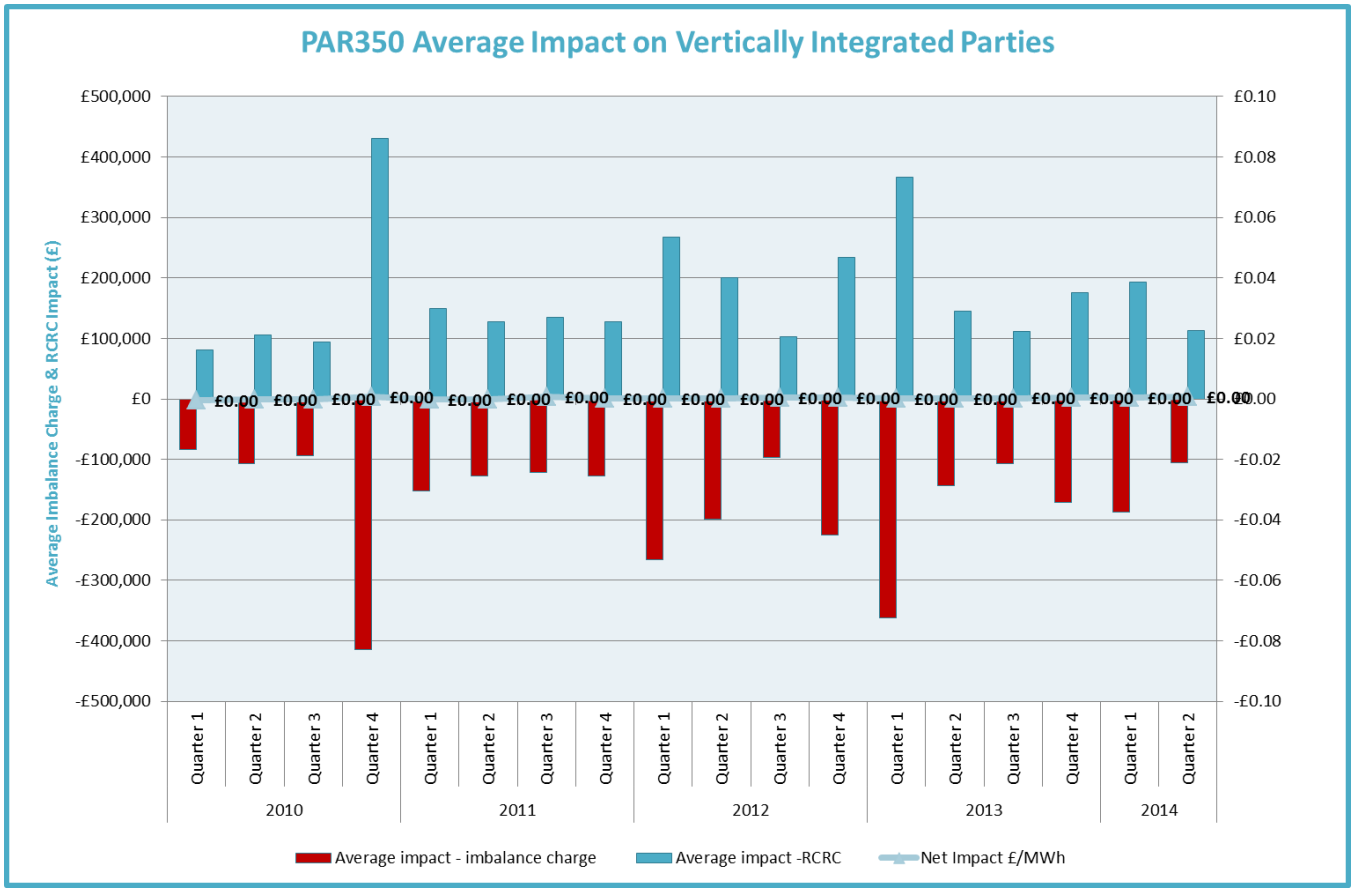
PAR350 PARTY TRADING CHARGE IMPACT ANALYSIS

We have re-run the Imbalance Charge and RCRC calculations using PAR350 cash-out prices to assess the impact to different types of Trading Parties and study whether any particular types of Trading Party would be more heavily affected by sharpened cash-out prices. We note that PAR350 has resulted in higher Imbalance Charge payments for all BSC Parties, especially during Q4 2010 and Q1 2013 when SBP increased more significantly (see graph 3). This would effectively increase the total RCRC given the Reverse Price remains unchanged and would benefit the Parties with large Credited Energy Volumes[1]. Under the current dual pricing system, reducing PAR would have more impact to Parties with small Credited Energy Volumes as their receivable RCRC does not sufficiently cover the additional imbalance cost arising from sharpened cash-out prices.

Table 3 – BSC Party Grouping

Group
Vertically Integrated
Independent Generator - Thermal
Independent Generator - Wind
Independent Suppliers

