November 2001

P40 Consultation Paper and Impact Assessment

Modification Proposal P40 – Calculation of Negative Estimates of Annual Consumption (EAC)

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I DOCUMENT CONTROL

a Authorities

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1.0		Peter Davies		Modification Group Chairman

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b Distribution

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c Change History

Issue 0.1 sent out for review by Modification Group.

d Changes Forecast

Issue 1.0 sent out for consultation and impact assessment.

e Related Documents

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1 INTRODUCTION

1.1 Background

Modification Proposal P40 'Calculation of Negative Estimates of Annual Consumption (EACs)' was submitted on 25th September 2001 by SEEBOARD. The Modification Proposal seeks to preclude the ability for an EAC (Estimated Annual Consumption) to be calculated as a negative value. These negative EACs result from negative Annualised Advances (AAs), which may occur from either an erroneously large previous AA or as a result of an undetected meter rollover.

At its meeting on 18th October 2001, the BSC Panel reviewed the Initial Written Assessment of Modification Proposal P40 prepared by ELEXON, and agreed that the Proposal should be submitted to the Volume Allocation Modification Group under the Assessment Procedure, as described in section F2.6 of the Balancing and Settlement Code. (A copy of the Modification Proposal and of the Initial Written Assessment can be found on the BSC website at www.elexon.co.uk).

The Panel agreed that the Modification Group should include in the Assessment Report: -

- An assessment of the extent to which the Proposal facilitates the Applicable BSC Objectives.
- Alternative solutions, including if possible ones that would prevent negative EAC/AA values from arising in the first place.
- An assessment of which parties would benefit from the Modification Proposal, and (in light of the Applicable BSC Objectives) recommendations on how the cost of any required changes to central systems might most appropriately be recovered.

The Modification Group was also asked to consult with any classes of Parties and Party Agents who would incur additional costs as a direct result of the solutions considered.

The Volume Allocation Modification Group must prepare a written report for the Panel that includes the following matters (see BSC Annex F-1):

(a) an analysis of whether the Proposed Modification or any Alternative Modification would better facilitate achievement of the Applicable BSC Objectives;

(b) an assessment or estimate (as the case may be) of the impact of the Proposed Modification and any Alternative Modification on BSC Systems, processes and costs;

(c) an assessment of the impact of the Proposed Modification and any Alternative Modification on Core Industry Documents;

(d) an assessment of the impact of the Proposed Modification and any Alternative Modification on Parties in general (or classes of Parties in general) and Party Agents in general, including the changes which are likely to be required to their internal systems and processes and an estimate of the development, capital and operating costs associated with implementing the changes to the Code and to Core Industry Documents;

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(e) an assessment of the Proposed Modification and any Alternative Modification in the context of the statutory, regulatory and contractual framework within which the Code sits (taking account of relevant utilities, competition and financial services legislation);

(f) the Modification Group's proposed Implementation Date(s) for implementation (subject to consent of the Authority) of the Proposed Modification and any Alternative Modification.

The Modification Group met on 25th October 2001, and agreed to consult with Parties and Party Agents on the issues raised by Modification Proposal P40.

1.2 Purpose and Structure of Document

This document has three main purposes:

- As a consultation document, seeking the views of Parties and Party Agents on the issues raised by Modification Proposal P40.
- To specify the various options being considered by the Modification Group in sufficient detail that Parties and Party Agents can provide a high-level impact assessment of them.
- To specify the potential changes to the EAC/AA software in sufficient detail to allow a Detailed Level Impact Assessment by the developer.

It is structured as follows:

- Section 2 gives details of the Volume Allocation Modification Group (VAMG) membership.
- Section 3 describes the analysis to date of the issues raised by Modification Proposal P40.
- Section 4 describes Modification Proposal P40, and identifies a number of different technical options for implementing it.
- Section 5 describes alternative solutions to the issues raised by Modification Proposal P40 that were considered by the Modification Group.
- Appendix 1 lists the consultation questions on which the views of Parties and Party Agents are invited.
- Appendix 2 lists the options for which Parties and Party Agents are requested to provide a Detailed Level Impact Assessment.
- Appendix 3 describes the changes required to the EAC/AA software. It is intended that this Appendix will form the basis of impact assessment by the EAC/AA developer.

