

Meeting name BSC Panel

Date of meeting 12 October 2006

Paper Title REPORT ON ISSUE 23 'APPARENT TENDENCY FOR EAC VALUES TO UNDERESTIMATE CONSUMPTION'

Purpose of Paper For Information

Synopsis Issue 23 was raised to consider the premise that underestimation by EACs was the cause of an observed increase in NHH energy across Settlement, from SF to RF. It was concluded that this was not the case, but that there may be issues concerning the accuracy of settlement. This paper provides an outline of analysis performed and a summary of the possible causes of Settlement inaccuracy.

1. INTRODUCTION

- 1.1 Issue 23 'Apparent Tendency for EAC Values to Under-Estimate Consumption' was raised on the premise that values of Estimated Annual Consumption (EACs) are, on average, lower than actual consumption. This hypothesis was based on analysis, by Distributors and by ELEXON, which showed an increase in uncorrected (i.e. not including GSP Group Correction Factor) Non Half Hourly (NHH) energy across Settlement, from the Initial Settlement Run (SF) to the Final Reconciliation Run (RF).
- 1.2 It was proposed that this increase was caused by EACs underestimating consumption because of their failure to capture growth in consumption over time. A number of implications of this were identified, including inaccuracy in Distribution Use of System (DUoS) bills and the crystallisation of error at RF where EACs are not replaced by Annualised Advance (AA) values because Meter readings have not been obtained, i.e. inaccurate data in settlement at RF becomes fixed and can no longer be corrected.

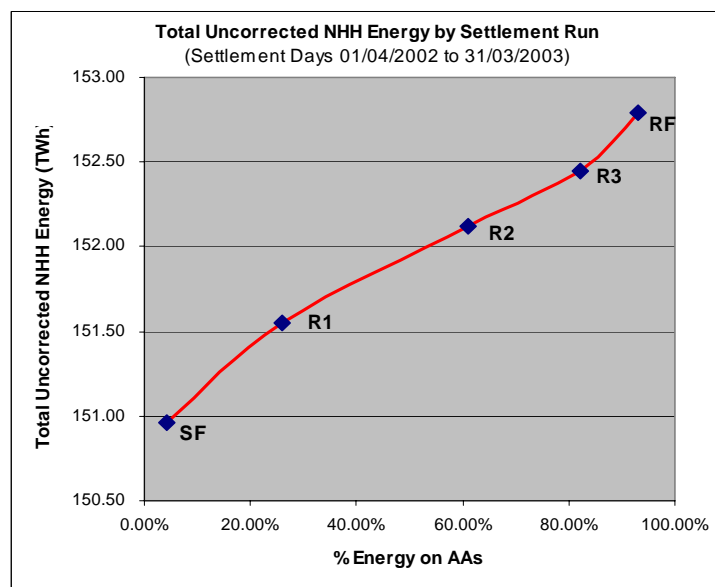


Figure 1

- 1.3 Initial analysis by ELEXON confirmed that values of uncorrected NHH energy appear to be just over 1% higher at RF than at SF (illustrated by Figure 1 above from the 2004/05 BSC Review). Two possible causes were identified; that EAC values are being replaced by AA values that are, on average, larger (e.g. due to an increase in average consumption not reflected by the EAC calculation); and that there are Metering Systems which are excluded from SF but included in RF.

2. ANALYSIS

- 2.1 Analysis was carried out on data from the Performance Assurance Reporting Monitoring System (PARMS) and on profiling data. Energy data for SF and RF extracted from PARMS for the years 2001/02 to 2004/05, and corresponding Group Average Annual Consumption (GAAC) values, were analysed. Figure 2 below shows that the PARMS and GAAC data indicates growth in the energy consumption of the average Metering System over the last 2 years included in the analysis. Comparing data for EACs at SF with AAs at RF it was found that there was 0.5% more energy at RF over the period of analysis.

