## Attachment A – Group Analysis of Issue 38

## Issue 1

# 1 Reduced accuracy of Credit Checking Process

### 1.1 Background

1.1.1 The Credit Checking Process[1] relies on estimates of how much energy each Supplier has used. There are two issues associated with the current method of estimating Metered Volumes at Initial Settlement:

- Values can become increasingly inaccurate as the volume of embedded generation in the GSP Group increases. This is because wind generation is unpredictable which means that the electricity generated (or used) 3 weeks ago may or may not have a clear relationship with the current generation (or usage). This issue was not initially raised with the Panel, but came to light as a result of the Groups analysis.
- The method used to estimate Metered Volumes for Supplier BM Units (in paragraph T4.2.2 of the BSC) in the Interim Information (II) Run can give rise to inaccurate estimates. This is particularily evident when the percentage change in GSP Group Take (from the equivalent day three weeks previously) is not reflective of changes in individual Suppliers' positions. This is more likely to occure in situations when the previous GSP Group Take value is close to zero.

1.1.2 This second defect can best be explained using an example.

### 1.2 A practical example:

1.2.1 Let's assume there are three Suppliers in a GSP Group. The GSP Group take for a single Settlement period is -500 MWh (The GSP Group is Offtaking), with BMU metered volumes as follows:

| BM Unit | BMU Metered Volume | Percentage share of GSP Group Take |
|---|---|---|
| BMU 1 | -100 MWh | 20% |
| BMU 2 | -180 MWh | 36% |
| BMU 3 | -220 MWh | 44% |
| **GSP Group Take** | **-500 MWh** | **100%** |

1.2.2 This Settlement Period will be used to determine the II Run Metered volumes for a Settlement Period approximately 3 weeks later. Let's say that the GSP Group Take for the Settlement Period (3 weeks later) that we are looking at is -300 MWh.

[1] Please refer to the following link for clarification regarding the Credit Checking Process - Credit Checking

1.2.3 BMU's 1 -3 will be allocated the following Metered Volumes (*Current GSP Group Take * (Proportion of Previous GSP Group Take * 100%)*:

**BMU1 (Estimated Metered Volume) = 300 * ((100/500) * 100%)**

**= 60 MWh**

**BMU2 (Estimated Metered Volume) = 300 * ((180/500) * 100%)**

**= 108 MWh**

**BMU3 (Estimated Metered Volume) = 300 * ((220/500) * 100%)**

**= 132 MWh**

1.2.4 As you can see, when GSPGT for the previous period is relatively high we do not see erroneously large estimates and each of the BM Units are allocated a reasonable proportion of the current periods GSPGT.

1.2.5 The problem arises when the GSPGT for the current period is high with the GSPGT for the preceding period tending towards zero**.**

1.2.6 Let's see what happens when GSPGT for the previous period is close to zero. Assuming that the GSPGT for the current period is 300 MWh and the GSPGT for the reference day is close to zero, (say -1 MWh), made up as follows:

| BM Unit | BMU Metered Volume | Proportion of GSP Group Take (BMUX/GSPGT) *100% |
|---|---|---|
| BMU 1 | - 200 MWh | 20, 000% |
| BMU 2 | - 100 MWh | 10, 000% |
| BMU 3 | 299 MWh | -29, 900% |
| **GSP Group Take** | **- 1 MWh** | **100%** |

1.2.7 Using the previous periods GSPGT the following Metered volumes are calculated for the respective BMU's:

**BMU1 (Estimated Metered Volume) = 300 * ((200/1) * 100%)**

**= - 60 000 MWh**

**BMU2 (Estimated Metered Volume) = 300 * ((100/1 * 100%)**

**= - 30 000 MWh**

**BMU3 (Estimated Metered Volume) = 300 * ((299/1 * 100%)**

**= 89 700 MWh**

1.2.8 The above estimation method therefore assumes that the GSPGT for the current period would be made up of the following BMU Metered volumes:

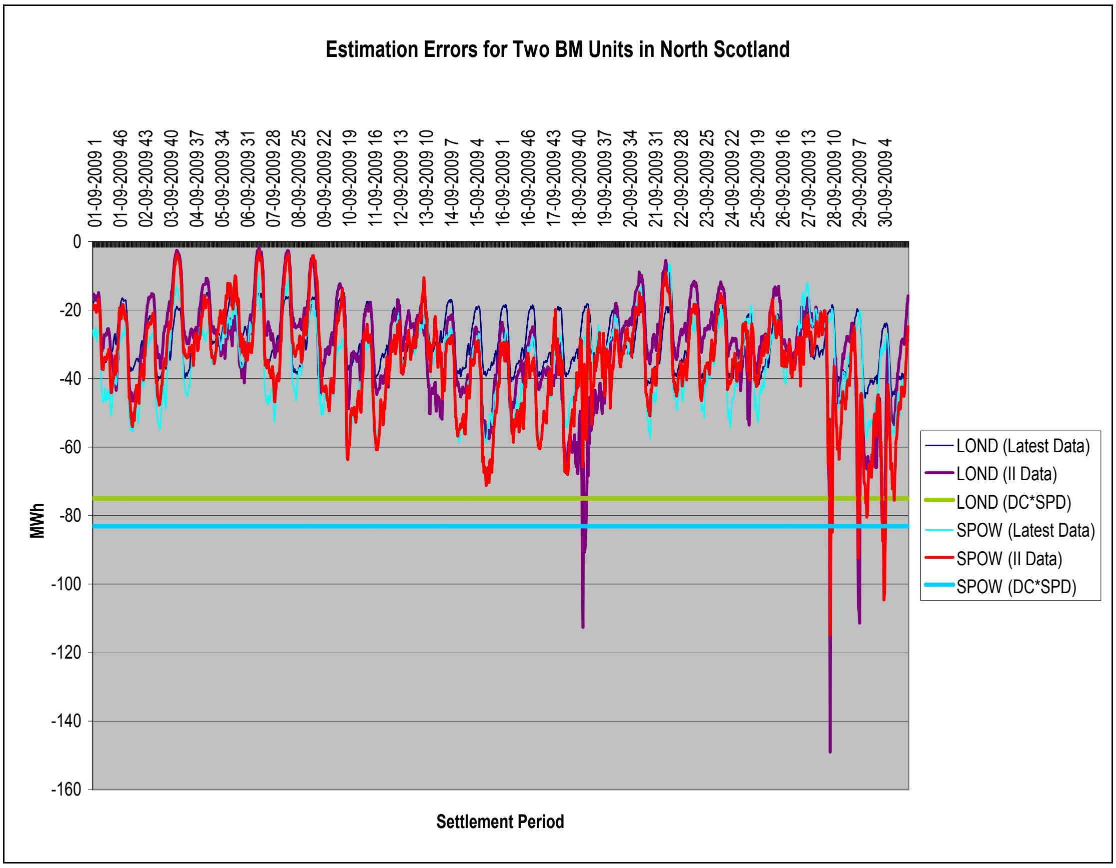
| BM Unit | BMU Metered Volume |
|---|---|
| BMU 1 | - 60 000 MWh |
| BMU 2 | - 30 000 MWh |
| BMU 3 | 89 000 MWh |

1.2.9 As you can see, the figures calculated using the calculation in section T4.2.2 provide erroneously large values when the GSPGT is close to zero i.e. (The size of the error is inversely proportional to the size of the GSP Group Take) which means that it increases very rapidly as the GSP Group Take approaches zero.

