



# Contributing Factors to GSPGCF

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**Meeting Name** Profiling and Settlement Review Group

**Meeting Date** 03 September 2013

**Purpose of paper** For decision

**Summary**

At PSRG meeting 26 it was agreed that the PSRG would re-visit the contributing causes/factors to GSP Group Correction Factors (GSPGCFs) in light of the recent market developments (such as rollout of advanced and smart meters). The aim would be to see if there were any areas that could be further addressed in maintaining the robustness of Settlement in the short to medium term. This paper presents the contributing causes/factors, the existing controls, and asks the PSRG if there is any further work (and or BSC changes) that can be instigated to address the causes/ factors.

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## 1 What are the factors that contribute to GSPGCFs

- 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 currently applied to Non Half Hourly (NHH) metered volumes, and losses (NHH and HH). The mechanism accounts for error in the SVA market and is applied to those types of consumption deemed to be the source of this error
- 1.2. There are two fundamental types of factors that contribute to GSPGCFs. These are volume errors and volume allocation (shape or volume in the wrong half hour) errors. Below these sit a large number of causes, most of which are well known and are already being mitigated through controls under the BSC (or through other governance such as DCUSA, MRA or through regulation). Additionally, we have updated the analysis undertaken in 2011 (SVG paper [150/04](#)) which seeks to quantify the errors in the SVA market.
- 1.3. This paper presents those causes/factors, the existing controls and invites the PSRG to review the level of impact for each, to identify any omissions. Furthermore, the PSRG should consider what new work (if any) can be undertaken to mitigate the impacts in light of recent market changes (focussing on the rollout of smart and advanced meters) and whether any changes to the BSC are required. The aim being to maintain the robustness of Settlement in the short to medium term.

## 2 What causes the volume errors?

2.1 The factors that cause of the volume errors are set out in the table below:

No.	Cause/factor	Impact level	Controls	Comments
1.	Incorrect Agg. Rules	H	Agg. Rule review	Instances are rare but impacts can be high. Review of rules against schematics have been undertaken to address these issue.
2.	Faulty metering	M	TAA checks, GCF checks	<a href="#">Common non compliances</a>
3.	Faulty metering data	M	Fault resolution, GVC and Disputes	GVC also causes Volume Allocation Error. TDC looking at read validation issues.
4.	Line loss factors inaccurate non-technical losses	M	BSCP 128 processes including, LLF validation and LLF Audits	Estimate for the next BSC year: 0.75 TWh
5.	Erroneously Large EACs and AAs	M	Material Error Monitoring (MEM)	Workshops have also been held on the root causes of these – (0.01 TWh)
6.	Energisation status/ Disconnection	M	Performance Assurance processes, e.g. PARMS Serials and BSC Audit	Less than 0.04TWh (NHH only)
7.	UMS EACs/ Inventories	M	MEM and BSC and UMSO Audits	0.012 TWh based on latest calculation.
8.	Undetected theft	M	Revenue Protection, theft incentive schemes	0.158 TWh (of which 0.051 TWh cannabis farms!)
9.	Detected theft not settled	L	BSC504 requirement	No stats. available but OFGEM are looking at this currently in the <a href="#">tackling-electricity-theft-consultation</a>
10.	Defaulting Values	L	Regular Parameter Reviews, e.g. Default EACs	Ensure default values and processes up to date. Error is inherent in the estimate.
11.	Micro-Gen Spill not Settled	L	Not addressable by BSC but could be high impact in future	See previous PSRG work paper <a href="#">PSRG25/02</a>

2.2 The PSRG is invited to consider the above factors and determine whether further analysis should be undertaken.

### 3 What causes the volume allocation (shape) errors?

3.1 The factors that cause of the volume allocation errors are set out in the table below. Most factors contribute to the estimated 5.4 TWh of error from the Profile Modelling except for the sampling error (3.6 TWh):

No.	Cause/factor	Impact level	Controls	Comments
12.	Sampling Errors	H	P223 seeks to maintain robustness	Inherent in any sample. P223 seeks to maintain robustness. To date we have only 8% (222 samples of data) provided by Suppliers
13.	Inherent error in profile methodology, e.g. regression error	H	PEG methodology reviews	Not addressable without fundamental changes in methodology
14.	Tele-switch Profiling Methodology	H	None as this is the defined BSC requirement	Causes significant peaks and troughs in GCFs but is not easily addressable.
15.	Process Errors	M	ELEXON and PEG review process and MDD approval through SVG	Some of these errors are inherent other can be caused by Standing data or registration issues.
16.	National Profiles applied to regional GSPs	M	None as this is the defined BSC requirement	Significant Changes to existing sample sizes and central systems would be required to produce regional profiles
17.	Seasonal Shoulders	M	Winter Shoulder coefficients address this issue around the Xmas period	Can lead to up and down shifts in GCF
18.	Extrapolation to temperatures outside experience	M	Pooling of regression coefficients	Inherent in existing methodology.
19.	GVC	M	None as this is the defined BSC requirement	Contributes to misallocation of Energy (0.49TWh)
20.	Profiles calculated based on 1 year old data, e.g. different temperatures, different holiday profiles	L	Twice yearly profiling has been introduced. 3 year pooling to mitigate temperature effects	Only real time options would address this factor.
21.	Legacy Errors: Equated Rate Customers	L	None as this is a legacy issue.	This causes night-time shift in GCFs. Not easily addressable without moving these customers to alternative Profile Classes.



