150/04

Review of GSP Group Correction Scaling Weights

Meeting Name	Supplier Volume Allocation Group
Meeting Date	30 July 2013
Purpose of paper	For Decision
Summary	This paper revisits previous analysis of the sources of error in Suppliers' Metered Volumes, which was used to set new GSP Group Correction Scaling Weights effective from April 2013. ELEXON has considered whether the analysis remains valid, and has estimated sources of error not quantified in the original work. We propose updated GSP Group Scaling Weights based on this analysis, and ask the SVG to agree that they should be issued for industry consultation.

1. Background

1.1 Grid Supply Point (GSP) Group Correction is the mechanism that adjusts Suppliers' Metered Volumes in each GSP Group so that they, in aggregate, match the GSP Group Take. GSP Group Correction is not applied to all Supplier consumption – the mechanism accounts for error in Metered Volumes and is applied to those types of consumption deemed to be the source of this error.

1.2 Supplier consumption is split by Consumption Component Class (CCC), and GSP Group Correction Scaling Weights determine how much correction is applied to each CCC. CCC enables SVA energy volumes to be grouped by its characteristics, e.g. Half Hourly/Non Half Hourly, metered/unmetered, Import/Export, actual/estimated and losses/Metered Volumes. Appendix 1 gives the full list of CCCs.

1.3 Historically, GSP Group Correction was only applied to Non Half Hourly (NHH) consumption. In light of developments in the market with regards to the roll out of Advanced meters and Smart metering, the SVG established the Profiling and Settlement Review Group (PSRG) to review the Settlement arrangements on its behalf. One of the PSRG's recommendations (SVG 128/02) was to amend the GSP Group Correction Factor Scaling Weights so that they reflect the best estimate of the differing sources of error that contribute to GSP Group Correction volumes. This would remove the cross-subsidy between different classes of Supplier. It would also ensure that any increase in the volume of energy settled Half Hourly (HH) does not lead to more volatile GSP Group Correction Factors.

1.4 Following industry consultation, the BSC Panel agreed to apply GSP Group Correction to HH loss volumes from April 2013 (Panel 188/11). Energy lost on the distribution network is estimated as a proportion of metered consumption using Line Loss Factors (LLFs), and the error in estimating this volume was deemed to apply to both the NHH and HH market. Extending GSP Group Correction to include HH losses was seen as a better reflection of the sources of error that are addressed through GSP Group Correction.

1.5 The table below shows the original Scaling Weights which were effective from the start of Supplier competition in 1998, and the revised weights applicable from 1 April 2013.

Table 1 – Past and current GSP Group Correction Scaling Weights

GSP Group Correction Scaling Weights		
Consumption type	Original weights	Revised weights (effective from April 2013)
NHH consumption	1.0	1.0
NHH losses	1.0	**2.3**
HH consumption	0	0
HH losses	0	**1.0**

1.6 When agreeing the revised weights, the SVG noted that GSP Group Correction would not be applied to HH consumption because the error associated with these volumes could not be quantified. Nevertheless, the SVG agreed that GSP Group Correction should be applied to HH consumption from April 2014 subject to a review of the Scaling Weights in 2013. This paper presents the results of that review. We have considered the level of error present in the HH market, and have also reconsidered the errors identified in the previous analysis to see whether there have been significant changes which justify changes to the Scaling Weights.

2. Previous work

2.1 ELEXON's previous work in quantifying sources of error – which led to the revised Scaling Weights – is summarised in the below table. The consultation document, which detailed the approach to quantifying the errors, is included as Attachment A.

