



Issue Report

Issue 55 'Review of the approach to the calculation and application of GSP Group Correction Scaling Weights'

This Issue looked to consider the approach to the calculation and application of Grid Supply Point Group Correction Scaling Weights to Export Consumption Component Classes, which are currently not being scaled during GSP Group Correction.

224/08

Issue 55
Issue Report

30 April 2014

Version 1.0

Page 1 of 13

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Contents

1	Summary	3
2	Background	4
3	Issue Group's Discussions	6
4	Conclusions	11
	Appendix 1: Glossary & References	12
	Appendix 2: Issue Group Membership	13

About This Document

This document is the Issue 55 Group's Report to the BSC Panel. ELEXON will table this report at the Panel's meeting on 8 May 2014.

There are two parts to this document:

- This is the main document. It provides details of the Issue Group's discussions and proposed solutions to the highlighted issue and contains details of the Workgroup's membership.
- Attachment A contains the slides presented to the Issue Group on the calculation of optimal Scaling Weights for GSP Group Correction.



Any questions?

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224/08

Issue 55
Issue Report

30 April 2014

Version 1.0

Page 2 of 13

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Issue

The Grid Supply Point (GSP) Group Correction Factor (GGCF) calculation can result in 'competing corrections', whereby corrections to Import and Export volumes are affected in opposite directions. This has the effect of cross-cancelling the volume corrections, meaning that neither correction addresses the volume of energy to be corrected by the process.

The Panel and the Supplier Volume Allocation Group (SVG) recommended that an Issue be raised to consider the current approach to the calculation and application of GSP Group Correction Scaling Weights and in particular the approach to the correction of Export error.

The Issue 55 Group was provided with an overview of GSP Group Correction and the context within which GSP Group Correction Scaling weights are used. Part of the overview focussed on how the volume of Half Hourly (HH) error had been calculated.

Conclusions

The Issue 55 Group has expressed a majority view that changes are required to:

- the GSP Group Correction Scaling Weight Values; and
- the way in which these values are calculated.

A majority of the Issue Group agreed that changes should be made to set the Scaling Weight for HH Metered Volumes back to zero.

A majority of the Issue Group agreed that the Scaling Weights applied to Export error should be put to zero. Such a change means that 'competing corrections' would be so small that it is not worth addressing at this point in time.

GSP Group Correction

GSP Group Correction is the mechanism that adjusts Suppliers' Metered Volumes in each GSP Group in order to address the under or over accounting of energy. This is done by applying a correction factor¹ to Suppliers' Supplier Volume Allocation (SVA) energy so that the aggregate energy allocated to Suppliers is equal to the GSP Group Take² in each Settlement Period.

The GSP Group Correction Factor calculation refers to a Scaling Weight for each Consumption Component Class (CCC)³, which defines how much GSP Group Correction should be applied to that CCC.

Recent changes to GSP Group Correction Scaling Weights

Originally, GSP Group Correction was only applied to Non Half Hourly (NHH) consumption. However, following industry consultation, the SVG recommended, and the BSC Panel agreed, that it should also be applied to HH losses from 1 April 2013. The SVG and the Panel also agreed that correction should be applied to HH Metered Volumes from 2014, subject to a review of the GSP Group Correction Scaling Weights in 2013.

The GSP Group Correction Factor for each Settlement Period and each GSP Group is calculated in accordance with [Section S Annex S-2 'Supplier Volume Allocation Rules'](#) of the BSC.

ELEXON presented a paper to the SVG at its December 2013 meeting ([SVG154/05](#)). The SVG recommended to the Panel that ELEXON raise an Issue to consider changing the BSC's correction of Export error and that in the interim GSP Group Correction should not be applied to any Export Metered Volumes or losses (whether NHH or HH). The SVG also recommended that the Panel still approve the revised Scaling Weights, but that each of these Scaling Weights should be applied only to Import and not to Export.

ELEXON presented a paper to the Panel, which included the above recommendation made by the SVG, at its December 2013 meeting ([Panel 219/10](#)). The Panel agreed with the SVG's recommendation that the revised Scaling Weights still be approved but only applied to Import not Export. Below are the revised Scaling Weights approved by the SVG and the Panel:

- 1.0 for NHH Metered Volumes
- 2.25 for NHH line losses
- 0.94 for HH line losses
- 0.10 for HH Metered Volumes

¹ GGCFs are used to ensure that the total energy allocated to Suppliers in each Settlement Period in each GSP Group matches the energy entering the GSP Groups from the Transmission System, adjoining GSP Groups and through embedded generation.