No.	Cause/factor	Impact level	Controls	Comments
22.	Special Days e.g. Easter and Xmas	L	Special Coefficients are calculated for these days	If methodology was changed it may be one area that could be looked at.
23.	Real Change in Customer Behaviour.	L	None	Short term behavioural changes cannot be addressed e.g. reaction to short term adverse weather or unexpected National events (e.g. Diana's funeral)
24.	Micro-Gen Profiling	L	SSTPGPL review	Sample review.

3.2 The causes and factors regarding profiling can be included in the work the PSRG has requested the PEG to consider (agreed at meeting 26). This is to look at profiling sample design and any potential methodology improvements that can be implemented in the short to medium term.

## 4 Recommendations

4.1 The PSRG are invited to:

- a) **REVIEW** the causes and factors (their impacts and controls) that contribute to the volume and volume allocation errors that are apportioned through GSP Group Correction
- b) **NOTE** the work to be undertaken by the PEG to investigate profiling sample design and any potential methodology improvements that can be implemented in the short to medium term;
- c) **AGREE** any further work (and or BSC changes) that can be instigated to address the causes/ factors.

### For more information, please contact:

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**Appendix A - Factor Descriptions**

No.	Cause/factor	Description
1.	Incorrect Agg. Rules	Aggregation Rules are owned by the LDSO. New connections can lead to inaccuracies in the calculation of Group Take.
2.	Faulty metering	Physical faults with the metering system or communication hardware.
3.	Faulty metering data	Faulty metering data include MTDs, CT/VT ratios. Incorrect or corrupted meter readings.
4.	Line Loss Factors with inaccurate non-technical losses	Inaccurate estimates of data used in the LLF calculation process.
5.	Erroneously Large EACs and AAs	Miscalculated AAs or EACs derived from miscalculated AAs.
6.	Energisation status/ Disconnection	Faulty registration data.
7.	UMS EACs/ Inventories	Miscalculated values and missing inventory data which would affect the EAC.
8.	Undetected theft	Theft which is not been identified by Revenue Protection Services.
9.	Detected theft not settled	Theft which has be identified but not submitted to Settlement.
10.	Defaulting Values	The calculated or derived default EACs.
11.	Micro-Gen Spill not Settled	Unaccounted export energy from micro-generation systems.
12.	Sampling Errors	Inherent error in any sample of a population.
13.	Inherent error in profile methodology, e.g. regression error	The 'unexplained' component of the regression estimate.
14.	Tele-switch Profiling Methodology	Algorithmic profiling creates profile shapes inherently different from those of real storage and immersion heaters. Mechanism was not designed for daily dynamic change. Energy can only be allocated to whole Settlement periods and are not reflect reality.
15.	Process Errors	Rounding errors, registration errors, MDD or other standing data issues.
16.	National Profiles applied to regional GSPs	The differences between the national and regional profile shapes. E.G. differences in the level of gas penetration in the South West.
17.	Seasonal Shoulders	Change in the profiling season result in step changes in GCFs since the profile tends towards



**Appendix A - Factor Descriptions**

No.	Cause/factor	Description
		the seasonal average.
18.	Extrapolation to temperatures outside experience	The temperature coefficient will be reflective of the temperatures at which the sample data is collected and will not necessarily extrapolate well outside the range of experience.
19.	GVC	Gross Volume Correction (GVC) is applied to settlement period that do not necessarily match the time at which the volume error occurred.
20.	Profiles calculated based on 1 year old data, e.g. different temperatures, different holiday profiles	The profile data is at least 1 year old by the time it is used in Settlement meaning it may be less reflective of current behaviour. Holiday profiles also differ year to year e.g. Easter and School holidays.
21.	Legacy Errors: Equated Rate Customers	In the Eastern, East Midlands and Seaboard regions larger customers without switched load were moved onto E7 type tariffs. The storage profile in Autumn and winter will tend to be overstated for these regions.
22.	Special Days e.g. Easter and Xmas	The profile modelling of such days is based on the experience from the latest available year which may not be reflective of behaviour in the out-turn year.
23.	Real Change in Customer Behaviour.	Short term effect such as people in a single GSP group reacting to a storm by moving indoors and switching on lighting cannot be reflected in the profile. Also major unforeseen events can impact load e.g. Diana's funeral.
24.	Micro-Gen Profiling	The modelling of micro-gen export is based on Profile Class 8 and 'deemed clock intervals' the true average export shape is not reflected. The impact of the micro-generation on import is also not reflected as these customers are settled on standard profiles.