Graph 11 – Average PAR350 Impact on Vertically Integrated Parties

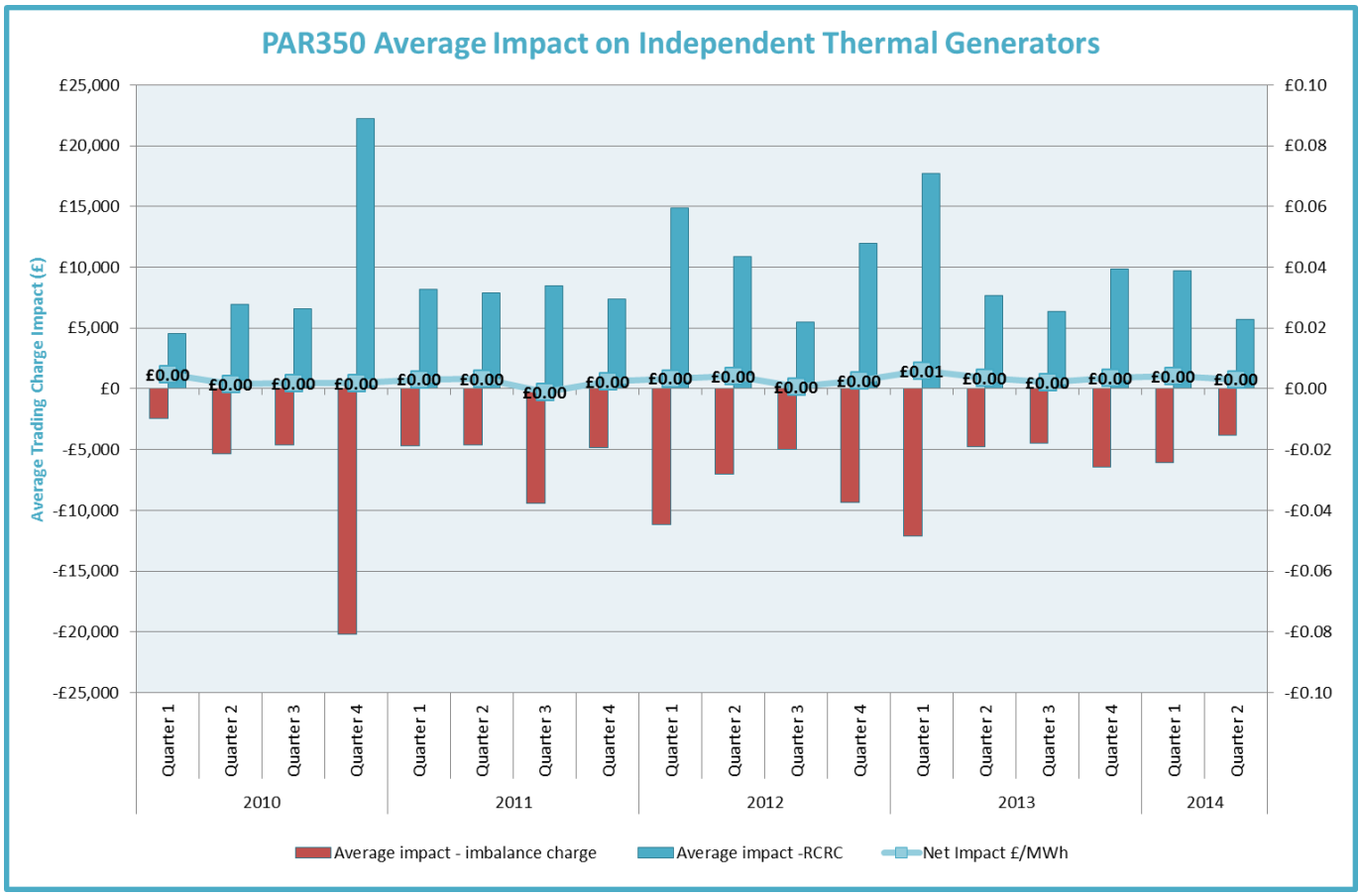


[1] RCRC is net Imbalance Charge payment to be redistributed back to Parties which amount is proportional to the amount of Credited Energy in BSC Parties' trading accounts. Large Trading Parties would therefore receive more money from RCRC because they have more Credited Energy Volumes.

P304 – WORKGROUP PAR350 ANALYSIS

Graph 11 shows the quarterly average impact on Trading Charges for vertically integrated Parties as a result of PAR350. Each individual vertically integrated Party includes both their supplier and generator businesses. There were negative impacts in quarter 1 to quarter 3 2010 and quarter 1 2011. The higher Imbalance Charge due to sharpened cash-out prices paid by vertically integrated Parties was netted off by higher RCRC payment in the majority of quarters which results in net gain for vertically integrated Parties in these Periods. In comparison to PAR250, the overall net gain was less due to lower RCRC payments arising from smaller PAR350 Main Price/Reverse Price spread. The average net impact per MWh of Credited Energy is £0.00/MWh for vertically integrated Parties due to the large amount of energy that is traded by them.

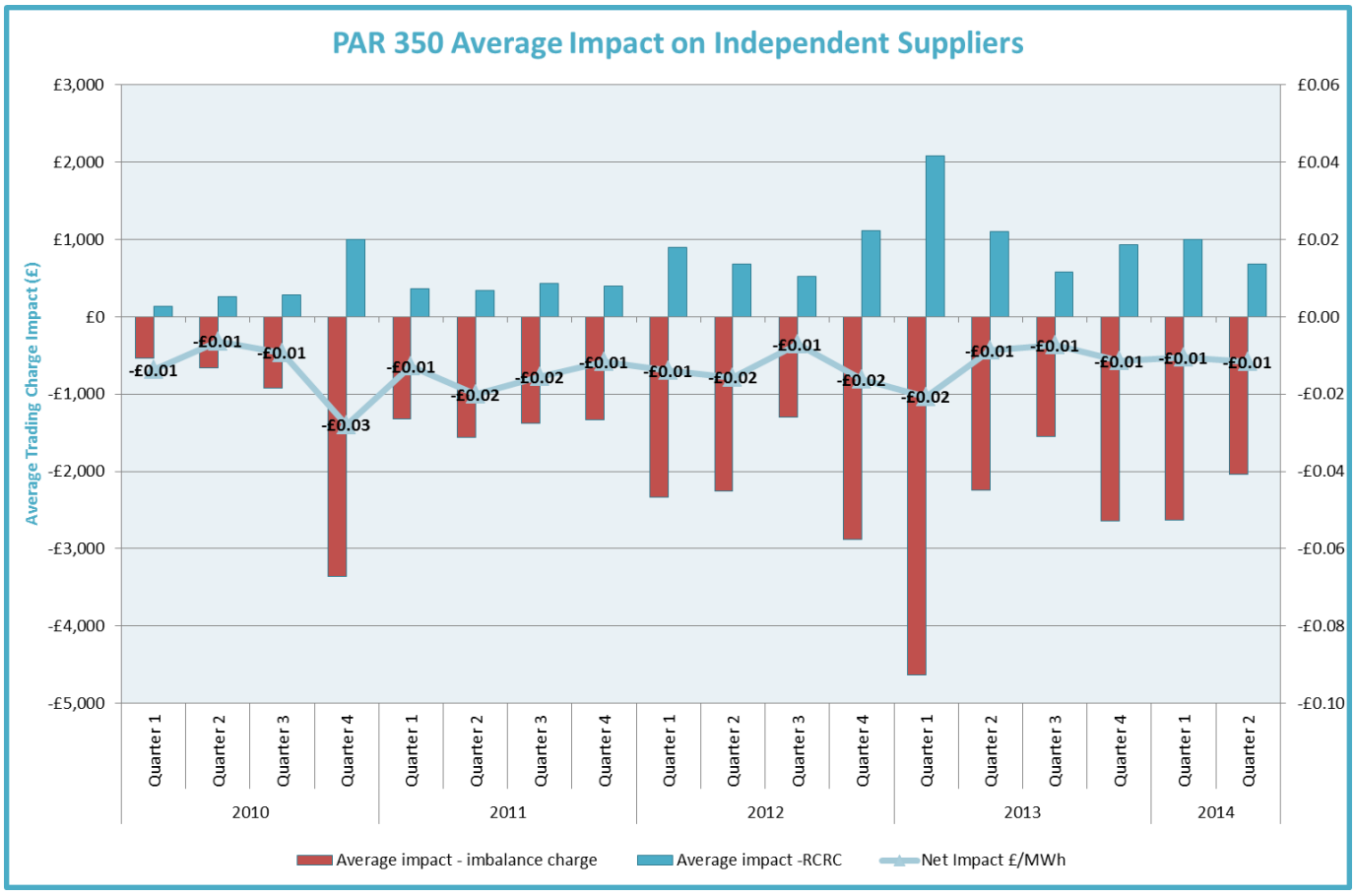
Graph 12 – Average PAR350 Impact on Independent Thermal Generators