1.2.10 The risk to Parties is mitigated by ELEXON's ability to invoke the 'material doubt' provisions to prevent Parties being placed into Credit Default erroneously.

## 1.3 What's happening in reality?

1.3.1 The following graph compares estimated Metered Volumes at II[2] with real Metered Volumes (at the subsequent Settlement Run[3]) for the second and third largest Supplier BM Units in the North Scotland GSP Group during September 2009:




1.3.2 Particular points to note on this graph are as follows:

- In a number of Settlement Periods[4], the estimated consumption at II is greater than DC*SPD (Settlement Period Duration), which should be the maximum possible consumption, suggesting that the estimating methodology has gone seriously wrong.

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[2] Because some of the data for previous runs has been archived from our monitoring system, all the II data in this report has been recalculated. The calculation used was the same as that performed in the real II run for that day, except that it used the latest available Settlement Run for the corresponding historic day (which was R1 in most cases), while the real II run would always have used SF. We do not believe that this slight difference is likely to have a material impact on the conclusions presented here.

[3] This is the data from the latest available Settlement Run (typically R1).

[4] Periods 1-8 on 19 September, 5-10 on 28 September, 7-10 on 29 September and 1-7 on 30 September.

- These manifestly erroneous values typically occur in Settlement Periods where the GSP Group Take on the previous day was several times lower than the GSP Group Take on the current day, and therefore all the previous metered volumes were increased significantly.
- The most extreme case of this was period 6 on 28 September, where data for 7 September (with a GSP Group Take of 20.33 MWh) was used to estimate Metered Volumes for a period with GSP Group Take of 147.45 MWh. As a result, all the Metered Volumes for 7 September were multiplied by a factor of roughly 7.25.

1.3.3 Although the above analysis relates to two BM Units only, it does provide strong evidence that the current estimation method can produce seriously erroneous results when GSP Group Take values are low.

1.3.4 **Quantifying the Issue**

1.3.5 In order to quantify more systematically the scope of this issue, we have calculated the total absolute error in Metered Volumes at II for each GSP Group. The following table shows the calculation for all GSP Groups in September 2009.

| Error in II Estimates (September 2009) | | | |
|---|---|---|---|
| GSP Group | Total Error at II[5] (GWh) | Total Metered Volume[6] (GWh) | Percentage Error |
| _A | 160.0 | 2700.6 | 5.93% |
| _B | 196.0 | 2145.0 | 9.14% |
| _C | 50.1 | 2342.6 | 2.14% |
| _D | 191.2 | 1121.2 | 17.06% |
| _E | 78.1 | 1890.1 | 4.13% |
| _F | 159.7 | 1215.3 | 13.14% |
| _G | 129.0 | 1819.5 | 7.09% |
| _H | 77.1 | 2504.9 | 3.08% |
| _J | 125.7 | 1606.7 | 7.82% |
| _K | 69.2 | 944.0 | 7.33% |
| _L | 41.8 | 1113.0 | 3.76% |
| _M | 128.3 | 1722.4 | 7.45% |
| _N | 187.3 | 1464.9 | 12.79% |
| _P | 200.2 | 441.9 | 45.30% |

1.3.6 And the following table shows the percentage figures for the three months prior to that:

| Error in II Estimates (June – August 2009) | | | |
|---|---|---|---|
| GSP Group | June 2009 | July 2009 | August 2009 |
| _A | 4.71% | 4.86% | 5.82% |
| _B | 8.35% | 6.72% | 8.19% |
| _C | 2.08% | 1.72% | 1.48% |
| _D | 11.97% | 11.58% | 13.00% |
| _E | 5.51% | 4.23% | 5.89% |
| _F | 17.11% | 18.82% | 10.84% |
| _G | 7.36% | 6.41% | 6.49% |
| _H | 3.89% | 3.44% | 3.15% |
| _J | 7.65% | 6.83% | 8.08% |
| _K | 7.71% | 6.54% | 7.83% |
| _L | 4.74% | 3.37% | 3.61% |

[5] This error is $\Sigma(|(QM_{ij}$ at II – latest $QM_{ij})|)$ i.e. the sum over all Settlement Periods and all Supplier BM Units in the GSP Group of the absolute value of the error at II.

[6] This is the sum over all Settlement Periods and BM Units of the absolute value $|QM_{ij}|$

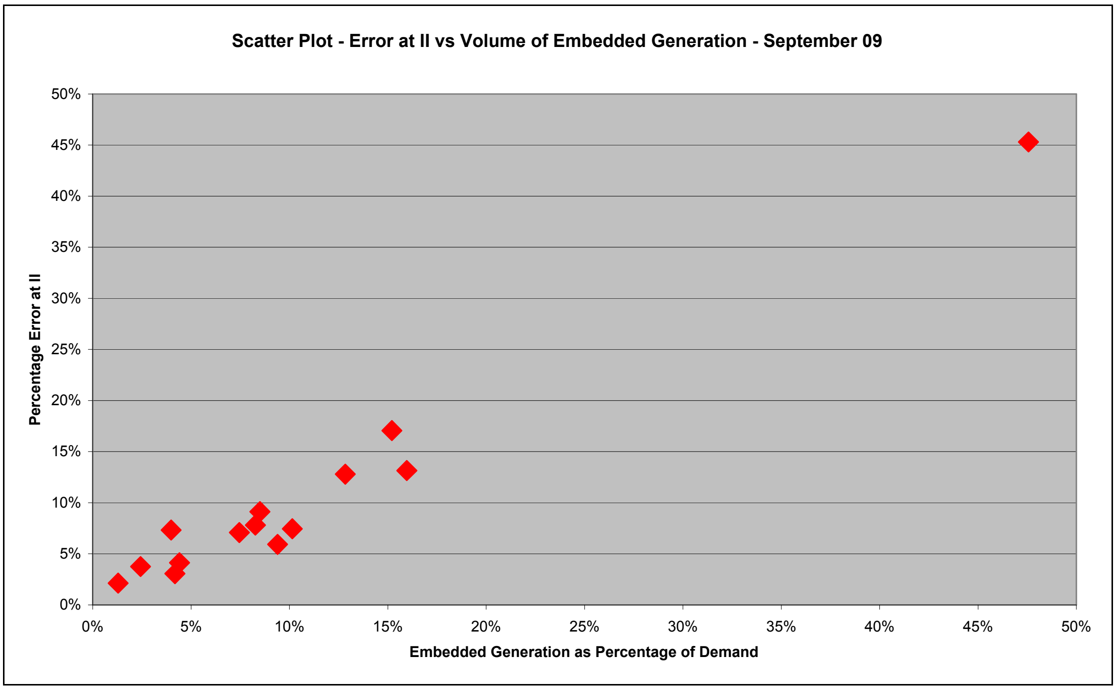
 

| Error in II Estimates (June – August 2009) | | | |
|---|---|---|---|
| GSP Group | June 2009 | July 2009 | August 2009 |
| _M | 6.47% | 6.11% | 6.15% |
| _N | 7.97% | 9.77% | 10.26% |
| _P | 16.61% | 17.02% | 27.80% |

1.3.7 Key points to note are that:

- the level of error in each GSP Group remains reasonably constant over time, and
- the level of error is highest in those GSP Groups with significant volumes of embedded generation.