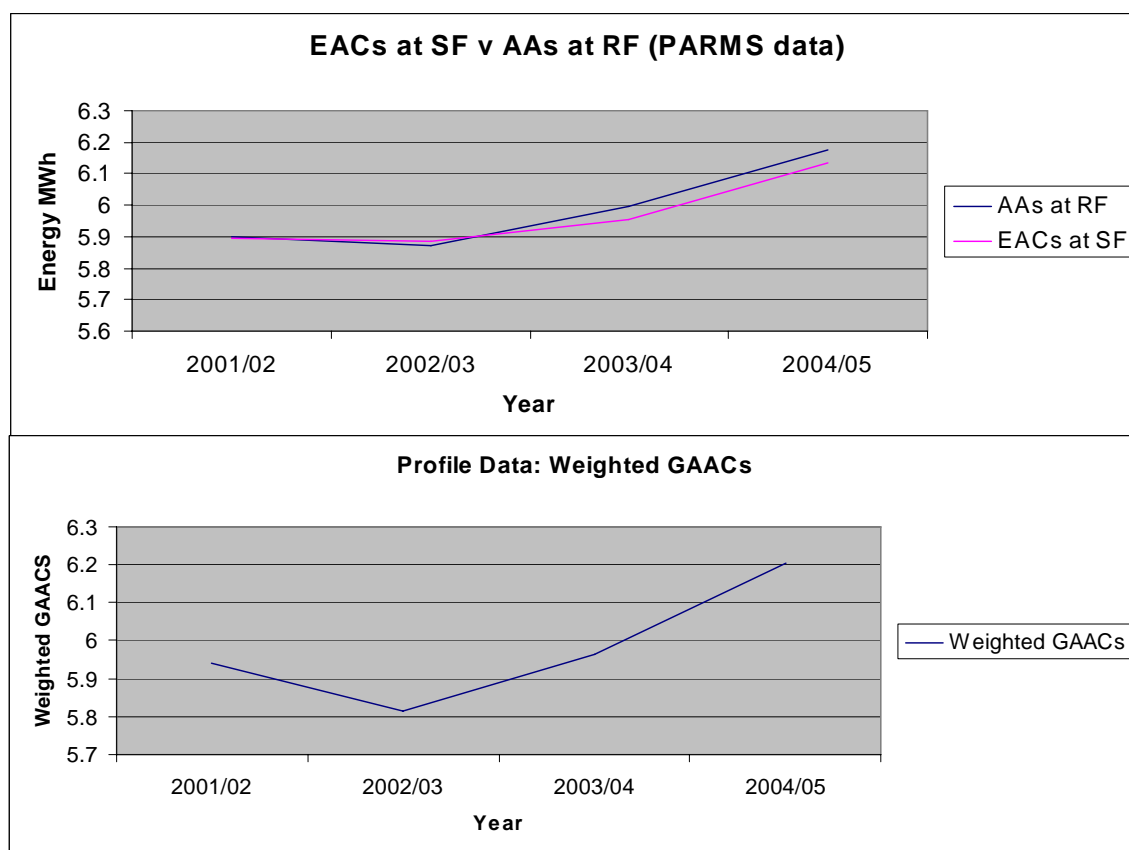


Figure 2

- 2.2 As part of the assessment of Modification Proposal P182 'Review and Redefinition of the Non-Half Hourly Settlement Performance Measures', EAC and AA data was extracted from Non Half Hourly Data Aggregator (NHHDA) databases. This data was analysed, enabling evaluation of almost 400,000 EAC/AA pairs at Metering System level.

2.3 In order to assess whether EACs were systematically becoming larger AAs (i.e. AAs were being underestimated by EACs), the percentage difference (i.e. inaccuracy) of each EAC from the AA that replaced it was calculated. Discounting about 5% of Metering Systems that had values over 100% or under -100%, a relatively normal distribution was obtained (Figure 3). It can be seen that this implies that there is no systematic underestimation of AAs by EACs, but rather that the changes in energy associated with EAC underestimation of AAs is generally greater than the change associated with overestimation of AAs by EACs, i.e. there are roughly equal numbers of underestimations and overestimations of AAs by EACs, but the average magnitude of underestimation is greater than the average overestimation, resulting in overall underestimation.