Graph 12 shows the quarterly average impact on Trading Charges for independent thermal generators as a result of PAR350. Overall, independent thermal generators would gain in the majority of periods, which is due to a combination of better energy balancing from more predictable station exports and higher receivable RCRC based on large Credited Energy Volumes however the gain would be less compared to PAR250. The average net impact per MWh of Credited Energy was £0.00/MWh for the majority of period for thermal generators.

P304 – WORKGROUP PAR350 ANALYSIS

Graph 13 – Average PAR350 Impact on Independent Suppliers

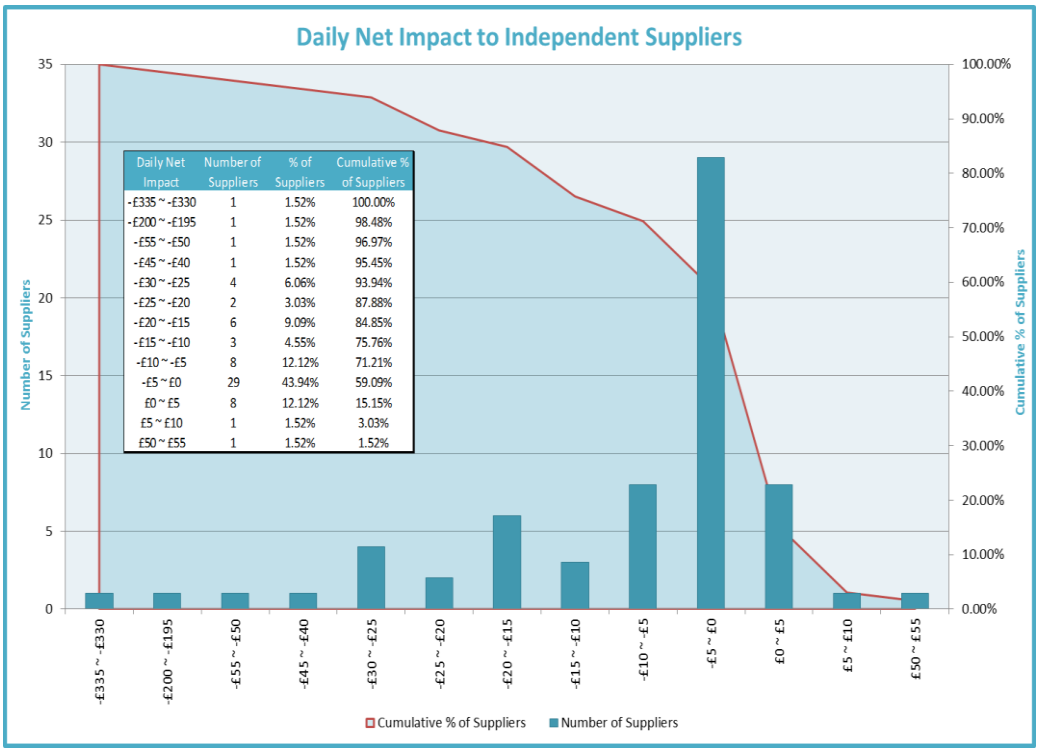


Graph 13 shows the quarterly average impact on Trading Charges for independent suppliers as a result of PAR350. Unlike the other types of Parties, the receivable RCRC for independent suppliers does not outweigh the additional Imbalance Charges incurred due to sharpened cash-out prices. Independent suppliers are more likely to be exposed to Imbalance Charges than generators as it is harder for them to predict the consumption of customers. Independent suppliers also had less Credited Energy Volumes in their trading accounts compared to vertically integrated players and big generators and hence would receive less RCRC. In comparison to PAR250, PAR350 would reduce this impact on independent suppliers due to smaller cash-out price spread. The net impact per MWh of Credit Energy for independent suppliers is more volatile and ranges from -£0.01/MWh to -£0.03/MWh.

Note that the impact on independent wind generators is not shown in this analysis as the impact is minimal, except for quarter 3 2013 which was due to the abnormal charge of a particular Party (see PAR250 analysis for information).