² GSP Group Take is the net energy measured going from/to a particular Local Distribution System (i.e. a GSP Group) in a Settlement Period.

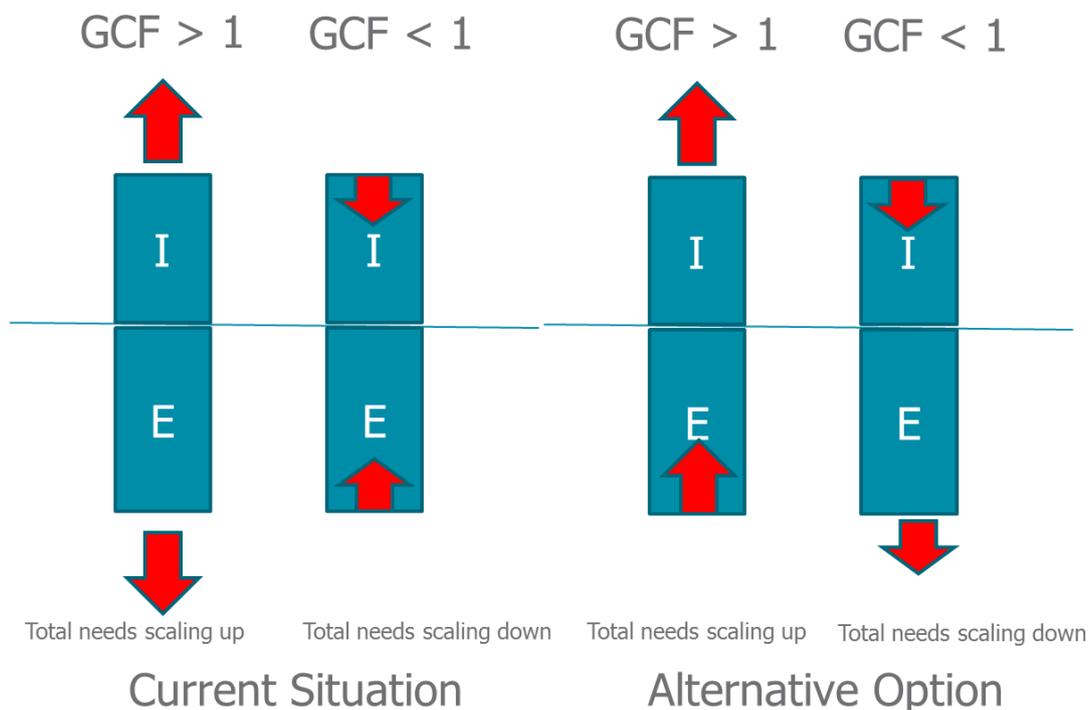
³ Consumption Component Class is a classification of Half Hourly Consumption which comprises of one element from each of the categories listed in [BSC Section X Annex X-2, Table X-8](#) (example: metered or unmetered; with or without line losses).

The Panel also agreed with the SVG's recommendation that ELEXON raise a Standing Issue to consider the current approach to the calculation and application of GSP Group Correction Scaling Weights and in particular the approach to the correction of Export CCCs.

What is the issue?

The GSP Group Correction Factor calculation takes account of whether a CCC to be corrected is Import or Export. The effect of this correction mechanism is correcting Import and Export CCCs in opposing directions, resulting in 'competing corrections' of Import and Export.

The issue of 'competing corrections' has already occurred in the NHH market, although the NHH Export volumes are small compared to the NHH Import volumes (meaning the impact is minimal). Furthermore, 'competing corrections' have also already occurred in the HH market for HH losses. Due to the higher volume of HH Export, applying a revised Scaling Weight of 0.10 to HH Metered Volumes would increase this 'competing correction' effect such that there is the potential for perverse outcomes.



The above diagram shows the current situation whereby corrections to Import and Export volumes are affected in opposite directions. This has the effect of cross cancelling the volume corrections. For example, an increase of 1 MWh of Import may be cancelled out by an increase of 1 MWh of Export. This means that neither correction addresses the volume of energy to be corrected by the process.