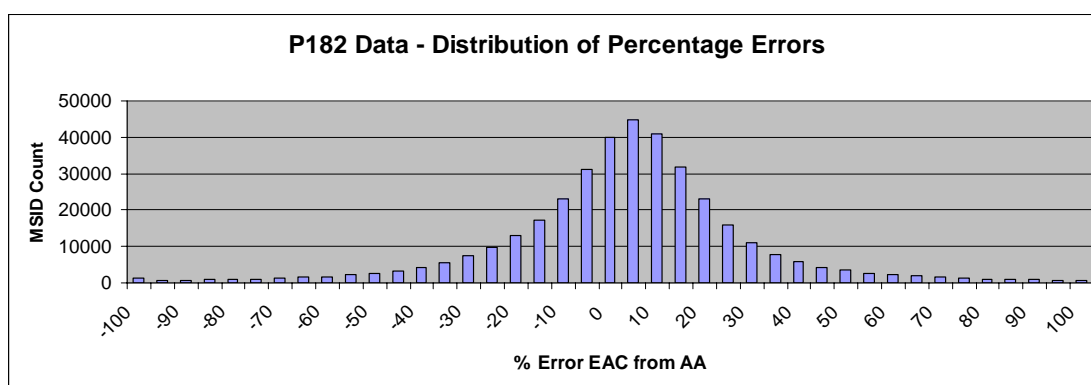


Figure 3

2.4 Excessive Consumption is consumption by a metering system, measured by an EAC or AA, in excess of a defined annual threshold which is dependant on Profile Class (e.g. 160,000kWh for PC1 Domestic customers). The EACs and AAs associated with Excessive Consumption are known as Large EAC/AAs. Discounting Metering Systems with Large EAC/AAs it was found that there was an overall volume underestimation of AAs by EACs of 0.5%. To assess the source of this underestimation a distribution was plotted showing the frequency of each energy error banding, weighted by the consumption boundary of the banding. Energy errors tend toward overestimation at lower values of energy, and underestimation at higher values.

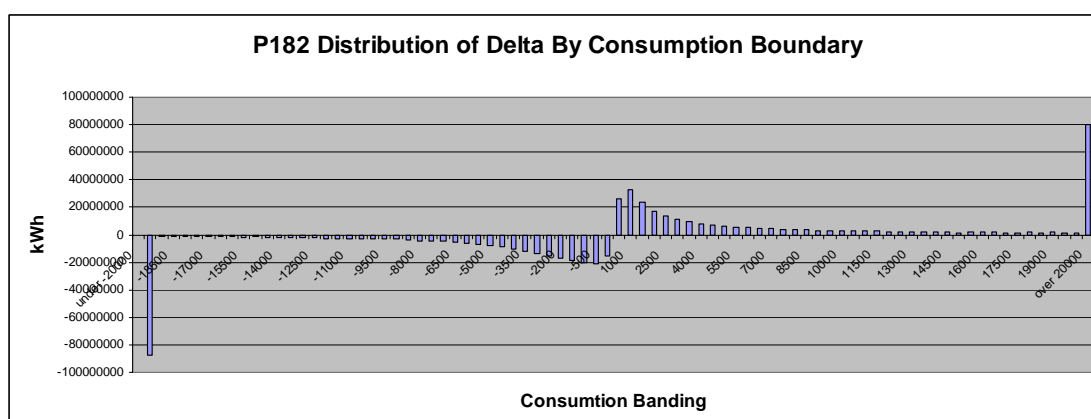


Figure 4

2.5 Analysis by Profile Class implies that underestimation is driven by Profile Classes 1 and 2 (The domestic Profile Classes). This is particularly evident for AAs with durations of 3 to 4 months, associated with quarterly read customers. Figure 5 below shows how underestimation is driven

by domestic customers. An illustration of this is that removal of the Metering Systems of domestic customers with an error of greater magnitude than -20000kWh removes the underestimation.