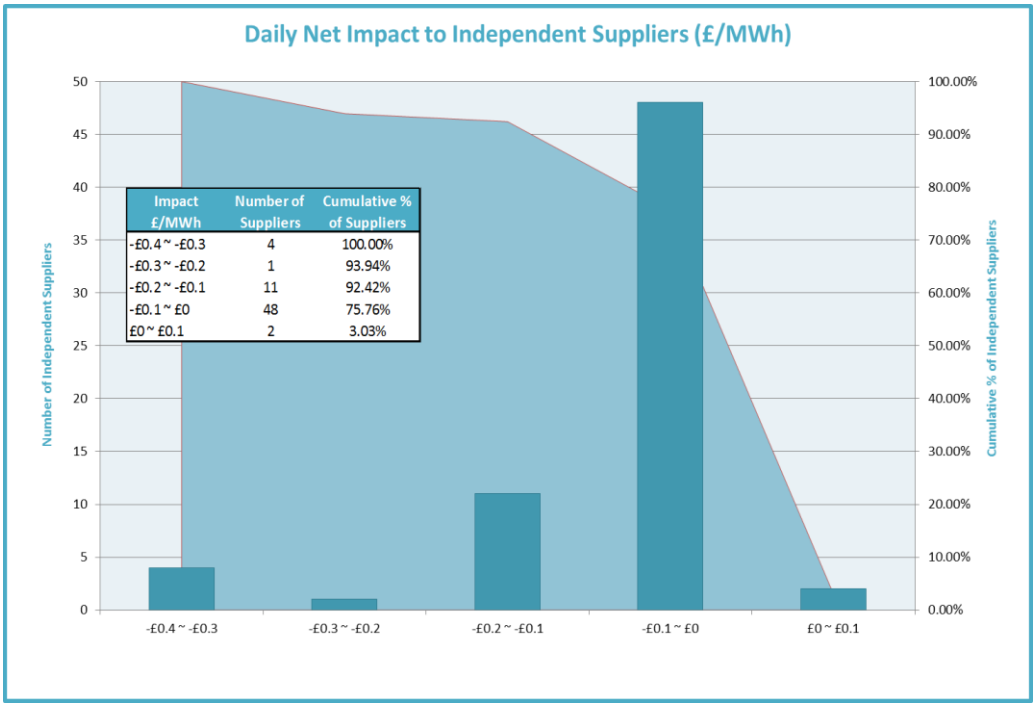
P304 – WORKGROUP PAR350 ANALYSIS

Graph 14 – Daily Net Impact on Independent Suppliers (£/MWh)



Daily Net Impact	Number of Suppliers	% of Suppliers	Cumulative % of Suppliers
-£335 ~ -£330	1	1.52%	100.00%
-£200 ~ -£195	1	1.52%	98.48%
-£55 ~ -£50	1	1.52%	96.97%
-£45 ~ -£40	1	1.52%	95.45%
-£30 ~ -£25	4	6.06%	93.94%
-£25 ~ -£20	2	3.03%	87.88%
-£20 ~ -£15	6	9.09%	84.85%
-£15 ~ -£10	3	4.55%	75.76%
-£10 ~ -£5	8	12.12%	71.21%
-£5 ~ £0	29	43.94%	59.09%
£0 ~ £5	8	12.12%	15.15%
£5 ~ £10	1	1.52%	3.03%
£50 ~ £55	1	1.52%	1.52%

Graph 15 – Daily Net Impact on Independent Suppliers (£/MWh)



Impact £/MWh	Number of Suppliers	Cumulative % of Suppliers
-£0.4 ~ -£0.3	4	100.00%
-£0.3 ~ -£0.2	1	93.94%
-£0.2 ~ -£0.1	11	92.42%
-£0.1 ~ £0	48	75.76%
£0 ~ £0.1	2	3.03%

We have looked into the daily net impact for independent suppliers as shown in Graph 14. Among all the active independent suppliers (some BSC Parties are registered as Suppliers but had no energy consumption in the past four years, they are excluded from the impact analysis), around 97% of the suppliers had a daily net impact of less than £55. Two Parties had a daily impact of £196 and £322 respectively, however this was due to the Parties having large Imbalance Volumes during a few specific days/Settlement Periods when the cash-out prices were sharpened by PAR350. We also looked at the net daily impact using £/MWh to factor the sizes of independent suppliers, this is shown in Graph 15. 75.76% of independent suppliers would be impacted by less than -£0.1/MWh and the maximum daily average impact to independent suppliers would be limited to -£0.4/MWh as a result of PAR350.

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We have also broken the overall impact down to different types of suppliers. The below table describes the segmentation of independent suppliers.

Table 4 – Supplier Segmentation[2]

Party Name	Party ID	Segmentation	Party Name	Party ID	Segmentation
AXPO UK LIMITED	EGLUK	I&C	Jetstream Energy Supply Ltd	JETSTREA	Independent domestic
Eneco Energy Trade	ENECOUK	I&C	LOCO2 Energy Supply Limited	GANYMEDE	Independent domestic
IPM Energy Retail Ltd	FOUR	I&C	Lorimer Power Ltd	LORM	Independent domestic
POWER4ALL Limited	POWER4	I&C	OVO Electricity Ltd	OVOE	Independent domestic
Farmoor Energy Limited	FRENERGY	I&C	Spark Energy Supply Limited	SPARKNRG	Independent domestic
Corona Energy Retail 5 Ltd	SUPELEC3	I&C + SME	Utilita Energy Limited	UTILITA	Independent domestic
DONG Energy Power Sales UK Ltd	MAGNETIC	I&C + SME	Good Energy Limited	PURE	Renewable supplier
Gazprom M & T Retail Ltd	GMTR	I&C + SME	The Renewable Energy Co Ltd	RENC	Renewable supplier
GDF SUEZ Marketing Ltd	RWETDL	I&C + SME	NEAS Energy Limited	CNDA	Renewables Aggregator
Haven Power Ltd	HAVEN	I&C + SME	Opus Energy Renewables Limited	EVENERGY	Renewables Aggregator
Opus Energy (Corporate) Ltd	CHENERGY	I&C + SME	Smartestenergy Limited	SMARTEST	Renewables Aggregator
Opus Energy Limited	OXFPOWER	I&C + SME	Statkraft Markets Gmbh	STATKRA1	Renewables aggreagator
Total Gas & Power Ltd	TFEGP	I&C + SME	Symbio Energy LLP	SYMBIO18	Renewables Aggregator
Co-operative Energy Limited	VOLA	Independent domestic	Vattenfall Energy Trading	VTS	Renewables Aggregator
Economy Energy Trading Limited	PAL	Independent domestic	Axis Telecom Ltd	AXISTELE	SME
Electricity Plus Supply Ltd	BAENERGY	Independent domestic	BES Commercial Electricity Ltd	EBEA	SME
Extra Energy Supply Limited	CALLISTO	Independent domestic	Dual Energy Direct Limited	DUALENER	SME
First Utility Limited	FRST01	Independent domestic	EPG Energy Limited	EPGNRG	SME
Flow Energy Ltd	CIRCUIT	Independent domestic	Hudson Energy Supply UK Ltd	AMPERE	SME
GNERGY Limited	LUMA	Independent domestic	MA Energy Limited	MA200308	SME
I Supply Energy Limited	COOP	Independent domestic			