Table 2 – Previous quantification of errors

Volume errors		
Source of error	**Estimated error volume (annual volume)**	**NHH/HH source of error**
Energisation Status errors	Less than 0.04TWh (NHH only)	NHH only i.e. less than **0.02%** allocation error for NHH incorrect Energisation Status
Estimated Annual Consumption/Annualised Advance (EAC/AA) errors	0.04TWh	NHH only i.e. **0.02%** allocation error for NHH incorrect Energisation Status
Unmetered Supplies (UMS) errors	0.002TWh	NHH only i.e. **0.001%** allocation error for NHH UMS errors

Shape errors		
Source of error	**Total energy in wrong period (annual sum)**	**NHH/HH source of error**
Profile error (from the modelling)	5.4TWh	NHH only i.e. **3%** allocation error for NHH consumption and losses
Profile error (from the load research)	3.6TWh	NHH only i.e. **2%** allocation error for NHH consumption and losses
Shape error in estimation of technical losses	0.75TWh	HH + NHH i.e. **5%** allocation error for all line losses
Shape error in estimation of non-technical losses (e.g. theft)	0.15TWh	NHH losses only i.e. **1.6%** allocation error for NHH consumption
Un-quantified errors		
Source of error	**Total energy in wrong period**	**NHH/HH source of error**
Errors arising from the accuracy of metering	N/A	N/A
Errors arising from errors in UMS inventories, or the estimation of UMS consumption	N/A	N/A

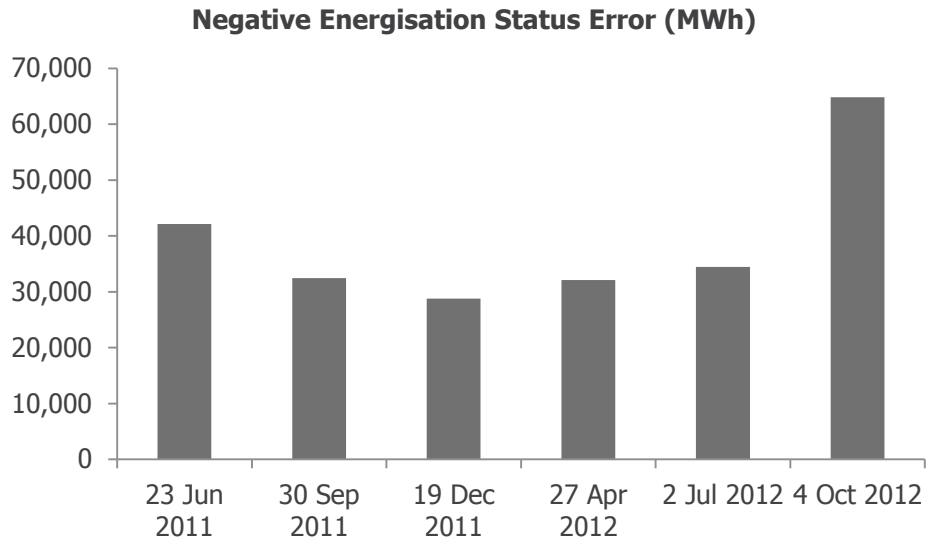
3. Updated analysis of sources of error

3.1 We have revisited all sources of error from the 2011 analysis, to consider whether there have been changes in the market which would have had significantly changed the error levels and would justify new estimates of their impact.

3.2 Energisation Status errors

3.2.1 The 2011 analysis considered ELEXON's quarterly Energisation Status error monitoring, and we have repeated this for the latest available data. The previous work found there to be approximately 0.04TWh of negative error, and concluded that positive error (which ELEXON does not monitor) would lead to a net figure less than 0.04TWh. The latest view of Energisation Status error, shown below, saw no change in error when averaged over the past six quarters and compared to the 2011 analysis.