1.3.8 The following scatter plot shows the percentage error at II against the volume of embedded generation (as a percentage of demand) for each GSP Group:




1.3.9 This diagram shows that error at II is very strongly correlated with the level of embedded generation[7].

## 1.4 Group Recommendations

1.4.1 The Issue 38 Group considered the following possible approaches to solving Issue 1:

- **Option 1** – Remove the need for the T4.2.2 algebra entirely by reading Half Hourly SVA meters and running the SVAA software in time for the II Run; and
- **Option 2** – Amend the algebra in T4.2.2 to make it more robust to small GSPGT values.

## 1.5 Option 1 (Preferred Option)

[7] The correlation coefficient is 0.986.

1.5.1 The idea of including SVA in the II Run was initially considered as part of Issue 22 (Indebtedness). The Issue 22 Group issued a Requirement Specification describing a solution with two elements to it:

- Collecting readings from 100kW HH meters and running HHDA/NHHDA processes in time for II (so that the Actual Energy Indebtedness (AEI) part of the calculation would be based on real SVA data). This is the part of the solution that would solve Issue 1's problem.

- For the one-week portion of the credit calculation that has not had an II Run, estimating Metered Volumes based on recent data (from SAA) rather than historic CALF data. This component of the Issue 22 solution is not relevant to Issue 38 and should not be considered as part of Issue 38.

1.5.2 The first component of the above solution was to change the Supplier Volume Allocation (SVA) timetable to get accurate data into the system quickly. This would have involved undertaking an "improved" version of the II Run to increase the accuracy of the AEI element of the credit calculation. The principal idea was to extend the II Run to the SVA aspect of the BSC arrangements. This would involve submitting SVA Half Hourly (HH) metered data into the Settlement systems more quickly and requiring Non Half Hourly Data Aggregators (NHHDAs) to undertake an additional aggregation run in time for the II Run.

1.5.3 It was felt that this solution would improve the accuracy of II data, which would be beneficial for the credit arrangements.

1.5.4 The Issue 22 Group commissioned an impact assessment in relation to this solution. The implementation costs for BSC Systems and for ELEXON were estimated as follows:

| Impact | Implementation Costs |
|---|---|
| Central systems development and testing | approx. £ 470,000 |
| SVA Agent development and testing | approx. £ 75,000 |
| ELEXON project management and implementation | approx. 350 man days (stand-alone project) |

1.5.5 In addition there were also certain operational costs and benefits associated with the proposal:

| Impact | Implementation Costs |
|---|---|
| Operational SVA and Data Transfer costs (for new SVA II Run) | approx. £ 100,000 per year |
| Ongoing ELEXON savings | 40 man days per year |

1.5.6 It should be emphasised that the solution considered by the Issue 22 group was based on improving the accuracy of II data for credit purposes only. The group did not believe that Settlement Charges should be based on the proposed II Run. However, it was noted that a change to the overall Settlement Timetable could be introduced at a later stage if BSC Parties were comfortable with the accuracy of the II data.

1.5.7 Unfortunately, the Issue 22 impact assessment combined the two components described above (making it hard to extract a cost for those elements of the solution relevant to Issue 38). The Issue 38 Group highlighted that the costs associated with the Issue 22 solution seemed high, but was mindful of the fact that processes and systems have changed since 2006. The Group believed that these costs will need to be reassessed if a Modification were raised.

## 1.6 Option 2

1.6.1 In terms of option 2, the Group stressed that any new algebra should:

- Give plausible estimates of metered volumes (even when GSPGT values are small and volatile); and
- Assign the correct total volume of energy (i.e. summing the estimates for all Supplier BM Units in a GSP Group should give the correct GSP Group Take).

1.6.2 At the first meeting of the Issue Group, ELEXON proposed that the issue of very low GSP Group Takes could be addressed by changing the estimation method so that it **adds** an appropriate adjustment to each of the historic Metered Volume values, rather than **multiplying** them by a scaling factor. The new equation would be as follows:

- $$QM_{ij} = QM_{ij'} + (GSPGT_j - GSPGT_{j'}) * \frac{|QM_{ij'}|}{\sum |QM_{ij'}|}$$

1.6.3 We repeated the calculations using this new approach, as shown in the following table:

| Errors in II (Proposed New Method) | | | | |
|---|---|---|---|---|
| GSP Group | June 2009 | July 2009 | August 2009 | Sept 2009 |
| _A | 4.65% | 4.88% | 5.73% | 5.84% |
| _B | 8.29% | 6.68% | 8.03% | 8.94% |
| _C | 2.08% | 1.72% | 1.48% | 2.14% |
| _D | 11.82% | 11.44% | 12.77% | 15.93% |
| _E | 5.49% | 4.22% | 5.88% | 4.12% |
| _F | 14.60% | 17.72% | 10.53% | 13.00% |
| _G | 7.35% | 6.39% | 6.47% | 6.99% |
| _H | 3.89% | 3.42% | 3.15% | 3.06% |
| _J | 7.51% | 6.77% | 7.95% | 7.58% |
| _K | 7.70% | 6.53% | 7.82% | 7.31% |
| _L | 4.76% | 3.37% | 3.61% | 3.74% |
| _M | 6.44% | 6.11% | 6.16% | 7.44% |
| _N | 7.92% | 9.56% | 10.06% | 11.84% |
| _P | 14.93% | 15.96% | 25.69% | 29.16% |

1.6.4 In most cases the new method gives **slightly** smaller errors than the current method (refer to the table within section 1.3.6 for a comparison). However, both methods become less accurate as the volume of embedded generation in the GSP Group increases.

## 1.7 Conclusion

1.7.1 The Group believes that although the solution in option 2 provides slightly smaller errors than the current method, it does not resolve the problems associated with Credit Checking and embedded generation. The unpredictability of embedded generation (in particular wind generation) creates problems when trying to estimate today's generation based upon generation 3 weeks ago. This is an issue that would be resolved by adopting option 1 of the group's recommendations.

1.7.2 The Group noted that there was a potential for raising an efficiency Modification, on the basis that it could potentially remove the requirement for Parties to raise Material Doubt claims.

## Issue 2

# 1 GSP Group treated as Production

## 1.1 Background

1.1.1 Energy Contract Trading Parties are required to notify BSC Systems of their contracted trades to enable Energy Imbalance Volumes to be calculated. This is done by submitting notifications to the Energy Contract Volume Notification Aggregation Agent (ECVAA).