[2] **Supplier segmentation source reference: Cornwall Energy**
I&C = A supplier whose principle business is supplying energy to industrial and commercial customers.
SME = A supplier whose principle business is supplying energy Small Medium Enterprise customers.
Renewable Aggregator = A suppliers whose principle business is managing embedded renewable energy.

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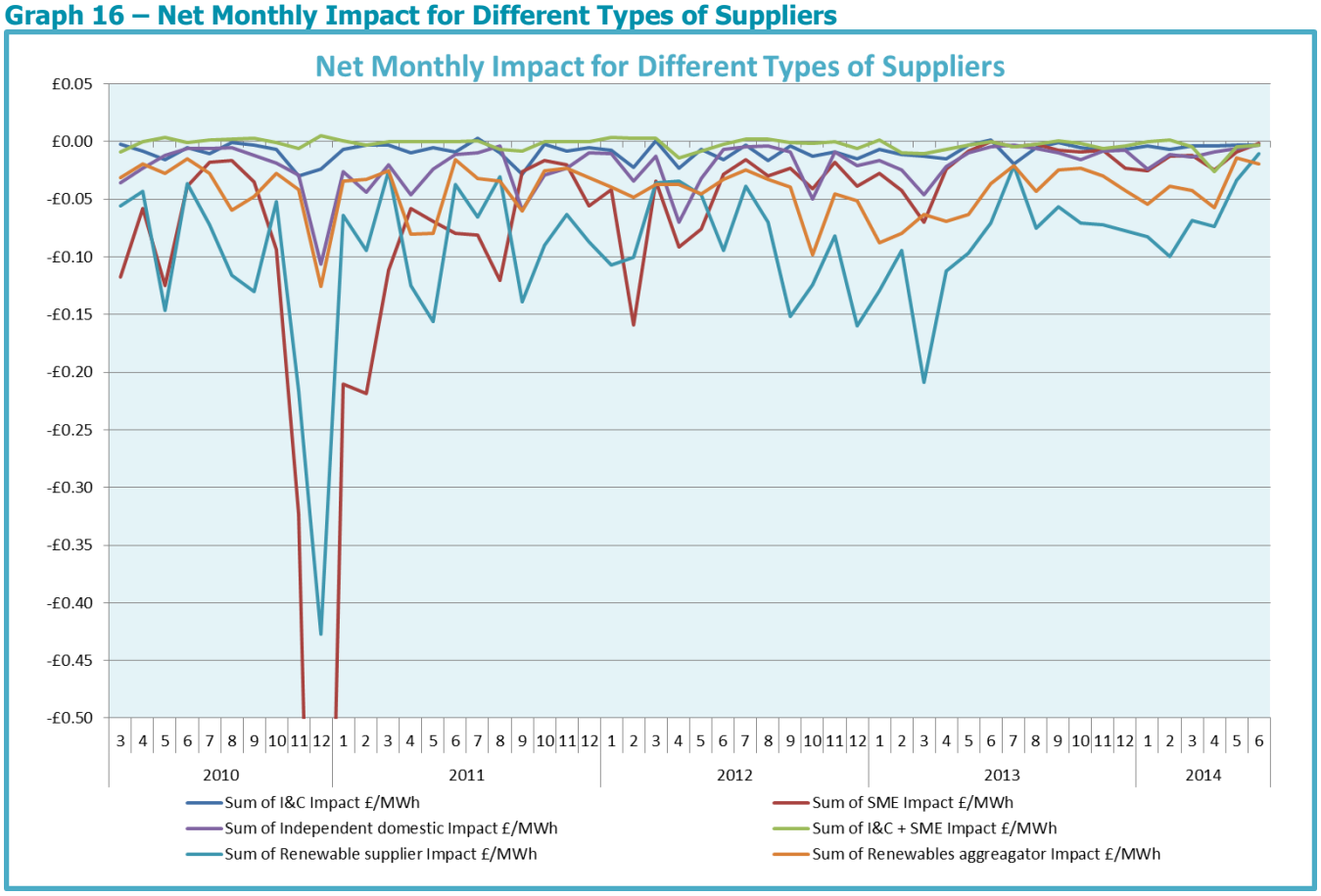
Graph 16 – Net Monthly Impact for Different Types of Suppliers



Graph 16 shows that, despite the spike in December 2010 (-£1.09/MWh) for SME suppliers which was due to one particular Party having an abnormal imbalance in that month, renewable suppliers would have experienced the largest impact as a result of PAR350 with a maximum net impact of -£0.43/MWh in December 2010 when the System Price increased most significantly. All other types of suppliers would have an average monthly impact limited to -£0.13/MWh in a worst case scenario.

Impact Summary Statistics during Periods with Significant System Scarcity

As requested by the P314 Workgroup, we provide, in Appendix 2, the impact summary statistics for different Party Groups and for different types of independent suppliers during several Periods with significant System scarcity. This will help assess the impact to different types of Parties as a result of PAR350 when System scarcity is high.