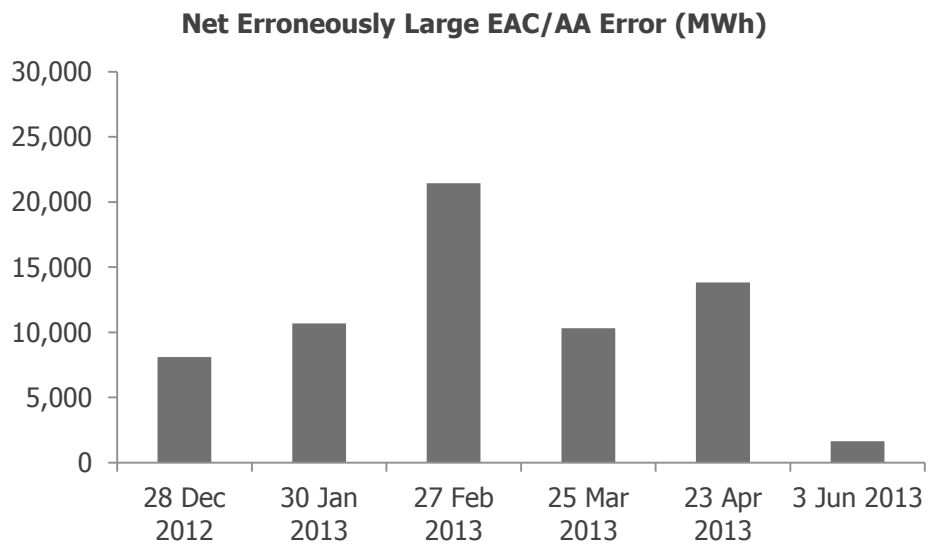
Figure 1 – Energisation Status error



3.3 EAC/AA errors

3.3.1 In 2011, we estimated the annual net error associated with large EAC/AAs to be around 0.04TWh. Our latest monitoring shows that this has reduced to 0.01TWh when averaged over the past six months. While the relative reduction appears significant, in absolute terms it will have a negligible effect on Scaling Weights because other sources of error are orders of magnitude larger.

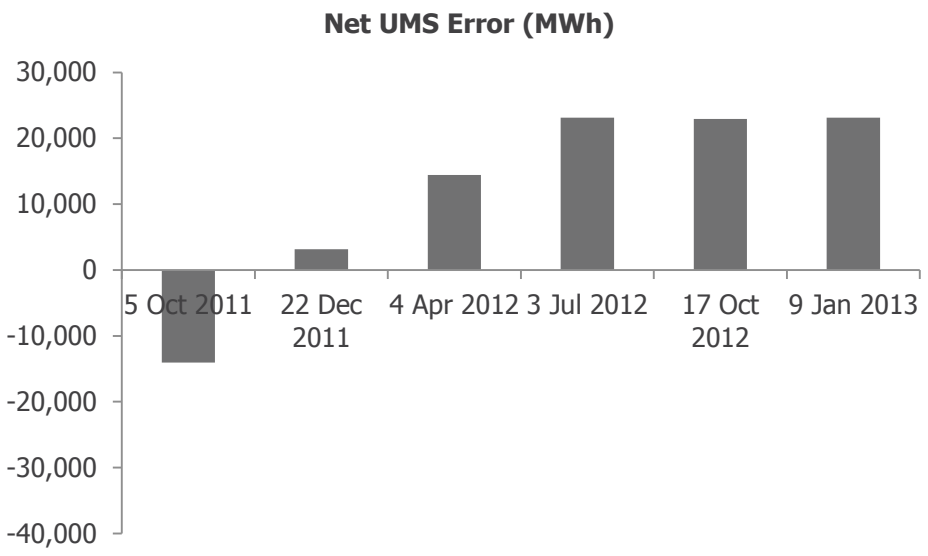
Figure 2 – EAC/AA error



3.4 UMS errors

3.4.1 In 2011, the net error associated with UMS was 0.002TWh. Using the same approach, with our latest monitoring data, shows that error has increased to 0.012TWh. As with EAC/AA error, whilst the relative change appears significant, the absolute change will have very little impact on GSP Group Correction.

Figure 3 – UMS error



3.5 Profile error

3.5.1 The 2011 consultation based its estimate of profiling error on work done as part of the 2004/05 BSC Review 'Review of the SVA Arrangements'. This was split between model error (3% of energy settled in the wrong period) and load research error (2% of energy settled in the wrong period).

3.5.2 We repeated the model error analysis in 2011 and arrived at the same figure. As the process used to calculate profiling data remained the same we believed that the level of error had not changed and it was valid to use the same estimate. In addition, profile coefficients are calculated as an average of the previous three years of data, which will reduce variation in year-on-year error levels.

3.5.3 In 2011, we proposed that the load research error will not have changed significantly from the BSC Review's estimate. Again, the sampling process has not changed since 2011 so we believe that the previous estimate of 2% misallocation remains valid.