1.1.2 There are two types of notifications:

- The first relates to Energy Contract Volume Notifications (ECVNs) which advise the ECVAA of the volumes of energy bought and sold between two Contract Trading Parties.
- The second is a Metered Volume Reallocation Notification (MVRN). This notification is used to inform the ECVAA that the energy flowing to or from a particular BM Unit is to be allocated between two (or more) different Parties for the purposes of Energy Imbalance calculations.

1.1.3 These notifications are submitted on behalf of Contract Trading Parties by 'Notification Agents', appointed by the Parties specifically for this purpose, who are known as Energy Contract Volume Notification Agents (ECVNAs) and Metered Volume Reallocation Notification Agents (MVRNAs) respectively.

## 1.2 Clarification of the Issue

1.2.1 Issue two relates to the interaction between these two accounts and the impact of a change on the Parties Contract accounts.

1.2.2 As mentioned above, Trading Parties are required to register their Metered Volumes with the ECVAA. These Meter Volumes will be allocated to either their Production (P) or Consumption (C) Energy Accounts. The P/C flag determines whether a BM Unit's Metered Volumes are allocated to a Party's Production or Consumption Energy Account.

1.2.3 The P/C flag for a BM Unit is set to 'P' when a BM Unit has Production Status and set to 'C' when a BM Unit has Consumption Status. The flag is set by the Central Registration Agent (CRA) in accordance with the rules in Section K (of the BSC) on receipt of a Party's Generation Capacity/Demand Capacity[8] (GC/DC) sub missions.

1.2.4 If a BM Unit forms part of a Trading Unit (please click on the following link for information regarding Base Trading Units: Overview of Trading Units) the P/C flags are allocated at a Trading Unit level rather than at a BM Unit level. Once the Relevant Capacity for each BM Unit in a Trading Unit is known, the P/C Status of the Trading Unit is determined.

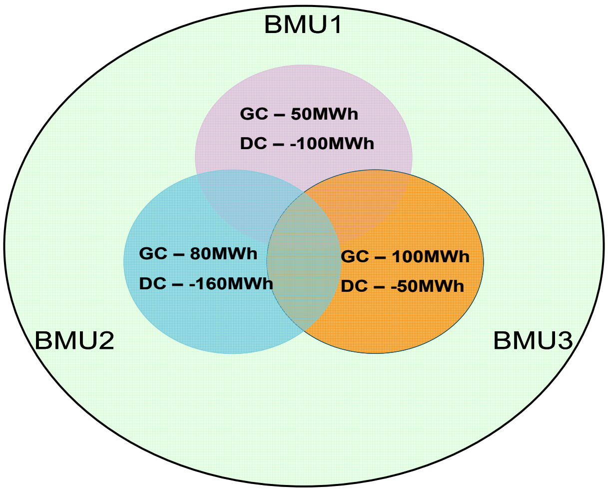
1.2.5 If the sum of the Relevant Capacities is equal to or less than zero, the Trading Unit (and all BM Units in that Trading Unit) is determined to have Consumption Status - the P/C flag is set to 'C' (Consumption).

[8] The Generation Capacity is a Party's estimate of the expected maximum metered volume, in any Settlement Period, for a particular BSC Season. The Demand Capacity is a Party's estimate of the expected maximum metered demand, in any Settlement Period, for a particular BSC Season.

1.2.6 If the sum of the Relevant Capacities is greater than zero, the Trading Unit (and all BM Units in that Trading Unit) is determined to have Production Status - the P/C flag is set to 'P' (Production).

1.2.7 Issue 2 addresses the scenario when a Base Trading Units (BTU's) status changes during a season i.e. from Consumption to a Production or visa versa.

1.2.8 **Lets look at an example:** For the sake of this example we have 3 BM Units.



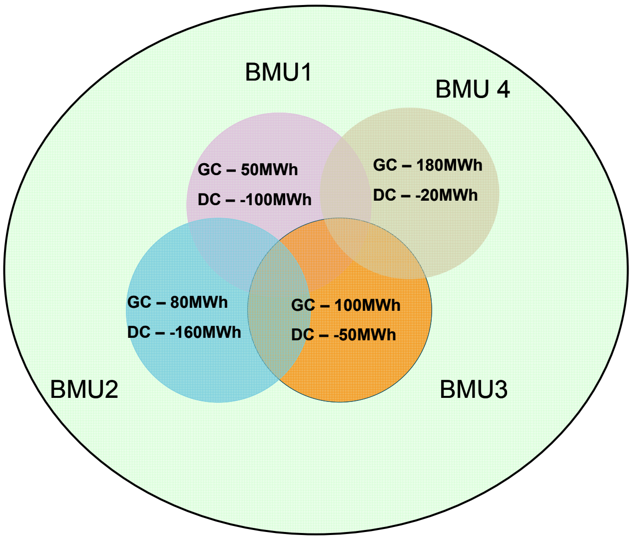

1.2.9 BM Units 1 – 3 form part of a Base Trading Unit. Each BM Unit will supply estimates of their seasonal Generation and Demand Capacities (GC's and DC's).

<table>
<tr><th></th><th>GC</th><th>DC</th><th>Relevant Capacity</th><th>GC > DC = P Flag<br>DC > GC = C Flag</th></tr>
<tr><td>BMU 1</td><td>50 MWh</td><td>-100 MWh</td><td>-100</td><td rowspan="4">C Flag</td></tr>
<tr><td>BMU 2</td><td>80 MWh</td><td>-160 MWh</td><td>-160</td></tr>
<tr><td>BMU 3</td><td>100 MWh</td><td>- 50 MWh</td><td>100</td></tr>
<tr><td></td><td></td><td></td><td>-160</td></tr>
</table>

1.2.10 In this case the Relevant Capacities are less than zero (-160), meaning that the Trading Unit (and all BM Units in that Trading Unit) will have a Consumption Status associated with it - the P/C flag is set to 'C' (Consumption).

1.2.11 This flag will establish which energy account each BM Unit's net energy will be allocated to, in this case the Consumption Account. For the sake of this example, let's now assume that a new embedded generator, BMU4, is registered within the BTU[9].

[9] In accordance with Section K 'Classification and Registration of Metering Systems and BM Units' of the BSC and BSCP15 'BM Unit Registration'




1.2.12 The sum of the Relevant Capacities is now greater than zero, which will render the Trading Unit (and all BM Units in that Trading Unit) as Production - the P/C flag is set to 'P' (Production).

| BM Unit | GC | DC | Relevant Capacity | GC > DC = P Flag<br>DC > GC = C Flag |
|---|---|---|---|---|
| BMU 1 | 50 MWh | -100 MWh | -100 | **P Flag** |
| BMU 2 | 80 MWh | -160 MWh | -160 | |
| BMU 3 | 100 MWh | - 50 MWh | 100 | |
| BMU 4 | 180 MWh | - 20 MWh | 180 | |
| | | | **20** | |

1.2.13 If the existing BM Units within the BTU were not aware of the introduction of BMU4, they would not have amended their Energy Contract accounts in order to address the change in their Metered Volume accounts.