An alternative option is presented above that would move both volumes in the same direction. In this scenario the Import and Export volumes are both corrected in a way that directly addresses the volume of error that is being corrected.

Volume of Half Hourly error

The Issue 55 Group was provided with an overview of GSP Group Correction and the context within which GSP Group Correction Scaling weights are used. Part of the overview focussed on how the volume of HH error has been calculated.

To calculate the estimated total volume of HH error ELEXON used two sources of data relating to two GSP Groups:

- Trading Disputes data; and
- Data derived from the BSC Audit Report.

However, the Trading Disputes data was deemed to be too low as the Licensed Distribution System Operator (LDSO) did not visit all the sites in the two GSP Groups meaning that some errors may have gone undetected. Furthermore, the Technical Assurance Agent (TAA) estimates derived from the BSC Audit Report were deemed to be too high due to targeted inspections. Therefore, ELEXON came to the conclusion that the true estimated volume of HH error would likely fall between 0.434 TWh⁴ (based on Disputes data) and 0.95 TWh (based on TAA data) equating to approximately 0.7 TWh of HH error. It was this estimate of 0.7 TWh that was used to determine the Scaling Weight for HH Metered Volumes of 0.10.

An Issue Group member advised that the current method for calculating Scaling Weights is restricted by the data available. The member noted that no netting of errors in Settlement Periods have been added to this method. Another member responded that there is no reason to expect that a HH error in one Meter will be related to a HH error in another. If you are looking at two HH Meters where one Meter has an error of +3 and another Meter has an error of -2 the net value of error would not be 5 (as assumed in the methodology). The member believes that it would not be appropriate to scale based on the absolute HH Meter error.

The method of extrapolating a sample across the population of HH Meters is thought to be inconsistent with statistical rules. This is because each error on a HH Meter is thought to be independent. Therefore, some members of the Issue 55 Group challenged whether 0.7 TWh is the correct volume of HH error to use or whether it is closer to 0.007 TWh, as a standard mechanism would be to use the square root of the Meter population in the extrapolation. It was also noted that if the error in HH Metered Volumes is less than 0.7 TWh the resulting Scaling Weight will be smaller. Therefore, since results are already expected to yield extremely small values there will be no large practical difference between results based on different assumptions at the current time. The Issue Group noted that the issue of volume of Half Hourly error would need to be revisited if uncertainty in this part of the analysis was to become a driver of significant differences in the appropriate levels of Scaling Weights at a future time. An Issue Group member added that the industry needs to consider how to adjust the HH error volume estimate for uncorrelated Meters, a step that is not currently being taken.

⁴ ELEXON used the Trading Dispute data available for two GSP Groups (_B and _E). The total HH error was extrapolated based on the percentage of HH volumes across those two GSP Groups (which was about 20%). This means that HH error = Total HH Error in Group _B and Group _E / 0.2 = 0.434 TWh of error.

⁵ This value of 0.9 TWh was based on the TAA's estimated range of 0.7 to 1.1 TWh of error as detailed in the BSC Audit Report.

An Issue Group member asked for ELEXON's view as to whether the industry should assume that HH Meters are uncorrelated or correlated. ELEXON responded that over a long period of time there would tend to be zero error as errors would naturally be fixed through the BSC processes. Some errors, like those under NHH, are clearly correlated but the industry cannot really say the same about HH errors. An Issue Group member noted that for HH error correlation would be dependent on the source of error. If there is a common source of error there is potentially some correlation. ELEXON noted that a reasonable assumption could be made that HH would be less correlated than NHH.

What should the Scaling Weight be for HH Metered Volumes?

ELEXON produced a model which now suggests that the optimum Scaling Weight for HH Metered Volumes is 0.003. However, it should be noted that this estimate did not assume that HH error is uncorrelated. An industry Supplier had produced a similar model which indicated an optimal scaling weight of 0.007, as detailed below.

ELEXON's model determining the appropriate Scaling Weight for HH Metered Volumes was based on the volume of HH error being 0.7 TWh. Based on the modelling a Scaling Weight of 0.10 for HH Metered Volumes was no longer appropriate because the error in Settlement increases as the HH Metered Volumes Scaling Weight increases past 0.003. ELEXON determined that a Scaling Weight of 0.003 would be more appropriate. However, it should be noted that this estimate did not assume that HH error is uncorrelated.