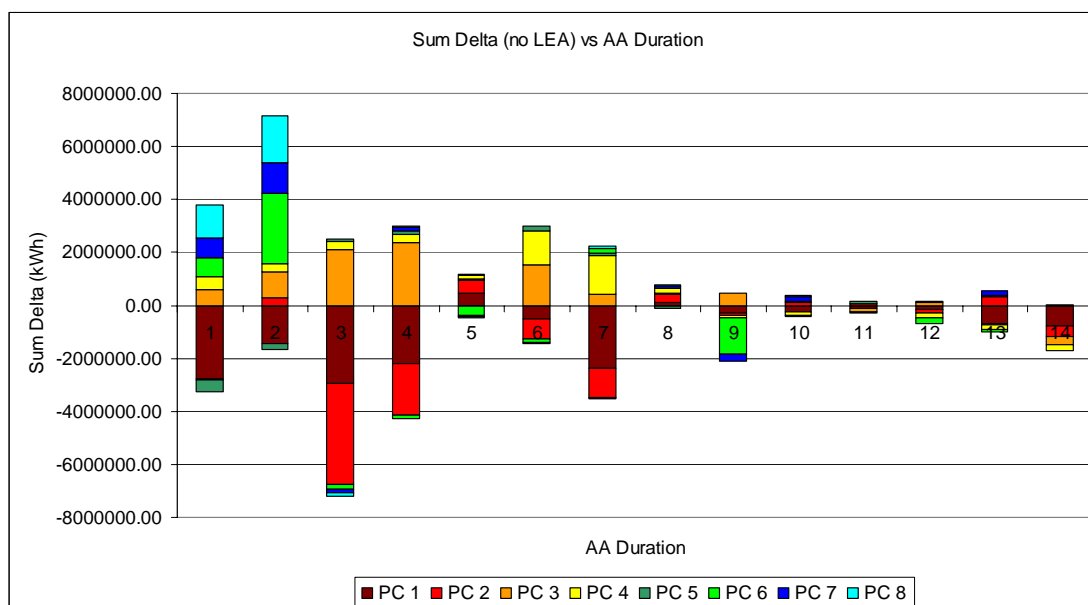


Figure 5

- 2.6 This analysis suggests that there are a large number of AAs that are probably erroneous but not captured for investigation by the existing Large EAC/AA threshold of 160,000kWh for domestic customers and 110,000kWh for domestic economy 7 customers. It appears that a large number of EACs are being converted to AAs that are large but below the threshold (i.e. 'large' rather than Large). Although some may be genuinely large customers, the majority seem to be smaller EACs replaced with large AAs. Energy volumes tend to increase from EACs to AAs; EACs that are replaced by much larger AAs that are beneath the current Large EAC/AA thresholds account for around 39% of the volume change. EAC error, based on the sample data and excluding customers above the Large EAC/AA threshold, is around 0.5% of total energy based on AAs.
- 2.7 It should be noted that sensitivity analysis carried out on the P182 data found that the percentage error of EACs compared with AAs is particularly sensitive to the treatment of zero AAs. If a Metering System is marked as de-energised no EAC will have been aggregated, and thus the error will be zero, whereas if a Metering System is not de-energised (or marked as de-energised) an EAC will be used until the zero AA is provided, resulting in an error equal to the whole EAC. In reality there will be a mix of these scenarios. It is possible that the converse situation is contributing to the observed increase in energy across Settlement. That is, that there are energised MPANs marked as de-energised, and which thus contribute zero EAC values to Settlement until a meter reading is taken, at which point they contribute a non-zero AA.

3. CONCLUSIONS

- 3.1 The Issue 23 Group concluded that EAC values are not systematically underestimating energy consumption (i.e. AA values from Meter readings). The Group did consider that there may be an

issue regarding the accuracy of estimation of consumption but that any inaccuracy was the result of several factors, and it would not be appropriate to attempt to tackle these factors for a number of reasons: the materiality of any inaccuracy was undetermined; the Group was unable to quantify the contribution of the identified factors; and several of the factors identified are already being examined and/or tackled in other forums.

- 3.2 The Group believed it was important to consider all the possible causes of inaccuracy in conjunction, and felt it would be helpful to present the identified factors, their impact (quantified where possible) and any comments or actions regarding them.