1.2.14 Lets assume that BM Units 1 – 3 have the following Energy Contract Volume Notifications:

| BM Unit | Energy Contract Volume | | Metered Contract Volume | Net Imbalance Position |
|---|---|---|---|---|
| | Consumption | Production | Consumption | |
| BMU 1 | -100 MWh | 50 MWh | -50 MWh | - |
| BMU 2 | -160 MWh | 80 MWh | -80 MWh | - |
| BMU 3 | -50 MWh | 100 MWh | 50 MWh | - |

1.2.15 Currently the Contract Account balances with the Metered Volumes Account i.e. the accounts are balanced.

1.2.16 The introduction of BMU4 will result in a mismatch (imbalance) between the respective accounts i.e. their Energy Contract accounts will not match their Metered Volume accounts.

| BM Unit | Energy Contract Volume | | Metered Contract Volume | Net Imbalance Position |
|---|---|---|---|---|
| | Consumption | Production | Production | |
| BMU 1 | -100 MWh | 50 MWh | -50 MWh | 100 |
| BMU 2 | -160 MWh | 80 MWh | -80 MWh | 160 |
| BMU 3 | -50 MWh | 100 MWh | 50 MWh | -100 |

1.2.17 **BMU 1** will have a net balance of -50 MWh within its ECV (Consumption Account) and a balance of -50 MWh within its MCV (Production Account). This means that BMU 1 will be imbalance by 100 MWh.

1.2.18 **BMU 2** will have a net balance of -80 MWh within its ECV (Consumption Account) and a balance of -80 MWh within its MCV (Production Account). This means that BMU 1 will be imbalance by 160 MWh.

1.2.19 **BMU 3** will have a net balance of 50 MWh within its ECV (Consumption Account) and a balance of -50 MWh within its MCV (Production Account). This means that BMU 3 will be imbalance by 100 MWh.

1.2.20 BMU's 1 – 4 will be exposed to Imbalance Charges on each Energy Account.

## 1.3 Group Recommendations

- **Option 1: Always treat Base Trading Units as having a Consumption status**. Under this option GC/DC changes will not result in a recalculation of the P/C flag.
- **Option 2: Fix the Production/Consumption status of Base Trading Units for each BSC Season**. Under this option mid-Season GC/DC changes do not cause a recalculation of P/C Status). Suppliers would still have to amend their systems and/or processes to cope with changes of P/C Status, but there would be more notice of a change
- **Option 3: Keep the status quo**. This option will have implications on Suppliers and embedded generators within a GSP Group, who may have to amend their systems and processes, and face the risk of Imbalance Charges (particularly for mid-Season changes).

1.3.1 After considering the implications of each option, the Group believes that Option 1 is the more favourable one as it aligns with the principles of P100[10] 'Extension of Demand-side Trading Units in order to increase the competitiveness of the market for embedded benefits' and ensures that Parties do not have to continually align their Contract and Metering Volume accounts.

[10] Modification Proposal P100

## Issue 3

# 1 GSP Group treated as Delivering

## 1.1 Background

1.1.1 If a Trading Unit is a net exporter of electricity over a Settlement Period (i.e. if the sum of the BM Unit Metered Volumes of the constituent BM Units is greater than zero), then the Trading Unit is termed a "Delivering Trading Unit" in that Settlement Period. Alternatively, if it is a net importer (i.e. if the sum of the BM Unit Metered Volumes of the constituent BM Units is negative), it is termed an "Offtaking Trading Unit" in that Settlement Period.

## 1.2 Clarification of the Issue

1.2.1 A sufficiently high volume of Embedded Generation could cause the entire GSP Group (i.e. all BM Units in the Base Trading Unit) to be treated as Delivering rather than Offtaking on a Settlement period basis.

1.2.2 This has already happened for a small number of Settlement Periods, and it is likely to occur more often in the future as the volume of embedded generation increases. The impact on these Settlement Periods is that embedded generators don't receive embedded benefits (such as losses and BSUoS - Balancing Services Use of System Charge), while Suppliers do receive a benefit (from being treated as delivering).

## 1.3 Lets look at an example:

1.3.1 Assume we have a Trading Unit that is a net importer (Imports exceed Exports) of electricity over a Settlement period:

| | Export | Import | Net over Settlement Period | Delivering/Offtaking Status |
|---|---|---|---|---|
| BMU 1 | 50 MWh | -100 MWh | **-50 MWh** | Offtaking |
| BMU 2 | 80 MWh | -160 MWh | **-80 MWh** | Offtaking |
| BMU 3 | 100 MWh | - 50 MWh | **50 MWh** | Delivering |
| **Net** | **230 MWh** | **-310 MWh** | **-80 MWh** | **Offtaking** |

1.3.2 Under this scenario embedded generators will receive embedded benefits for being a delivering BM Unit within an offtaking Trading Unit (i.e. BMU1 and BMU2 will be charged BSUoS charges whereas BMU3 will receive BUSUoS payments).

1.3.3 If the Trading Unit were to flip from an offtaking to a delivering Trading Unit, the situation would reverse. Lets assume the status of the Trading Unit is made up as follows:

| | Export | Import | Net over Settlement Period | Delivering/Offtaking Status |
|---|---|---|---|---|
| BMU 1 | 70 MWh | -100 MWh | **-30 MWh** | Offtaking |
| BMU 2 | 100 MWh | -160 MWh | **-60 MWh** | Offtaking |
| BMU 3 | 150 MWh | - 50 MWh | **100 MWh** | Delivering |

| | | | | |
|---|---|---|---|---|
| **Net** | **320 MWh** | **-310 MWh** | **10 MWh** | **Delivering** |

1.3.4 Under this scenario embedded generators will no longer receive embedded benefits whereas Suppliers will now receive BSUoS payments for being an offtaking BM Unit within a delivering Trading Unit. (i.e. BMU1 and BMU2 will receive BSUoS payments whereas BMU3 will be charged BUSUoS charges.)

## 1.4 Group Recommendations

1.4.1 The Group recognised that this issue raised fundamental questions about who (if anyone) should receive embedded benefits in a GSP Group that has become a net exporter of electricity. On the one hand it could be argued that demand is now reducing the impact on the Transmission system, and should receive the benefit; but on the other hand some of the generation is also providing a benefit.

1.4.2 The issue is further complicated by the interaction with the Connection and Use of System Code (CUSC), given that delivering/offtaking status directly affects the allocation of embedded benefits (e.g. BSUos) under that Code.

1.4.3 With this in mind the Group believes that this should be treated as a charging issue rather than a BSC issue. The Group recommends that any review in this area should be undertaken within that environment.

## Issue 4

# 1 BSC description of interface from CDCA to SVAA

## 1.1 Background

1.1.1 The standard NETA sign convention within the BSC (as stated in paragraph 2.4 of Annex X-2) is that flows of energy onto the Transmission System (i.e. Exports) are positive, and flows of energy off the Transmission System (i.e. Imports) are negative. However, the data sent from the Central Data Collection Agent (CDCA) to the Supplier Volume Allocation Agent (SVAA) has to follow the opposite sign convention (for consistency with the way the pre-existing SVAA software worked).

## 1.2 Defining the problem

1.2.1 Section R5.7.1 (b) of the 'Code' infers with the use of the word 'magnitude' that the value being transferred from the CDCA will always be a positive value (Importing). This implies that the CDCA will never transfer a negative value (Exporting).