ELEXON questioned whether it was worth using such a potentially vanishingly small number (if HH error is assumed to be uncorrelated) or whether the Scaling Weight should be set back to zero. An Issue Group member responded that, going back a number of years, there was a reason why a Scaling Weight of zero was put in place. It was not deemed to be pragmatic to correct HH Metered Volumes over the 14 month Settlement Reconciliation Period. The member added that once the decision was made that the Scaling Weight should no longer be zero another number needed to be put in its place.

Another Issue Group member stated that, if the value is that small it might as well be zero. The member was also unsure if such a small value could be inputted into the Market Domain Data (MDD) or Supplier Volume Allocation Agent (SVAA) systems. ELEXON advised that it was unsure how low a value could be used but the relevant systems could be changed to accept such a value. The member added that there may be a point in the future where a negative Scaling Weight may need to be applied to Export volumes. The member asked if this potential development needs to be assessed and find out if one can put a negative number into the MDD and SVAA systems (and for the systems to still work). ELEXON noted that a Scaling Weight of less than zero can be applied, though the number is not seen to be negative as it is correcting error directionally.

An Issue Group member noted that what the industry wants is a more accurate calculation and Scaling Weight to minimise errors in the application of GSP Group Correction. Another member asked the Issue Group if there is a benefit of having such a small Scaling Weight (of 0.003) when looking at cost verses accuracy.

A member asked the Issue Group whether the Scaling Weight should be retrospectively set back to zero. ELEXON noted that it is worth looking at the implications of retrospectively changing the value. If there are no adverse implications of backing this value out over Reconciliation Runs this approach would be appropriate. A member asked ELEXON if the industry will have to deal with two different values over a short period of time given the start date for the approved Scaling Weight of 0.10 was 1 April 2014. The member added

that it seems strange to have a few months with a Scaling Weight of 0.10 and then going back to zero. However, the member believes that having a retrospective change would still be appropriate, if it is possible.

A majority of the Issue Group agreed that a change should be made to set the Scaling Weight for HH Metered Volumes back to zero. Furthermore, consideration should be given to the retrospective application of the revised weights.

What is the most appropriate Calculation Methodology?

ELEXON's original model determining the appropriate Scaling Weight for HH Metered Volumes was based on the estimated annual volume of HH error being 0.7 TWh.

A Supplier has derived a mathematical calculation for optimal GSP Group Correction Scaling Weight values to maximise the accuracy of Settlement. The Supplier took ELEXON through this calculation during its on-going discussions on Scaling Weights. ELEXON believed it would be of benefit to take the Issue 55 Group through this as well to see if this mathematical calculation should be used to determine the optimal GSP Group Correction Scaling Weight values going forwards.

The Supplier's representative on the Issue 55 Group took other members through this calculation. ELEXON noted that, in the past, it took an intuitive approach based on share of errors. The slides presented to Group members can be found in Attachment A.

ELEXON asked the Issue 55 Group if (based on the information presented) members were happy to take a view that this alternative approach to the calculation of GSP Group Correction Scaling Weights should be used going forward and whether the Group agreed that it would be more accurate than the current approach. ELEXON also asked if members wanted to take the details away to their organisations to review and digest. A member responded that the alternative approach seems sensible and if the calculation is correct they could see no reason why it should not be used going forwards. However, the member noted that it wanted to look at this in more details with other members of their organisation. Other Group members agreed that they wanted time to take the information away and that they would confirm their views.

The Supplier's representative advised the Issue Group that it is not trying to prove anything but by reviewing the details of ELEXON's consultation on revised Scaling Weights it managed to work out what mathematical equation could be applied. An Issue Group member responded that because of this work the industry is in a better place with a better understanding on how to agree Scaling Weights going forward.

An Issue Group member noted that if one inserts the relevant data into this equation then further assumptions need to be made about what the correlations are for HH and NHH error and what the allocation of error is. The member believes that the Supplier's mathematical equation is fine as long as the industry understands such assumptions.

An Issue Group member advised the Group that the next step is to determine if they want to change the Scaling Weight for losses (both HH and NHH) if this calculation is taken forward. The member also added that it would be appropriate to ask the SVG to consider using this calculation in future if the Group didn't want to change the Scaling Weight for losses now. The Supplier's representative agreed that this could be an appropriate option.