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Appendix 1: The Main Price Calculation with Different PAR Values

This is an example of the System Sell Price (Main Price) calculation for Period 30 on 31/08/2013, and here we demonstrate how different PAR values would impact the final price calculation. PAR is a cash-out pricing parameter which determines the maximum volume of most expensive priced energy balancing actions to be volume averaged to calculate the Main Price. The smaller the PAR values, the more marginal the price will be (hence we will take less cheap balancing actions when calculating the Main Price).

The below table shows all the PAR (500MWh) adjusted balancing actions that the live SSP of -£11.48/MWh was calculated based on. When PAR decreases to 350MWh, we exclude more cheap balancing actions (i.e. tightening our selection box in the below table) to calculate the SSP, this effectively sharpens the SSP to -£30.48. As PAR decreases further to 250MWh, the SSP drops to -£53.29/MWh and eventually to -£78/MWh when PAR equals 100MWh.

BOA	Date	Period	BMU	PAR Adjusted Volume	Price	TLM	TLM Adjusted Volume	BOA Final Cost	PAR			
BID	20130831	30	T_WHILW-1	-15.476	-78	0.9909	-15.335	1196.12	PAR 500	PAR 350	PAR 250	PAR 100
BID	20130831	30	T_CLDSW-1	-13.687	-78	0.9909	-13.562	1057.84				
BID	20130831	30	T_GRIFW-1	-13.437	-78	0.9909	-13.314	1038.48				
BID	20130831	30	T_GRIFW-2	-13.437	-78	0.9909	-13.314	1038.48				
BID	20130831	30	T_WHILW-1	-13.15	-78	0.9909	-13.03	1016.36				
BID	20130831	30	T_BLLA-1	-13.15	-78	0.9909	-13.03	1016.36				
BID	20130831	30	T_WHILW-1	-12.3	-78	0.9909	-12.188	950.68				
BID	20130831	30	T_WHILW-2	-12.3	-78	0.9909	-12.188	950.68				
BID	20130831	30	T_GORDW-1	-11.853	-78	0.9909	-11.745	916.1				
BID	20130831	30	T_CLDNW-1	-10.265	-78	0.9909	-10.172	793.38				
BID	20130831	30	T_WHILW-2	-8.856	-78	0.9909	-8.775	684.49				
BID	20130831	30	T_WHILW-1	-8.834	-78	0.9909	-8.753	682.76				
BID	20130831	30	T_CLDCW-1	-7.626	-78	0.9909	-7.557	589.42				
BID	20130831	30	T_WHILW-2	-7.246	-78	0.9909	-7.18	560.03				
BID	20130831	30	T_GORDW-1	-4.249	-78	0.9909	-4.21	328.42				
BID	20130831	30	T_HADHW-1	-2.657	-78	0.9909	-2.633	205.35				
BID	20130831	30	T_CLDCW-1	-2.371	-78	0.9909	-2.349	183.22				
BID	20130831	30	T_TDBNW-1	-2.201	-78	0.9909	-2.181	170.08				
BID	20130831	30	T_HADHW-1	-2.174	-78	0.9909	-2.154	168.01				
BID	20130831	30	T_TDBNW-1	-1.02	-78	0.9909	-1.011	78.82				
BID	20130831	30	T_CLDCW-1	-0.693	-78	0.9909	-0.687	53.58				
BID	20130831	30	E_BETHW-1	-3.042	-76	0.9909	-3.014	229.06				
BID	20130831	30	M_CAS-GAR01	-5.1	-50	0.9909	-5.053	252.67				
BID	20130831	30	M_CAS-GAR01	-3.9	-50	0.9909	-3.864	193.22				
BID	20130831	30	M_CAS-BEU01	-0.908	-50	0.9909	-0.9	45				
BID	20130831	30	M_CAS-BEU01	-0.483	-50	0.9909	-0.479	23.94				
BID	20130831	30	T_DRAXX-1	-18.375	20	0.9909	-18.207	-364.14				
BID	20130831	30	T_DRAXX-4	-17.625	20.1	0.9909	-17.464	-351.03				
BID	20130831	30	T_DRAXX-3	-17.625	20.5	0.9909	-17.464	-358.01				
BID	20130831	30	T_LOAN-2	-52.125	26.5	0.9909	-51.649	-1368.7				
BID	20130831	30	T_LOAN-2	-37.5	26.5	0.9909	-37.158	-984.68				
BID	20130831	30	T_LOAN-4	-64.764	27.5	0.9909	-64.172	-1764.74				
BID	20130831	30	T_RUGPS-7	-7.708	30	0.9909	-7.638	-229.14				
BID	20130831	30	T_RUGPS-6	-7.708	30	0.9909	-7.638	-229.14				
BID	20130831	30	T_RUGPS-7	-1.581	30	0.9909	-1.566	-46.99				
BID	20130831	30	T_RUGPS-6	-1.581	30	0.9909	-1.566	-46.99				
BID	20130831	30	T_RATS-3	-9.208	31	0.9909	-9.124	-282.85				
BID	20130831	30	T_RATS-2	-7.75	31.1	0.9909	-7.679	-238.82				
BID	20130831	30	T_RATS-2	-3.333	31.1	0.9909	-3.303	-102.72				
BID	20130831	30	T_ABTH8	-12.5	34.01	0.9909	-12.386	-421.24				
BID	20130831	30	T_PEHE-1	-19.816	37	0.9909	-19.635	-726.5				
BID	20130831	30	T_PEHE-1	-17.174	37	0.9909	-17.017	-629.63				
BID	20130831	30	T_PEHE-1	-13.211	37	0.9909	-13.09	-484.33				
PAR500				-500		0.9909	-495.43	5687.58	-11.48			
PAR350				-350		0.9909	-346.80	10570.95	-30.48			
PAR250				-250		0.9909	-247.72	13200.87	-53.29			
PAR100				-100		0.9909	-99.09	7728.79	-78.00			

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Appendix 2: Impact Summary Statistics[3] during Periods with System Scarcity