Factor	Impact	Comments/Actions
Growth in energy consumption	Analysis of PARMS and profiling data shows a growth rate of 2% for the last two years analysed, 2003/04 and 2004/05	
EAC calculation	Not quantified – ‘backward looking’ nature and lack of any factor that reflects trends in consumption (e.g. growth) may affect EAC accuracy	EAC values seem to capture the growth observed, but with a delay
Smoothing Parameter (SPAR) value	Not quantified - the current SPAR value of 2 gives relatively more weight to the current AA value in EAC calculation, rather than historical data	SPAR value was reviewed by ELEXON recently and set by the SVG to remain at 2 due to enduring problems with large EAC and AA values and around 5% of EACs being used at RF
Large AAs under Large EAC/AA threshold	EACs replaced by much larger AAs, that are beneath current Large EAC/AA thresholds, account for around 39% of the 0.5% EAC to AA volume increase observed in the P182 data	The Large EAC/AA thresholds were set to avoid capturing so many instances that investigation would be rendered impossible
Change in Metering Systems in Settlement	Recent data indicates a 0.28% increase between SF and RF in the number of Metering Systems included in Settlement	A cause of increasing energy may be Metering Systems incorrectly marked as de-energised, and which thus have zero EACs, which then receive non-zero AAs that are included in Settlement at RF
Data quality	The Data Consistency Check (Interim Report) found that 1.1% of sample Metering Systems had inconsistencies in Energisation Status data which may impact Settlement, while 3% had ‘key’ standing data mismatches of some	The Data Consistency Check will be presented to the Panel and PAB after follow-up investigation by participants

	kind and 23.8% had inconsistencies in Meter details	
Long Term Vacant sites	Not quantified - the assessment of Modification P196 concluded that at least 1% of sites are Long Term Vacant (LTV), and considered that LTV sites that are energised but not consuming any electricity, that are settled on non-zero EACs, may contribute to an observed 2% overestimation of the energy entering Settlement	Implementation of Modification P196 'Treatment of Long Term Vacant sites in Settlement' is intended to rectify the effect of LTV sites
EACs in Settlement at RF	Not quantified – around 5% of MSIDs are settled on EACs at RF; at this point any inaccuracy due to EACs is crystallised	If the P196 estimation that 1% of sites are LTV is correct, and all these are then settled on zero EACs, the proportion of EACs at RF could be reduced to 4%

3.3 As previously noted, the Issue 23 Group concluded that there was no additional action it would be appropriate to take in light of the findings of the analysis presented to them and the fact that most of the issues identified are already the subject of ELEXON initiatives. However, the Group noted that it was important that the accuracy of EACs and other aspects of Settlement continue to be observed, particularly in relation to the factors identified above and the effects of any actions taken regarding these factors to improve accuracy.

4. RECOMMENDATIONS

4.1 The Panel is invited to:

- a) **NOTE that the Issue 23 Group concluded that EAC values do not appear to systematically underestimate consumption;**
- b) **NOTE the other findings and conclusions of the Issue 23 Group; and**
- c) **NOTE that the Issue 23 Group concluded that no further action should be taken in relation to Issue 23 at this time.**

Dean Riddell

Change Assessment Analyst
ELEXON Change Delivery

Appendix 1 – Issue Group Details

Member	Organisation	04/07/06	05/09/06
Katie Key	ELEXON (Chairman)	√	X
Dean Riddell	ELEXON (Lead Analyst)	√	√
Andrew Neves	Proposer	√	√
Phil Russell	Independent Consultant	√	X
Richard Harrison	Npower	√	X
Tony Davey	Scottish and Southern	√	X
James Evans	British Energy	√	√
Rosie McGlynn	E.ON	√	√
Claire Walsh	Centrica	√	X
Tim Roberts	Scottish Power	X	√
Jonathan Purdy	EDF Energy Networks	√	√

Attendee	Organisation	04/07/06	05/09/06
Nicholas Rubin	Ofgem	X	√
Douglas Alexander	Scottish Power	√	X
John Lucas	ELEXON	√	√
Jon Spence	ELEXON	√	X
Andy Manning	Npower	√	X
Barbara Vest	Gaz de France	√	X
Yvonne Kenny	Ofgem	√	X
Mark Knight	Scottish and Southern	√	X
Steve Dodd	Scottish Power	√	X
Kevin Spencer	ELEXON	X	√
Louisa Stuart-Smith	NPower	X	√
Richard Slane	Centrica	X	√
Mo Rezvani	Scottish and Southern	X	√