## 1.3 Group Recommendations

1.3.1 The Issue 38 Group suggests that an Efficiency Modification be raised in order to amend section 5.7.1 (b) to ensure that the text is more robust to exporting trading units. The Group recommends that the relevant section be amended as follows:

> (b) the~~magnitude~~ value (values submitted will be positive if the GSP Group is a net importer and negative if a net exporter) of the GSP Group Take for each GSP Group for each Settlement Period to the SVAA (but not in relation to any Interim Information Volume Allocation Run).

## Issue 5

## 1 Reduced share of Supplier Charges

### 1.1 Background

1.1.1 Supplier Charges[11] are costs that Suppliers incur if they fail to meet certain performance levels. They are used to compensate Parties who have been disadvantaged by those who are not meeting defined Standards.

### 1.2 Defining the problem

1.2.1 This issue relates to the GSP Group Liability CAP calculation in section S-1 point 3.7.3. The calculation is reflected as follows within the BSC:

$$GSP_{MC} = £1,275,000*[GSP_{A}/GSP_{AS}]$$

- **$GSP_{MC}$** - GSP Group liability cap for the relevant month;
- **$GSP_{A}$** – The total quantity of energy attributable to all Suppliers determined as the GSP Group Take in **that GSP Group** across all Settlement Periods in the 12 month period ending on the immediately preceding 31st March, as determined by the Performance Assurance Board on the basis of information provided by the SVAA; and
- **$GSP_{AS}$** - the total quantity of energy attributable to all Suppliers determined as the sum of all GSP Group Takes **for all GSP Groups** across all Settlement Periods in the 12 month period ending on the immediately preceding 31st March, as determined by the Performance Assurance Board on the basis of information provided by the SVAA.

1.2.2 An increase in embedded generation leads to a decrease in the GSP liability CAP for that Group but leads to an increase in another (i.e. if embedded generation increases in GSPa, then GSPa's proportion of its CAP is reduced, meaning that GSPb's proportion of the CAP will increase).

1.2.3 Suppliers within these groups would benefit from high levels of embedded generation which in turn would reduce their incentive to meet performance standards.

### 1.3 Group Recommendations

1.3.1 The Issue 38 Group recommends that the total annual Supplier Cap Take[12] would be a more appropriate way of calculating the caps than total annual GSPGT. The Group recommends that this issue could be addressed as part of the Supplier Charges review.

[11] The Performance Assurance Reporting and Monitoring System (PARMS) software calculates the Supplier Charges due each calendar month. For further information please refer to our Supplier Charges web page: Supplier Charges.

[12] The total quantity of active import energy attributable to that Supplier determined as the sum of Supplier Cap Take for that Supplier in the relevant GSP Group across all Settlement Periods in the relevant month.

## Issue 6

# 1 Data collection obligations

## 1.1 Background

1.1.1 For demand sites above 100kW, section S2.6.1 of the BSC imposes an obligation on Suppliers to submit data prior to Initial Settlement. This obligation is supported by the Performance Levels and associated Supplier Charges in Annex S-1. There is, however, no corresponding obligation for large generation sites, i.e. Generators could choose not to submit data to Settlement until a later Reconciliation run.

1.1.2 One of the reasons for the absence of any obligation to submit generation data is that there is a natural incentive to do so, in order to reduce Imbalance Charges. This contrasts with the case of demand, where there is no natural incentive, and artificial incentives are therefore required.

## 1.2 Defining the problem

1.2.1 There are no performance standards associated with the export from embedded generators, as there are for import, where 99% of energy for Half Hourly Metering Systems has to be on actual data at each Run Type (for above 100kW sites) and by the RF Run (for below 100kW sites).

1.2.2 A high level of estimated generation data could lead to reduced accuracy at Initial Settlement. On the other hand Generators have a natural incentive to enable Suppliers to read export meters. As Half Hourly data is usually retrieved remotely, it is likely that export readings will be retrieved at the same time as the associated import readings for the site.

1.2.3 Please note that the following analysis excludes NHH export as inaccurate data will have a negligible effect on GSP Group Correction Factor, at current volumes of microgeneration.

## 1.3 Relative Performance – import vs. export – on actual vs. estimated energy

1.3.1 The table below shows the percentage of Half Hourly energy settled on actual data at each Run Type, for export and (above 100kW) import Metering Systems. Figures are averaged over the period 8 September 2007 to 7 September 2008 (the latest dates for which data is available at all Run Types).

| | **All GSP Groups** | | **North Scotland GSP Group** | |
|---|---|---|---|---|
| **Run Type** | **export** | **import** | **export** | **import** |
| SF | 99.9% | 99.2% | 100% | 99.1% |
| R1 | 99.8% | 99.4% | 99.9% | 99.4% |
| R2 | 99.6% | 99.4% | 99.4% | 99.4% |
| R3 | 99.5% | 99.4% | 99.4% | 99.4% |
| RF | 99.4% | 99.3% | 99.3% | 99.4% |

1.3.2 These figures show that the volume of energy settled on actual data is close to 100% at all Run Types for HH export sites, both nationally and in the North Scotland GSP Group. It is no worse at the Initial Settlement Run than it is at later runs. In fact, performance is better at SF than at later runs. The reason for the improved performance is probably that the estimation rules for export are more restrictive than for import. As export is less predictable than import, export should be estimated at zero, unless there is sufficient evidence that export took place. Where readings are not available for a particular date, a Metering System will be settled on estimates at all Run

Types, but a zero estimate may be replaced by a non-zero estimate, as more information becomes available. This can lead to a drop in "performance" despite improved accuracy of data. This happens for both import and export, but is likely to be more pronounced for export.