An Issue Group member noted that, taking into account that the Group agreed the approach to calculate HH Metered Volume error, they did not see the point in asking the

SVG to consider this for the future. The member believed that it would be more pragmatic to change the Scaling Weight for HH losses to zero.

ELEXON asked the Group if it thought that setting the Scaling Weight for HH losses to zero would have a detrimental impact. Some Group members agreed that there is negligible impact.

An Issue Group member noted that the equation should come with a caveat that if a number is low enough the Scaling Weights should be set to zero. ELEXON responded that each Scaling Weight will be assessed on its own merits. Another member added that it should be clear that such a Scaling Weight would not have been calculated to zero but rounded to zero for practicality purposes. The member added that, given how these values have been calculated in the past, the use of this mathematical equation would be a step in the right direction.

The Issue 55 Group agreed that it would take the details of the equation away for further consideration. The Issue 55 Group has since expressed a majority view that:

- the new Scaling Weights, as detailed below, should be put forward by ELEXON based on the mathematical calculation presented; and
- this mathematical calculation should be used to calculate the optimal GSP Group Correction Scaling Weights going forward, however the final values will be reviewed by ELEXON before they are presented for approval.

Proposed Revised Scaling Weights	
Type	Revised Scaling Weight
NHH Metered Import	1.0
NHH Metered Export	0.0
NHH Losses Import	1.2
NHH Losses Export	0.0
HH Metered Import	0.0
HH Metered Export	0.0
HH Losses Import	0.0
HH Losses Export	0.0

ELEXON issued the '[2014 Review of GSP Group Correction Scaling Weights](#)' consultation document on 15 April 2014 with responses due back by 2 May 2014.

Documenting the calculation methodology

ELEXON advised the Group that, since it agreed that the mathematical calculation for optimal Scaling Weights should be used going forwards, the equation needs to be clearly laid out and documented. There are a few options on how this could be done and that a change could be made to the BSC. However, ELEXON believes that this is not the most pragmatic approach. The second option would be to document the equation in a Balancing and Settlement Code Procedure (BSCP) or other Code Subsidiary Documents (CSD). ELEXON advised the group that the Annual Fraction of Yearly Consumption (AFYC) validation methodology is set out in an internal Local Working Instruction (LWI) and is not

224/08

Issue 55
Issue Report

30 April 2014

Version 1.0

Page 9 of 13

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documented in any CSD. Therefore, when the Profiling Expert Group (PEG) decides the methodology for AFYC validation, ELEXON simply presents a paper to the SVG noting the agreed methodology. ELEXON believe that a similar process could be applied to documenting the new mathematical calculation presented to the Group.

The Issue Group agreed that the new mathematical equation for calculating optimal GSP Group Correction Scaling Weights should be documented in an ELEXON LWI and any change made be presented to the SVG for approval.

Are 'competing corrections' still an issue?

ELEXON asked the Issue 55 Group, based on the agreements made, if 'competing corrections' of Import and Export are still an issue that needs addressing at this point in time. ELEXON questioned whether NHH export still needs to be considered even though it's a small value. An Issue Group member responded that as the Group agreed to set the HH Metered Volume Scaling Weight to zero it should not be an issue. The member added that if 'competing corrections' did occur it would be so small that it is not worth looking to address given the amount of effort involved to do so.

A member asked the Group if approval of [P272 'Mandatory Half Hourly Settlement for Profile Classes 5-8'](#) would affect the GSP Group Correction Factors. Another member responded that the implementation of P272 will almost double the HH market in terms of Metering Systems and add more error, although it was noted that these customers would only add 18 TWh of energy to HH Settlement. If P272 is approved by the Authority it could be a trigger to review the Scaling Weights before NHH customers move to HH minimising any rise in 'competing corrections'. The Member added that the mathematical calculation (which the Issue Group agreed should be used going forwards) could be used to review the Scaling Weights at that point.

A member questioned how quickly data could be collected before such a review took place. Another member responded that it is important to look at how data is used rather than the data itself. The member believes that data is data at the end of the day and it is how the data is used and interpreted that's important.

A majority of the Issue Group agreed that as the Scaling Weights applied to Export error should be put to zero 'competing corrections' will be so small that it is not worth addressing at this point in time.