3.6 Error in losses

3.6.1 The previous analysis used transmission loss data as a proxy for distribution loss data, and estimated that 5% of technical losses were allocated to the wrong period. Based on a non-technical loss figure suggested by Sohn Associates in a report for Ofgem of 1% of units distributed, we estimated that 1.6% of NHH losses were allocated to the wrong period.

3.6.2 When we consulted with the industry on the proposed new Scaling Weights, one respondent (from seven) suggested that these figures overstated the error in losses. The SVG determined that ELEXON's proposed weights should be implemented.

3.6.3 We believe that there have been no significant changes in distribution losses since the previous analysis, and as such the error estimates for both technical and non-technical losses remain valid.

4. Previously unquantified sources of error

4.1 When agreeing the revised Scaling Weights in 2011, the SVG noted that the HH consumption would remain weighted as zero even though there is error in the HH market. The SVG agreed that ELEXON should perform a review of Scaling Weights in 2013, with particular focus on applying GSP Group Correction to HH consumption.

4.2 Errors in HH metered consumption

4.2.1 The Technical Assurance Agent (TAA) visits approximately 1% of HH sites each year and reports any non-compliances. In its report for the 2012/13 BSC Year, the BSC Auditor noted that, from the sample of 1,154 sites, the TAA identified 12 exceptions which had impacted Settlement. This represented 18GWh of error for the Audit period, and extrapolating across the whole HH market led the Auditor to estimate a potential gross error of 1.5-2.4TWh. It should be noted that an Audit period represents all Settlement Runs taking place in a year (equivalent to 26 months of Settlement Days) so this estimate represents approximately 0.7–1.1TWh of annual error.

4.2.2 The majority of Trading Disputes are raised to address HH metering errors, though it has historically been difficult to use Disputes data as an indicator of the level of error in the HH market.

4.2.3 Over the past two years, one distribution business has performed a large-scale audit of HH sites and larger NHH sites in two GSP Groups – raising 143 HH Disputes so far. A few Disputes addressed Meters which over-recorded consumption, but the rest were raised to address sites where consumption was under-recorded. The annual materiality of these upheld Disputes is 61.3GWh, and extrapolating this over the Disputes which remain open, and the rest of the GSP Groups, gives an estimate of annual HH metering error of 434GWh.

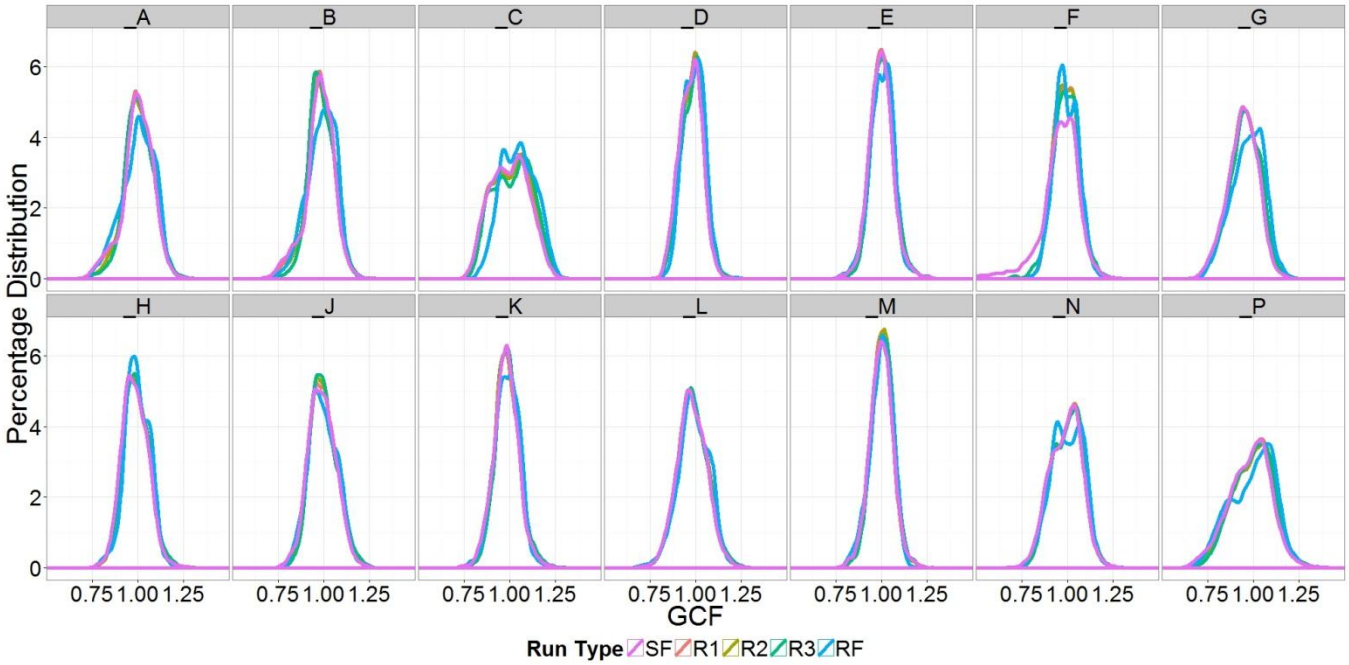
4.2.4 This is noticeably less than the Auditor's estimate, but we would expect the Disputes data to be an underestimate of the level of error. Firstly, we understand that the Distributor did not visit all sites in the two GSP Groups so some errors might remain unreported – however it is likely that all larger sites and those deemed to be of higher risk were visited. Secondly, as Disputes are needed to correct data beyond the RF Run there might have been a number of faults whose error period could – in whole or in part - be corrected through normal Settlement processes without recourse to a Dispute. Additionally, the materiality of a Dispute must exceed £3,000 for it to be upheld, so the Distributor might have discovered smaller errors which it did not raise as Disputes.