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2 MODIFICATION GROUP DETAILS

This Consultation Paper has been prepared by the Volume Allocation Modification Group (VAMG) following a meeting of the group on 25 October 2001. The Membership of the Modification Group was as follows:

Peter Davies	ELEXON (Chairman)
Graham smith	Western Power Distribution (S West)
Bob Brown	St Clements Services
Rob Cullender	BGT
Richard Harrison	NPower
Paul Jones	Power Gen (Not present at meeting)
Neil Magill	Scottish Power
Chris Pooley	Campbell Carr
Phil Russell	TXU-Europe
Clare Talbot	NGC

In Attendance:

Colin Garland	OFGEM
David McNair	ELEXON (Secretary)
John Lucas	ELEXON
Philip Twiddy	ELEXON
Ross Shonfeld	ELEXON
Jonathan Bell	ELEXON

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3 ANALYSIS OF ISSUES RAISED BY MODIFICATION PROPOSAL P40

The Volume Allocation Modification Group (VAMG) met on 25th October 2001 to discuss the issues raised by Modification Proposal P40. This section of the document summarises the Group's initial views as follows:

- Section 3.1 discusses the materiality of the issue.
- Section 3.2 discusses the underlying causes of negative EAC values.
- Section 3.3 discusses whether changing the BSC to preclude negative EAC values would further facilitate the Applicable BSC Objectives.

3.1 Materiality of Negative EAC Values

The Proposer of P40 and ELEXON both presented some initial evidence on the materiality of the issue, which suggested that a considerable number of metering systems may have large negative EAC values. The Group agreed that, in order to allow a more systematic investigation of the issue, ELEXON would develop a script to detect negative EAC values, and request Non Half Hourly Data Aggregators (NHHDA) to run it. The results of this analysis will be presented to the next meeting of the Modification Group.

The consultation questions in Appendix 1 to this document invite views from Parties and Party Agents on the extent to which negative EAC values are a problem.

3.2 Underlying Causes of Negative EAC Values

Because an Estimated Annual Consumption (EAC) is derived as a weighted average of the Previous EAC and the Annualised Advance, a negative EAC will always be caused by a negative Annualised Advance[1]. It was suggested at the meeting on 25th October that the underlying causes of negative Annualised Advances could be regarded as falling into three categories:

- Situations where the process has been followed correctly, but has led to a negative meter advance. An example of this is where a Deemed Meter Advance is calculated (perhaps at Change of Supplier), and shortly afterwards an actual meter read is taken which is lower than the deemed read, leading to a negative advance.
- Situations where the process has not been followed correctly, and this leads directly to a negative meter advance. An example of this would be where NHHDC software fails to interpret correctly a meter rollover, and therefore calculates a huge negative advance.
- Situations where, in accordance with the principle of 'gross volume correction', a negative advance is deliberately introduced into settlement to compensate for a previous advance that was erroneously large.

It should be noted that in none of these cases would Modification Proposal P40 seek to prevent the negative Annualised Advance entering settlement. It would merely prevent the negative Annualised Advance from leading to a negative EAC.

[1] Note however that a negative Annualised Advance will not necessarily give rise to a negative EAC. If the advance period is short, for example, relatively little weight will be given to the AA in calculating the EAC, and so even if the AA is negative, the resultant EAC may well be positive.

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3.3 Extent to Which Proposal Meets the Applicable BSC Objectives

It is proposed to discuss at the next meeting of the Volume Allocation Modification Group the extent to which Modification Proposal P40 meets the Applicable BSC Objectives. The consultation questions in Appendix 1 invite the views of Parties and Party Agents on this question.

One particular concern expressed at the Modification Group was that Modification Proposal P40 removes from settlement excessively small (i.e. negative) EAC values, but does nothing to remove excessively large (positive) EAC values. As such it could introduce a systematic distortion into settlement. There was discussion of whether an Alternative Modification Proposal that removed both negative and excessively positive EAC values might be more likely to facilitate the Applicable BSC Objectives. However, the Group decided that this would be a different Modification Proposal, not an alternative way of achieving the same ends, and therefore decided to restrict consideration to negative EAC values, as in the original Proposal (accepting the possibility that as a result they might end up having to recommend rejection of the Proposal).