Conclusions

The Issue 55 Group concluded that changes are required to:

- the GSP Group Correction Scaling Weight values; and
- the way in which these values are calculated.

The Issue 55 Group has expressed a majority view that:

- the new Scaling Weights, as detailed below, should be put forward by ELEXON based on the mathematical calculation presented, as noted in Section 3 of this document; and
- this mathematical calculation should be used to calculate the optimal GSP Group Correction Scaling Weights going forward.

The final values below will be reviewed by ELEXON before they are presented for approval. ELEXON issued the '[2014 Review of GSP Group Correction Scaling Weights](#)' consultation document on 15 April 2014 with responses due back by 2 May 2014.

Proposed Revised Scaling Weights	
Type	Revised Scaling Weight
NHH Metered Import	1.0
NHH Metered Export	0.0
NHH Losses Import	1.2
NHH Losses Export	0.0
HH Metered Import	0.0
HH Metered Export	0.0
HH Losses Import	0.0
HH Losses Export	0.0

A majority of the Workgroup agreed that retrospective changes should be made to set the Scaling Weight for HH Metered Volumes back to zero.

The Issue Group agreed that the mathematical equation for calculating optimal GSP Group Correction Scaling Weights (which the Issue Group agreed should be used going forwards) should be documented in an ELEXON LWI and any change made be presented to the SVG for approval.

A majority of the Issue Group agreed that as the Scaling Weights applied to Export error should be put to zero 'competing corrections' will be so small that it is not worth addressing at this point in time.

Appendix 1: Glossary & References

The terms used in this document are defined in the table below:

Glossary of Defined Terms	
Acronym	Defined Term
AFYC	Annual Fraction of Yearly Consumption
BSCP	Balancing and Settlement Code Procedure
CCC	Consumption Component Class
CSD	Code Subsidiary Document
GSP	Grid Supply Point
HH	Half Hourly
LDSO	Licensed Distribution System Operator
LWI	Local Working Instructions
MDD	Market Domain Data
NHH	Non Half Hourly
SVA	Supplier Volume Allocation
SVAA	Supplier Volume Allocation Agent
SVG	Supplier Volume Allocation Group
TAA	Technical Assurance Agent

All URL links listed in the table below are correct as of the date of this document:

Helpful Links		
Page	URL	Description
n/a	http://www.elexon.co.uk/smg-issue/issue-55/	Issue 55 webpage
4	http://www.elexon.co.uk/wp-content/uploads/2012/11/SVG154_05_GSPGCSW_v1.0.pdf	SVG154/05 paper on revised recommendation on GSP Group Correction Scaling Weights
4	http://www.elexon.co.uk/wp-content/uploads/2012/12/219_10_Application_GSPGCF_to_HH_Metered_Volume_Revised_Recommendations_v1.01.pdf	Panel 219/10 paper on revised recommendation on GSP Group Correction Scaling Weights
4	http://www.elexon.co.uk/wp-content/uploads/2011/10/section_x_annex_x-2_v33.0.pdf	BSC Section S Annex S-2
4	http://www.elexon.co.uk/wp-content/uploads/2011/10/section_x_annex_x-2_v33.0.pdf	BSC Section X Annex X-2
10	http://www.elexon.co.uk/mod-proposal/p272-mandatory-half-hourly-settlement-for-profile-classes-5-8/	P272 'Mandatory Half Hourly Settlement for Profile Classes 5-8' webpage

224/08

Issue 55
Issue Report

30 April 2014

Version 1.0

Page 12 of 13

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Appendix 2: Issue Group Membership

Issue Group membership and attendance

Issue 55 Group Attendance		
Name	Organisation	12 Mar 14
Chris Braley	ELEXON (<i>Chair</i>)	✓
Talia Addy	ELEXON (<i>Lead Analyst</i>)	✓
Kevin Spencer	ELEXON (<i>Design Authority</i>)	✓
Richard Woodard	E.ON	✓
Greg Mackenzie	Centrica	✓
Ben Fuller	Centrica	✓
Mo Rezvani	SSE	✓
Philip Russell	Independent	✓
Simon Wood	British Gas	✓
Joel Lindop	EDF	✓
Xiaolin Chen	EDF	✓

224/08

Issue 55
Issue Report

30 April 2014

Version 1.0

Page 13 of 13

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