4.2.5 We propose to use the midpoint of the BSC Auditor's estimate as the estimate of metering error in the HH market (0.9TWh). This estimate is based on a random sample across all GSP Groups so can be considered more representative than the Disputes raised by the Distributor, whose limitations as an estimator of the error are discussed above.

4.3 Shape error from Gross Volume Correction (GVC)

4.3.1 The chart below shows the distribution of GSP Group Correction Factors across run types for Settlement Days in 2012, split by GSP Group. In general the distribution between runs for a GSP Group is consistent across the SF to R3 runs, but a number of GSP Groups see the distribution change noticeably at the RF Run.

Figure 4 – Shape error from GVC



4.3.2 We would expect increased use of Actual data to have some effect on Suppliers' NHH volumes, which would in turn affect GSP Group Correction Factors. According to the June 2013 Trading Operations Report 90.17% of NHH volumes are settled on Actual data at R3, which increases to 97.30% at the RF Run. This is the smallest performance increase between Settlement Runs, so we do not believe this to be the root cause of the changes in GSP Group Correction Factors at RF.

4.3.3 Instead, we believe that these changes are the result of GVC, where error volumes for Settlement Days beyond RF are 'corrected' by making a compensatory adjustment to pre-RF data. This ensures that the correct total volume is settled, but is allocated to a different period.

4.3.4 Current obligations on the use of GVC make it difficult to quantify how widely it is used. However, Change Proposal (CP) 1360 'Inclusion of Audit Records for Gross Volume Correction and Dummy Meter Exchanges', approved for implementation in November 2013, will require Suppliers and their Agents to keep more detailed records of GVC activity.

4.3.5 As part of the analysis for Modification P274 'Cessation of Compensatory Adjustments', ELEXON requested data in order to estimate the volumes subject to GVC. The data request did not cover the whole market and was for a three-month period. Extrapolating the results to give an annual market-wide (net) figure suggests that 492GWh of volume is allocated to a different Settlement Period.