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4 DESCRIPTION OF THE MODIFICATION PROPOSAL

The rules for determining Estimated Annual Consumption (EAC_{KR}) values are specified in section 4.3.7 of Annex S-2 of the BSC. Modification Proposal P40 seeks to amend these rules to preclude the calculation of negative EAC values, in order to minimise inaccuracies in settlement and DUoS billing.

4.1 Options Identified in the Modification Proposal

The Modification Proposal identified four possible alternatives for replacing a calculated negative EAC:

a) to use previous EAC value;

b) to use a GSP Group Profile Class Average EAC value, as defined in Market Domain Data;

c) to set EAC to zero;

d) not to calculate an EAC (i.e. set to null).

It was agreed at the Panel meeting that these four options would be treated as follows in the Assessment Procedure:

- Option (b) is the Proposer's preferred option, and therefore this section 4 of the document describes option (b).
- Option (d) is not an independent option, but rather a possible technical option for implementing option (a) or (b). It is discussed further in section 4.1 below, under the heading of Technical Option 2.
- Options (a) and (c) are discussed in section 5 of the document, as possible Alternative Modification Proposals.

4.2 Description of Modification Proposal P40

Currently, Annex S-2 of the BSC states that an EAC value should be set equal to:

$$AAAF_{KR} * AA_{KR} + (1 – AAAF_{KR}) * PEAC_{KR}$$

where $AAAF_{KR}$ is the Annualised Advance Adjustment Factor, AA_{KR} is the Annualised Advance, and $PAEC_{KR}$ is the Previous EAC.

Modification Proposal P40 would amend this rule, so that an EAC value would be calculated as follows:

- EAC value is set to $\{AAAF_{KR} * AA_{KR} + (1 – AAAF_{KR}) * PEAC_{KR}\}$, if this value is greater than or equal to zero; else
- EAC value is set to

  GGPCAEC * AFYC

  where GGPCAEC is the GSP Group Profile Class Average EAC defined in Market Domain Data (MDD), and AFYC is the Average Fraction of Yearly Consumption (AFYC) defined in MDD.

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4.3 Technical Options for Implementation of P40

Although the calculation of EAC values is a Non Half Hourly Data Collector (NHHDC) responsibility, ELEXON provides EAC/AA calculation software that NHHDC can use to perform the calculation. There are therefore three technical options for implementing Modification Proposal P40:

- Technical Option 1 is to implement the full functionality in ELEXON's EAC/AA calculator. This minimises any change to NHHDC systems, but would require that the EAC/AA calculator be enhanced to load and store Market Domain Data (MDD).
- Technical Option 2 is to amend the EAC/AA calculator so that it replaces a negative EAC value with a null value, as a signal to NHHDC that they should substitute the Class Average EAC. This is the approach currently taken on Change of Profile Class during a Meter Advance Period.
- Technical Option 3 is to leave the EAC/AA calculator unchanged, placing the responsibility to detect a negative EAC and replace it with a Class Average EAC on the NHHDC.

Following the consultation and impact assessment process, the Volume Allocation Modification Group will consider which of these technical options is most appropriate. The consultation questions in Appendix 1 invite the views of Parties and Party Agents on which approach is most appropriate.

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5 ALTERNATIVE SOLUTIONS CONSIDERED BY THE MODIFICATION GROUP

This section of the document discusses other solutions to the issues raised by P40 that were discussed by the Modification Group, and is structured as follows:

- Section 5.1 discusses option (a) in the original Modification Proposal i.e. using the Previous EAC in place of a negative EAC.
- Section 5.2 discusses option (c) in the original Modification Proposal i.e. using a zero EAC in place of a negative EAC value.
- Section 5.3 discusses Alternative Modification Proposals that would implement the change in the Non Half Hour Data Aggregation Agent (NHHDA) software, rather than the EAC/AA software.
- Section 5.4 discusses the possibility of tightening the requirements for validation of meter advances by NHHDC, to avoid negative EAC arising in the first place.
- Section 5.5 discusses the possibility of putting new mechanisms in place to ensure that meter advances rejected by the Supplier for customer billing purposes are also removed from settlement.