4/11/2013 Period 34 PAR350 Impact Statistics

Group	Average of Impact (£/MWh)	Max of Impact (£/MWh)	Min of Impact (£/MWh)	StdDev of Impact (£/MWh)
Thermal Generators	-0.76	0.26	-9.96	2.76
Wind Generators	0.61	4.00	0.00	1.36
Independent Suppliers	-0.55	0.26	-16.16	2.45
Vertically Integrated	-0.07	4.00	-8.59	1.54
Grand Total	**-0.41**	**4.00**	**-16.16**	**2.29**

Supplier Segmentation	Average of Impact (£/MWh)	Max of Impact (£/MWh)	Min of Impact (£/MWh)	StdDev of Impact (£/MWh)
I&C	0.26	0.26	0.26	0.00
I&C + SME	0.11	0.26	-0.05	0.22
Independent domestic	-1.50	0.26	-9.56	3.30
Renewable supplier	-0.19	0.21	-0.59	0.57
Renewables aggreagator	-3.13	0.26	-9.80	5.78
SME	0.26	0.26	0.25	0.01
#N/A	-1.57	0.26	-16.16	4.33
Grand Total	**-1.24**	**0.26**	**-16.16**	**3.60**

Supplier Segment	Party Code[4]	Impact £/MWh
I&C	9984	0.26
I&C	2650	0.26
I&C + SME	7617	0.26
Independent domestic	9685	0.26
Independent domestic	6396	0.26
Independent domestic	1295	0.26
Independent domestic	4932	0.26
Renewables aggreagator	8658	0.26
SME	1569	0.26
SME	3275	0.26
SME	7846	0.26
#N/A	1248	0.26
#N/A	3993	0.26
SME	2087	0.25
Independent domestic	5051	0.23
Renewable supplier	6106	0.21

[3] The impact figures are for specific Settlement Period and are in £/MWh and have been rounded to two decimal places. This is the net impact (summing over imbalance charge and RCRC) divide by the Credited Energy Volume. Supplier Segmentation #N/A are those Parties categorised as independent suppliers according to their BSC roles but are not typical suppliers as described in Table 4. See Table 5 for the list of independent suppliers under #N/A Segmentation.

[4] Party Codes are four digit random numbers assigned by ELEXON to ensure anonymity. If you would like to reveal your own Party Code please contact ELEXON.

Independent domestic	9312	0.19
Renewables aggreagator	9768	0.15
#N/A	1064	0.14
#N/A	6782	0.11
#N/A	671	0
#N/A	5793	0
#N/A	9879	0
#N/A	2483	0
#N/A	4509	0
#N/A	4946	0
#N/A	8132	0
#N/A	5142	-0.04
I&C + SME	848	-0.05
#N/A	4868	-0.12
#N/A	5627	-0.26
#N/A	4602	-0.26
Renewable supplier	7802	-0.59
Independent domestic	5798	-2.04
#N/A	745	-2.33
Independent domestic	598	-3.39
Independent domestic	4414	-9.56
Renewables aggreagator	9885	-9.8
#N/A	272	-9.8
#N/A	4606	-16.16

9/7/2013 Period 23 PAR350 Impact Statistics

Note that PAR350 does not have any impact on 9 July 2013 Period 23 and there is no impact to all Parties on this Period as a result of PAR350.

1/11/2013 Period 35 PAR350 Impact Statistics

Group	Average of Impact (£/MWh)	Max of Impact (£/MWh)	Min of Impact (£/MWh)	StdDev of Impact (£/MWh)
Thermal Generators	-0.54	0.19	-8.00	1.75
Wind Generators	-0.59	0.00	-2.00	0.91
Independent Suppliers	-0.19	0.19	-5.20	0.98
Vertically Integrated	-0.29	0.60	-5.07	0.94
Grand Total	**-0.31**	**0.60**	**-8.00**	**1.16**

Supplier Segmentation	Average of Impact (£/MWh)	Max of Impact (£/MWh)	Min of Impact (£/MWh)	StdDev of Impact (£/MWh)
I&C	0.19	0.19	0.19	0.00
I&C + SME	0.14	0.19	0.09	0.05
Independent domestic	-0.58	0.19	-5.11	1.65
Renewable supplier	-1.54	-0.30	-2.77	1.24
Renewables aggreagator	-1.62	0.19	-5.14	2.49
SME	0.19	0.19	0.19	0.00

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#N/A	-0.33	0.19	-5.20	1.20
Grand Total	**-0.44**	**0.19**	**-5.20**	**1.43**

Supplier Segment	Party Code	Impact £/MWh
I&C	9984	0.19
I&C	2650	0.19
I&C + SME	7617	0.19
Independent domestic	9685	0.19
Independent domestic	6396	0.19
Independent domestic	9312	0.19
Independent domestic	5798	0.19
Independent domestic	1295	0.19
Renewables aggreagator	8658	0.19
SME	1569	0.19
SME	2087	0.19
SME	3275	0.19
SME	7846	0.19
#N/A	5627	0.19
#N/A	1248	0.19
Independent domestic	5051	0.1
Renewables aggreagator	9768	0.1
I&C + SME	848	0.09
#N/A	3993	0.08
#N/A	6782	0.07
#N/A	671	0
#N/A	5793	0
#N/A	5142	0
#N/A	9879	0
#N/A	2483	0
#N/A	4509	0
#N/A	4946	0
#N/A	8132	0
#N/A	1064	-0.03
Independent domestic	4932	-0.05
#N/A	4868	-0.06
#N/A	4606	-0.08
#N/A	4602	-0.19
Renewable supplier	6106	-0.3
#N/A	745	-0.85
Independent domestic	598	-1.11
Renewable supplier	7802	-2.77
Independent domestic	4414	-5.11
Renewables aggreagator	9885	-5.14
#N/A	272	-5.2