5. Summary of revised error components

5.1 The table below summarises the different sources of error that we have been able to quantify.

Table 3 – 2013 quantification of errors

Volume errors		
Source of error	**Estimated error volume (annual volume)**	**NHH/HH source of error**
Energisation Status errors	Less than 0.04TWh (NHH only)	NHH only i.e. less than **0.02%** allocation error for NHH incorrect Energisation Status
EAC/AA errors	0.010TWh	NHH only i.e. **0.005%** allocation error for NHH incorrect Energisation Status
UMS errors	0.012TWh	NHH only i.e. **0.006%** allocation error for NHH UMS errors
Errors in HH metered consumption	0.9TWh	HH only i.e. **0.7%** allocation error for HH consumption

Shape errors		
Source of error	**Total energy in wrong period (annual sum)**	**NHH/HH source of error**
Profile error (from the modelling)	5.4TWh	NHH only i.e. **3%** allocation error for NHH consumption and losses
Profile error (from the load research)	3.6TWh	NHH only i.e. **2%** allocation error for NHH consumption and losses
Shape error in estimation of technical losses	0.75TWh	HH + NHH i.e. **5%** allocation error for all line losses
Shape error in estimation of non-technical losses (e.g. theft)	0.15TWh	NHH losses only i.e. **1.6%** allocation error for NHH consumption
Misallocation errors arising from the use of GVC	0.49TWh	NHH only i.e. **0.29%** allocation error for NHH consumption and losses

5.2 The above analysis gives the following errors and Scaling Weights as shown in Table 4 below. For consistency with the previous analysis, the Scaling Weight for NHH consumption is set at 1.0 and the other Weights are set relative to it.

Table 4 – Proposed revised Scaling Weights

GSP Group Correction Scaling Weights			
Type	Allocation error	Current Scaling Weights	Proposed Scaling Weights
NHH Metered (CCCs 17, 18, 19, 32, 33)	5.3%	1.0	1.00
NHH Losses (CCCs 20, 21, 22, 34, 35)	11.9%	2.3	2.25
HH Metered (CCCs 1, 2, 6, 9, 10, 14, 23, 28)	0.7%	0	0.13
HH Losses (CCCs 3, 4, 5, 7, 8, 11, 12, 13, 15, 16, 25, 26, 30, 31)	5%	1.0	0.94

5.3 In line with the current Scaling Weights, we have not differentiated between Import and Export volumes, and have assumed that the same errors apply to both. The SVG is invited to consider this matter and may wish to seek views in the industry consultation.

6. Next steps

6.1 Subject to the SVG's approval, we will issue an industry consultation on the proposed Scaling Weights soon after this meeting. We propose that the consultation runs until the first half of September and we will present the results to the SVG meeting on 1 October 2013. If, following the consultation, the SVG still recommends changes to the Scaling Weights, we will present these changes to the October Panel meeting for final approval with a recommended 1 April 2014 implementation date.

7. Recommendations

7.1 ELEXON invites the SVG to:

a) **AGREE** that the proposed Scaling Weights should be issued for industry consultation; and

b) **RECOMMEND** questions to include in the industry consultation.

List of Appendices:

Appendix 1 – List of Consumption Component Classes

List of Attachments:

Attachment A – Proposed Scaling Weights for GSP Group Correction Consultation Document, August 2011

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Appendix 1 – List of Consumption Component Classes (CCCs)

There are 35 CCCs as follows:

Consumption Component Class Id	Measurement Quantity Id	Data Aggregation Type	Metered/ Unmetered Indicator	Consumption Component Indicator	Actual/ Estimated Indicator	AA/EAC Indicator
6	AE	H	M	C	A	
7	AE	H	M	M	A	
8	AE	H	M	L	A	
14	AE	H	M	C	E	
15	AE	H	M	M	E	
16	AE	H	M	L	E	
32	AE	N	M	C		E
33	AE	N	M	C		A
34	AE	N	M	L		E
35	AE	N	M	L		A
1	AI	H	M	C	A	
2	AI	H	U	C	A	
3	AI	H	M	M	A	
4	AI	H	M	L	A	
5	AI	H	U	L	A	
9	AI	H	M	C	E	
10	AI	H	U	C	E	
11	AI	H	M	M	E	
12	AI	H	M	L	E	
13	AI	H	U	L	E	
17	AI	N	M	C		E
18	AI	N	M	C		A
19	AI	N	U	C		E
20	AI	N	M	L		E
21	AI	N	M	L		A
22	AI	N	U	L		E
23	AI	H	M	C	A	
25	AI	H	M	M	A	
26	AI	H	M	L	A	
28	AI	H	M	C	E	
30	AI	H	M	M	E	
31	AI	H	M	L	E	