## 1.4 Relative Performance – import vs. export – on actual vs. estimated Metering Systems

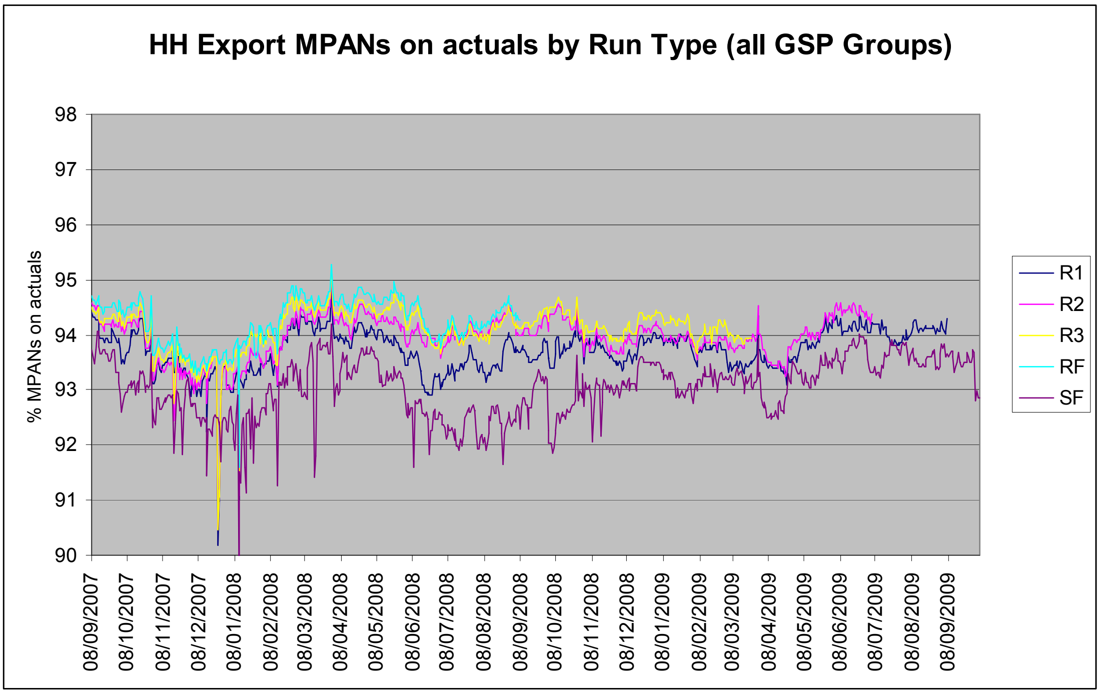
1.4.1 Given that zero estimates flatter performance for HH export, an alternative measure is the percentage of Metering Systems settled on actual energy. Figures below are averaged over the period 8 September 2007 to 7 September 2008 (the latest dates for which data is available at all Run Types). All energy volumes in this paper exclude Line Losses.

| | All GSP Groups | | North Scotland GSP Group | |
|---|---|---|---|---|
| **Run Type** | **export** | **import** | **export** | **import** |
| SF | 92.8% | 93.7% | 93.9% | 96.2% |
| R1 | 93.6% | 94.1% | 95.3% | 96.6% |
| R2 | 93.9% | 94.4% | 95.8% | 96.8% |
| R3 | 94.1% | 94.6% | 96.0% | 96.9% |
| RF | 94.2% | 94.9% | 96.0% | 97.0% |

1.4.2 This shows that performance in reading export meters is worse than performance in reading import meters, but arguablly not significantly so. The difference is more pronounced in the North Scotland GSP Group than it is nationally.

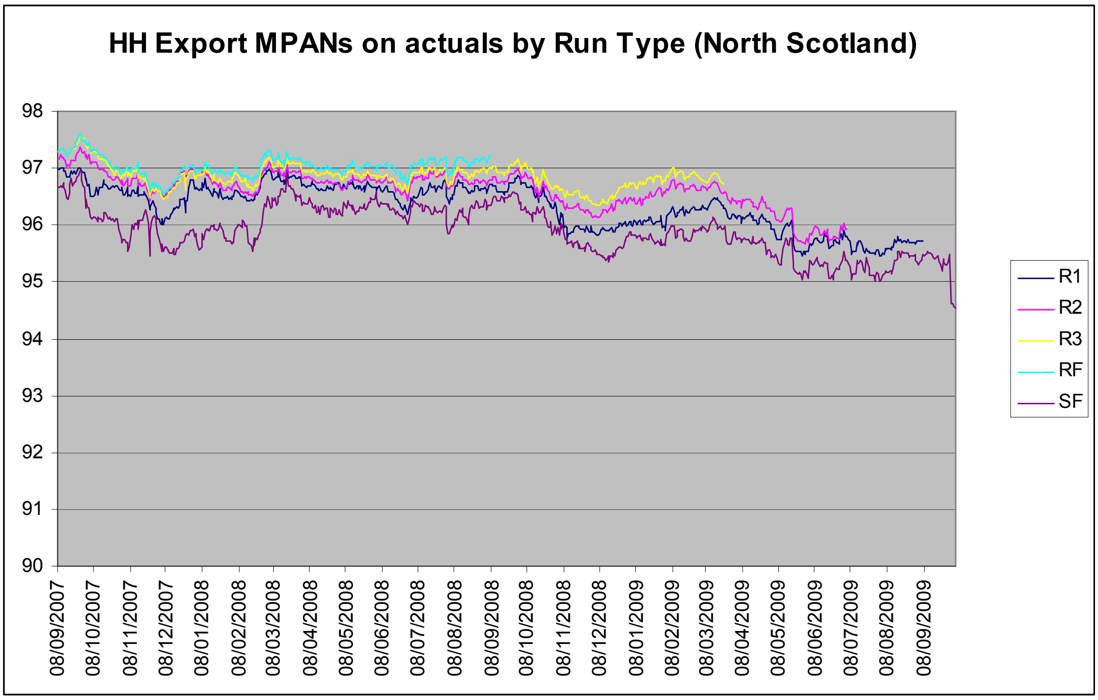
## 1.5 Reading performance over time

1.5.1 To compare all Run Type the tables above are based on data from 2007-2008. The following graphs show the percentage of export Metering Systems on actuals over a longer timeframe.




1.5.2 It should be noted that the percentage of HH Export Metering Systems on actuals at SF and R1 has improved over time and without the artificial incentive of a performance standard.

1.5.3 This trend is not reflected in North Scotland, though, where performance is dropping at SF and R1. Performance in North Scotland remains better than the national average. This is shown in the graph below.