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Supplier Segment	Party Code	Impact £/MWh
I&C	9984	0.19
I&C	2650	0.19
I&C + SME	7617	0.19
Independent domestic	9685	0.19
Independent domestic	6396	0.19
Independent domestic	9312	0.19
Independent domestic	5798	0.19
Independent domestic	1295	0.19
Renewables aggreagator	8658	0.19
SME	1569	0.19
SME	2087	0.19
SME	3275	0.19
SME	7846	0.19
#N/A	5627	0.19
#N/A	1248	0.19
Independent domestic	5051	0.1
Renewables aggreagator	9768	0.1
I&C + SME	848	0.09
#N/A	3993	0.08
#N/A	6782	0.07
#N/A	671	0
#N/A	5793	0
#N/A	5142	0
#N/A	9879	0
#N/A	2483	0
#N/A	4509	0
#N/A	4946	0
#N/A	8132	0
#N/A	1064	-0.03
Independent domestic	4932	-0.05
#N/A	4868	-0.06
#N/A	4606	-0.08
#N/A	4602	-0.19
Renewable supplier	6106	-0.3
#N/A	745	-0.85
Independent domestic	598	-1.11
Renewable supplier	7802	-2.77
Independent domestic	4414	-5.11
Renewables aggreagator	9885	-5.14
#N/A	272	-5.2

25/9/2013 Period 34 PAR350 Impact Statistics

Group	Average of Impact (£/MWh)	Max of Impact (£/MWh)	Min of Impact (£/MWh)	StdDev of Impact (£/MWh)

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Thermal Generators	-0.65	0.30	-12.14	2.83
Wind Generators	-4.25	0.00	-13.00	6.38
Independent Suppliers	-0.23	0.29	-11.73	1.32
Vertically Integrated	-0.70	5.00	-13.00	3.25
Grand Total	**-0.63**	**5.00**	**-13.00**	**2.76**

Supplier Segmentation	Average of Impact (£/MWh)	Max of Impact (£/MWh)	Min of Impact (£/MWh)	StdDev of Impact (£/MWh)
I&C	0.04	0.29	-0.21	0.35
I&C + SME	0.24	0.29	0.19	0.07
Independent domestic	-1.38	0.29	-11.73	3.91
Renewable supplier	-1.39	-0.49	-2.28	1.27
Renewables aggreagator	-1.65	-0.17	-2.39	1.28
SME	-0.29	0.29	-2.04	1.17
#N/A	-0.01	0.29	-0.29	0.15
Grand Total	**-0.56**	**0.29**	**-11.73**	**2.04**

Supplier Segment	Party Code	Impact £/MWh
I&C	2650	0.29
I&C + SME	7617	0.29
Independent domestic	6396	0.29
Independent domestic	5051	0.29
Independent domestic	598	0.29
Independent domestic	4932	0.29
SME	1569	0.29
SME	3275	0.29
SME	7846	0.29
#N/A	1248	0.29
#N/A	1064	0.27
I&C + SME	848	0.19
Independent domestic	9685	0.12
#N/A	6782	0.1
#N/A	671	0
#N/A	5793	0
#N/A	5142	0
#N/A	9879	0
#N/A	4509	0
#N/A	8132	0
#N/A	2483	-0.01
#N/A	3993	-0.02
#N/A	4606	-0.11
#N/A	4868	-0.15
Renewables aggreagator	9768	-0.17
#N/A	4602	-0.18
I&C	9984	-0.21

#N/A	5627	-0.29
Independent domestic	1295	-0.44
Renewable supplier	7802	-0.49
Independent domestic	9312	-0.55
Independent domestic	5798	-1.01
SME	2087	-2.04
Renewable supplier	6106	-2.28
Renewables aggreagator	9885	-2.38
Renewables aggreagator	8658	-2.39
Independent domestic	4414	-11.73

3/10/2010 Period 39 PAR350 Impact Statistics

Group	Average of Impact (£/MWh)	Max of Impact (£/MWh)	Min of Impact (£/MWh)	StdDev of Impact (£/MWh)
Thermal Generators	-0.03	0.04	-1.18	0.22
Wind Generators	0.00	0.00	0.00	0.00
Independent Suppliers	-0.04	0.03	-1.28	0.19
Vertically Integrated	-0.29	0.03	-12.03	1.86
Grand Total	**-0.11**	**0.04**	**-12.03**	**1.01**

Supplier Segmentation	Average of Impact (£/MWh)	Max of Impact (£/MWh)	Min of Impact (£/MWh)	StdDev of Impact (£/MWh)
I&C	0.03	0.03	0.03	0
I&C + SME	0.01	0.03	-0.01	0.03
Independent domestic	-0.06	0.03	-0.11	0.08
Renewable supplier	0.03	0.03	0.03	0
Renewables aggreagator	-0.67	-0.05	-1.28	0.87
SME	-0.64	-0.56	-0.71	0.11
#N/A	0.02	0.03	-0.03	0.02
Grand Total	**-0.13**	**0.03**	**-1.28**	**0.35**

Supplier Segment	Party Code	Impact £/MWh
I&C	2650	0.03
I&C + SME	848	0.03
Independent domestic	5051	0.03
Renewable supplier	6106	0.03
#N/A	4868	0.03
#N/A	4509	0.03
#N/A	8132	0.03
#N/A	3993	0.03
#N/A	5142	0.02
#N/A	671	0.01
#N/A	6782	0.01
I&C + SME	7617	-0.01
#N/A	5627	-0.03

Renewables aggreagator	8658	-0.05
Independent domestic	9312	-0.09
Independent domestic	5798	-0.11
SME	3275	-0.56
SME	7846	-0.71
Renewables aggreagator	9768	-1.28

Table 5 – Supplier Segmentation #N/A

Party_ID	Type	Sub
NEAS	IS	#N/A
OBERON	IS	#N/A
FSE0001	IS	#N/A
ENDC	IS	#N/A
ENERGY24	IS	#N/A
BKW	IS	#N/A
DANSKE	IS	#N/A
SHELL2	IS	#N/A
BARCAP	IS	#N/A
ENERGIDK	IS	#N/A
MBLLO	IS	#N/A
MSCGI	IS	#N/A
JPMSL	IS	#N/A
GAZPROM	IS	#N/A
ESBIGT	IS	#N/A
IMPX	IS	#N/A
VITOLSA	IS	#N/A