5.1 Use of Previous EAC Value

One of the options identified in Modification Proposal P40 was to substitute the previous EAC for a negative EAC. However, as described in section 3.2 of this document, one of the causes of a negative EAC is when a negative advance has been deliberately introduced into settlement to compensate for a previous erroneously large advance. Under these circumstances, the Previous EAC is the one associated with the erroneously large advance, which is likely to be erroneously large itself.

For this reason, the Modification Group felt that using the Previous EAC was probably not an appropriate solution to the issues raised by Modification Proposal P40, and decided not to issue it for impact assessment.

5.2 Setting EAC to zero

One of the options identified in Modification Proposal P40 was to substitute a zero EAC for a negative EAC. This would still result in an under-accounting of energy in settlements, but to a lesser extent than using a negative EACs.

The Modification Group felt that this was a less robust solution than P40 itself, but had the possible advantage of being cheaper to implement. They therefore agreed to issue it for impact assessment.

5.3 Implementation in NHHDA

The Modification Group discussed the possibility of preventing negative EAC values from entering settlement through changes to the Non Half Hourly Data Aggregation (NHHDA) software, rather than the NHHDC software. There would be two possible options here:

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- Amending the NHHDA software so that it replaces negative EAC values with a substitute value prior to writing them to the NHHDA database.
- Writing negative EAC values to the NHHDA database as currently, but amending the Data Aggregation process so that it substitutes an appropriate value when constructing the Supplier Purchase Matrix (SPM).

The Modification Group felt that these options were complex, and reduced the transparency of the data collection and aggregation processes. They therefore decided not to issue them for impact assessment.

5.4 Tighter Validation Requirements on NHHDC

The Terms of Reference provided to the Volume Allocation Modification Group by the BSC Panel required them to look at solutions that avoided negative meter advances from arising in the first place. One such solution would be to tighten the validation requirements on Non Half Hourly Data Collectors (NHHDC), to ensure that negative advances were flagged up and trapped before entering settlement.

Philip Twiddy of ELEXON, who has been involved in the process of "cleansing" large EAC/AA values, reported to the meeting that the number of meter readings already flagged up to Non Half Hourly Data Collectors by the validation routines was already high. He expressed concern that further tightening the validation requirements might lead to their ability to process these exceptions being swamped, and suggested that the alternative approach described in section 5.5 of this document might be preferable.

The Group therefore agreed not to issue this option for impact assessment.

5.5 Removing from Settlement Meter Advances Rejected by Suppliers

It was suggested at the Modification Group that Suppliers typically do not bill customers for negative or excessively large meter advances i.e. they have processes within their billing systems to reject advances that are clearly unreasonable. However, the fact that they have chosen not to bill on the reading does not get fed back to the Data Collector, and the erroneous reading still enters settlement.

One possible approach to preventing negative advances from entering settlement would therefore be as follows:

- Put an obligation on Suppliers to inform the Non Half Hourly Data Collector (NHHDC) when they have decided that a meter reading is erroneous, and decided not to bill the customer on it. (It may be that a new DTC flow would be an appropriate mechanism for this.)
- Oblige the Non Half Hourly Data Collector to reconsider the meter reading under these circumstances, and withdraw it from settlement unless they have good reason to believe that it is in fact valid.

One potential disadvantage of this approach is that part of the settlement process (i.e. deciding which meter advances are valid for settlement purposes) will be carried out by Supplier systems (which are not certified), rather than Party Agent systems (which are required to be certified). However, as the final decision on which meter advances to include in settlement would remain with (certified) Party Agent systems, the Modification

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Group took the view that this was not a serious disadvantage, and that the option was worth issuing for consultation and impact assessment.

It should be noted that this solution could be pursued either as an alternative to P40, or as an additional element of the solution alongside P40. Consultation question 9 in Appendix 1 invites the views of Parties and Party Agents on which (if either) of these approaches would be most appropriate.

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APPENDIX 1 –MODIFICATION PROPOSAL P40 CONSULTATION QUESTIONS

This section can now be found in the attachment Annex 1.