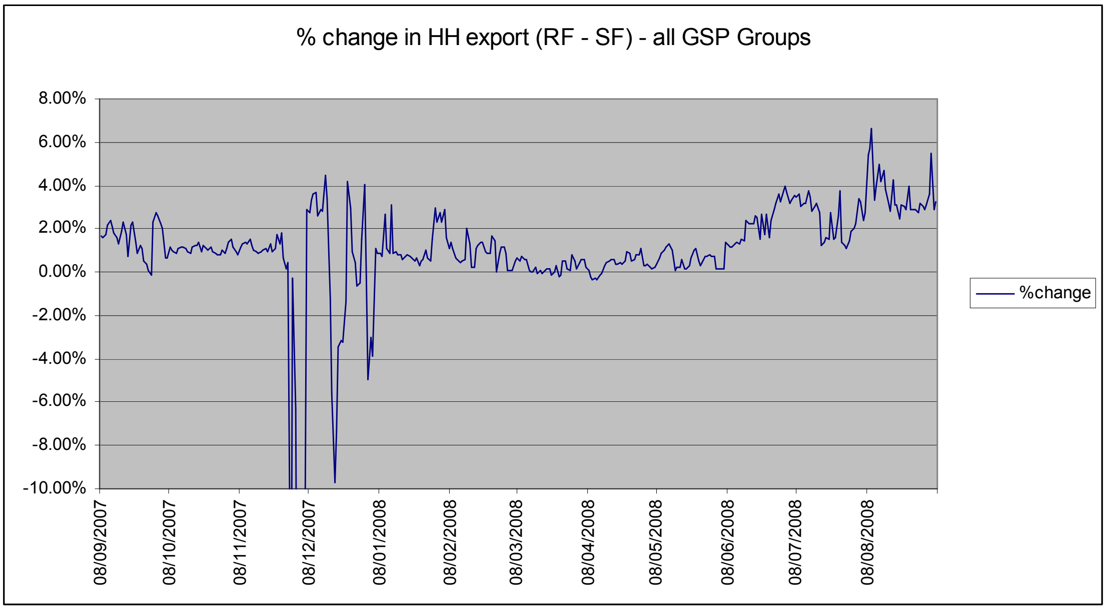


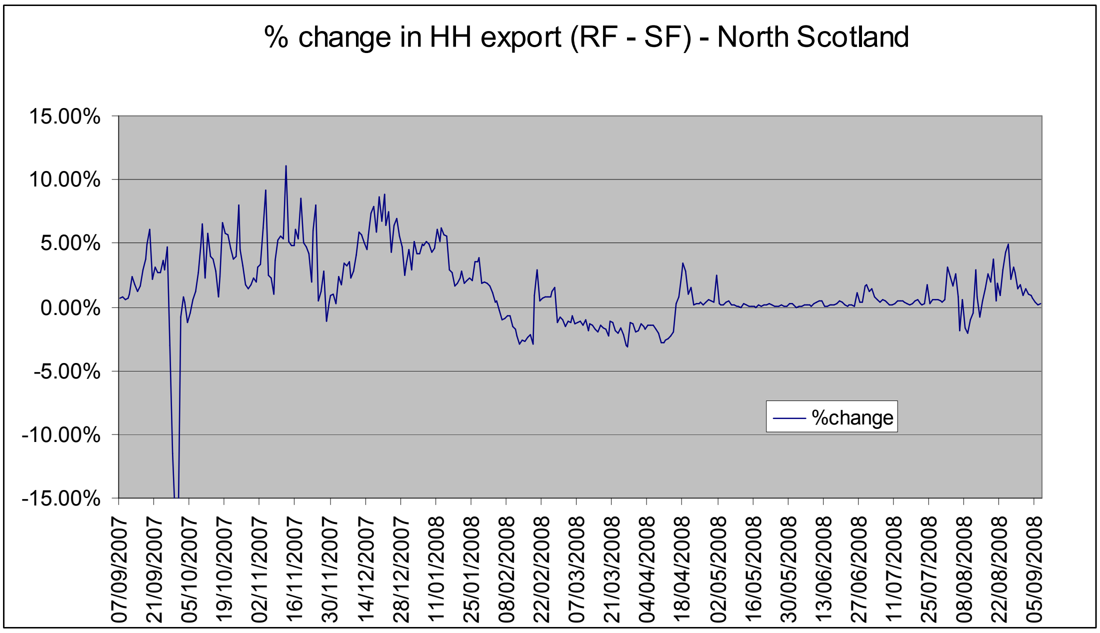

## 1.6 Volatility in Export volumes between runs

1.6.1 The fact that the percentage of HH export Metering Systems on actuals is less than the percentage energy on actuals is presumably the result of zero estimates. Over successive runs these zero estimates will be replaced with a mixture of zero and non-zero actuals (because export is intermittent) or will be replaced by non-zero estimates, where no actual data is available but evidence exists of export volumes. So you would expect HH export volumes to increase over successive runs.

1.6.2 The graph on the next page (graph 1) shows the change in HH export volumes between SF and RF. Apart from the anomalous values in Dec 2007 and Jan 2008, the prevailing trend is an increase in volume between Run Types. This is evident both on the market graph and the North Scotland graph (graph 2).




## 1.7 Volatility in GSP Group Correction Factors

1.7.1 Having established that export volumes increase across Run Types, the question is whether this is causing volatility in GSP Group Correction Factors. The table below shows annual export as a proportion of annual import in each GSP Group. It also shows the average GSP Group Correction Factor at SF and at RF and the variance. GSP Groups are sorted in descending order of GSP Group Correction Factor variance. There is no correlation between higher variances in GSP Group Correction Factors between SF and RF and higher proportions of export. Data is for the period 8 September 2007 to 7 September 2008 (the latest dates for which data is available at all Run Types) and includes all import (HH/NHH, metereed/unmetered) and both HH and NHH export.

| | Import | HH export | Export/ Import | Avg SF CF | Avg RF CF | Variance |
|---|---|---|---|---|---|---|
| Eastern | 38,930,137 | 3,002,145 | 7.7% | 0.982 | 1.000 | 0.018 |
| East Midlands | 30,393,788 | 1,349,305 | 4.4% | 1.011 | 1.026 | 0.014 |
| North Western | 26,569,596 | 1,516,198 | 5.7% | 1.018 | 1.031 | 0.013 |
| London | 29,866,631 | 354,990 | 1.2% | 1.026 | 1.014 | -0.012 |
| Midlands | 27,322,597 | 1,040,734 | 3.8% | 1.026 | 1.015 | -0.011 |
| Manweb | 19,509,220 | 2,648,103 | 13.6% | 1.019 | 1.028 | 0.009 |
| South Wales | 12,945,299 | 368,938 | 2.8% | 1.016 | 1.008 | -0.008 |
| Yorkshire | 25,634,795 | 1,478,671 | 5.8% | 0.993 | 1.001 | 0.008 |
| **North Scotland** | **11,402,711** | **2,666,789** | **23.4%** | **0.994** | **1.001** | **0.007** |
| Northern | 18,633,475 | 1,780,082 | 9.6% | 0.984 | 0.991 | 0.007 |
| Southern | 34,314,256 | 1,084,880 | 3.2% | 1.000 | 0.995 | -0.005 |
| South Scotland | 22,917,856 | 1,763,541 | 7.7% | 1.019 | 1.024 | 0.005 |
| South Western | 15,621,340 | 432,507 | 2.8% | 1.010 | 1.014 | 0.004 |
| South Eastern | 22,681,083 | 1,124,802 | 5.0% | 1.004 | 1.001 | -0.004 |

## 1.8 Conclusions

1.8.1 Performance reading in HH export meters is worse than performance reading import meters, though not significantly so.

1.8.2 This difference is not reflected when performance is measured in energy terms, probably due to more zero estimation for export than import. This is to be expected, given that export is more intermittent.

1.8.3 This feature would mean that an energy-based performance standard for export, along the lines of the current HH import serial, would not be appropriate.

1.8.4 HH export volumes usually increase across Run Types, which will result in higher GSP Group Correction Factors at later Run Types. Whilst GSP Group Correction Factors are higher at later Run Types, there is no correlation between the extent to which this occurs and the volume of export as a proportion of import.

1.8.5 There is currently insufficient evidence that a high proportion of export has an adverse effect on GSP Group Correction Factors at early Run Types. It appears unlikely that an artificial incentive to read export meters (via, say, a performance serial) would be any stronger than the commercial incentive of customers wanting early payment for their export.

## 1.9 Group Recommendations

1.9.1 The Groups analysis highlighted that there is currently insufficient evidence to be able to say that a high proportion of export has an adverse effect on GSP Group Correction Factors at early Run Types. It appears unlikely that an artificial incentive to read export meters (via, say, a performance serial) would be any stronger than the commercial incentive of customers wanting early payment for their export.

1.9.2 In addition the Group recommends that a new graph be added to the Trading Operations Report, showing the percentage of embedded generation settled at Initial Settlement, in order to allow monitoring of Issue 6.