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APPENDIX 2 – OPTIONS FOR HIGH LEVEL IMPACT ASSESSMENT BY PARTIES AND PARTY AGENTS

This section can now be found in the attachment Annex 1.

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APPENDIX 3 – OPTIONS FOR DETAILED LEVEL IMPACT ASSESSMENT BY EAC/AA SOFTWARE DEVELOPER

This Appendix describes three options for amending the EAC/AA calculation software, for which the EAC/AA developer is requested to provide a Detailed Level Impact Assessment:

- Option A is for the EAC/AA software to be enhanced to load GSP Group Profile Class Average EAC and Average Fraction of Yearly Consumption (AFYC) values from MDD, and use them to derive substitute values for any negative EAC values.
- Option B is a minimum-change option, in which the EAC/AA software is amended to replace a negative EAC with a pre-defined fixed value. This pre-defined fixed value would be specified prior to the start of development, and would be either zero or null. (It is assumed that the choice of zero or null will not affect the impact assessment).

Option A – Use of GSP Group Profile Class Average EAC

Under this option, the EAC/AA functionality for loading Pool Market Domain Data would be enhanced to load and store GSP Group Profile Class Average EAC and Average Fraction of Yearly Consumption data. The attributes of these two entities are as follows (with the prime key attributes underlined):

GSP Group Profile Class Average EAC	**Average Fraction of Yearly Consumption**
GSP Group Id	GSP Group Id
Profile Class Id	Profile Class Id
Standard Settlement Configuration Id	Standard Settlement Configuration Id
Effective From Settlement Date {GGPCAE}	Effective From Settlement Date {AFOYCS}
Researched Average EAC	Time Pattern Regime Id
	Average Fraction of Yearly Consumption

These two entities are available on the D0269 (Market Domain Data) flow as the GAE and AFD record types respectively. (It should be noted that the EAC/AA software currently loads the D0227 flow, which is a subset of the D0269, and does not include the GAE record. The software will either have to be changed either to load the D0269 instead of the D0227, or to load both flows).

The EAC/AA calculation module will be amended to detect negative EAC values, and replace them with:

GGPCAEC * AFYC

where:

a) GGPCAEAC is the GSP Group Profile Class Average EAC for the GSP Group, Profile Class and Standard Settlement Configuration; and

b) AFYC is the Average Fraction of Yearly Consumption for the GSP Group, Profile Class, Standard Settlement Configuration and Time Pattern Regime.

The software will write to the exception report details of any negative EAC values, and the substitute values calculated.

Option B – Detection of Negative EAC Values

The second of the two EAC/AA software options for which an assessment is required is for the EAC/AA calculation module to be amended to detect a negative EAC value, and replace it with a certain pre-defined value. (This pre-defined value would be specified before development began, and would probably be null or zero. It is assumed that it doesn't matter for the purposes of the impact assessment exactly what the pre-defined value is).

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The software would write to the exception report details of any negative EAC values for which the pre-defined value was substituted.

Cross-Reference Between Business Options and Software Options

The following table shows how the two software options defined in this Appendix relate to the business options defined in the remainder of the document:

Business Option	Section of this Document that Describes the Business Option	Software Option Required to Support Business Option
Modification Proposal P40 (Technical Option 1)	Section 4.3	Option A
Modification Proposal P40 (Technical Option 2)	Section 4.3	Option B (with the pre-defined value specified as null).
Modification Proposal P40 (Technical Option 3)	Section 4.3	No software changes required to EAC/AA calculator.
Use of Previous EAC	Section 5.1	This would require software changes to EAC/AA. However, as the Group didn't favour this option, no assessment is required.
Use of Zero EAC	Section 5.2	Option B (with the pre-defined value specified as zero).
Implementation in NHHDA	Section 5.3	This would require software changes to NHHDA. However, as the Group didn't favour this option, no assessment is required.
Tighter Validation Requirements on NHHDC	Section 5.4	No software changes required to EAC/AA calculator.
Mechanism to Remove Supplier-Rejected Reads from Settlement	Section 5.5	No software changes required to EAC/AA calculator.

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