

# **Annex Explanation of Authority's reasons for the directions and determination under Special Licence Condition G - Southern Electric Power Distribution plc**

## **1. Introduction**

1.1 This document sets out the reasons for the directions under Special Licence condition G ("the Condition") of a licence ("the Licence") treated as granted to Southern Electric Power Distribution plc ("SEPD") under section 6(1)(c) of the Electricity Act 1989. The directions adjust SEPD's 2001/2 performance for the number and duration of interruptions, its 2004/5 targets, associated incentive rates and its interim targets.

The structure of the rest of this document is as follows:

- Section 2 sets out the reasons for the direction under paragraph 8 of the Condition to adjust SEPD's 2001/2 reported performance for inaccuracy;
- Section 3 sets out an explanation of the determination under paragraph 7 of the Condition to define SEPD's interim targets;
- Section 4 sets out the reasons for the direction under paragraph 7C of the Condition to adjust SEPD's 2004/5 targets for further information on the impact of definitions and measurement systems on its reported performance. It also explains the consequential adjustments to SEPD's incentive rates;
- Section 5 sets out an explanation of the direction under paragraph 7D of the Condition to adjust SEPD's interim targets for 2002/3 and 2003/4 in line with the changes under paragraph 7C of the Condition; and
- The Appendix includes further detailed tables used in calculating the adjustments and the revised version of Annex A of the Condition incorporating all of the changes.

## **2. Reasons for direction under paragraph 8 of the Condition – Adjusting 2001/2 performance data for inaccuracy**

### Examiner's report

2.1 The Authority appointed Mott MacDonald and British Power International (together known as "the Examiner") to provide an audit opinion on the rebasing of IIP targets for certain electricity distribution companies. The audit report of the examiner<sup>1</sup> shows that SEPD's data for number of interruptions at LV is below the minimum level of accuracy specified in the Regulatory

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<sup>1</sup> "Information and Incentives Project – Audit of incident reporting for 2001/2 - Appendix K Scottish and Southern Energy (SSE) – Southern Electric", Mott-MacDonald and British Power International, February 2003

Instructions and Guidance (“the RIGs”) due to under-reporting. Under paragraph 8 of the Condition the Authority may therefore, in accordance with the provisions of that paragraph, make adjustments to this data to mitigate against the effects of this inaccuracy.

Additional information submitted by SEPD

- 2.2 SEPD submitted further information regarding the accuracy of its 2001/2 performance data in its letter of 26 September 2002 and at a meeting on 8 January 2003.
- 2.3 SEPD implemented the first stage of its new connectivity model (SIMS) in March 2001 with coarse connectivity associating individual customers to the nearest substation. The data for the number of duration of interruptions for the period April 2001 to December 2001 (inclusive) was reported using this system. SEPD notes that the final version of its SIMS connectivity model was introduced in January 2002 with full connectivity of customers to individual LV feeders. It argues that this led to a substantial improvement in reporting accuracy, reflected in increases in the number of customers affected per incident and the number of customer hours lost per incident.
- 2.4 SEPD argues that its data for the number and duration of interruptions for the period April to December 2001 should be “normalised” to reflect the change in customer effects per incident due to the completion of its connectivity model. It has calculated normalisation factors for each month’s data based on the ratio of average customer effects per incident for the period January to March 2002 divided by the customer effects per incident for the month in question. This methodology results in a 42.10% increase in reported LV CIs and a 40.06% increase in reported LV CMLs.

Authority’s draft direction

- 2.5 The Authority has considered the evidence contained in the examiner’s report, additional evidence presented by SEPD and other relevant circumstances. In the light of these, and of its principal objective and general duties, the Authority considers that it is appropriate to exercise its powers under paragraph 8 of the Condition to adjust SEPD’s 2001/2 data for the number of interruptions at LV to take into account inaccuracy in measuring the number of customers affected per incident prior to the completion of its new connectivity model.
- 2.6 If the Authority were simply to apply the results of the IIP audit this would result in a 28.45% increase in number of interruptions at LV. The Authority recognises that this may not fully capture the improvements in accuracy resulting from the implementation of the final stage of SIMS. It is therefore appropriate to carry out some normalisation of the data for the first part of 2001/2.
- 2.8 The Authority is not satisfied that the normalisation proposed by SEPD is appropriate. The Cumulative Sum Analysis (CUSUM) carried out by the examiner on the number of customers affected per incident and the number of customer hours lost per incident indicates that the step change in

performance began in December 2001 as opposed to January 2002. Further, the Authority is concerned that three months' data is insufficient to derive a stable baseline for the customer effects per incident.

2.9 The Authority has therefore carried out its own analysis to calculate normalisation factors based on the ratio of the average customer effects per incident for the period December 2001 to September 2002 divided by the data for each month in question. It has then applied the normalisation factors to adjust the data for each month from April to November 2001 (inclusive). The detailed calculations are shown in Table 1 in the Appendix to this document.

2.10 Based on this analysis, the Authority proposes that CIIS<sub>t</sub> for 2001/2 should be adjusted upwards by 4.20% from 95.73 to 99.75. The calculation is set out in Table 2.1 below.

**Table 2.1: Adjustments to 2001/2 performance data for inaccuracy**

	Disaggregated reported performance figures for 2001/02		Estimated % change due to inaccuracy		Adjusted disaggregated performance figures for 2001/02	
	CI	CML	CI	CML	CI	CML
HV & above	84.99	63.55	0	0	84.99	63.55
LV	10.74	26.03	37.42%	0	14.76	26.03
NGC or other transmission co	3.42	1.28	0	0	3.42	1.28
Embedded generators	0.00	0.00	0	0	0.00	0.00
Other connected systems	0.00	0.00	0	0	0.00	0.00
Total unweighted CI/CML	99.15	90.85	4.05%	0	103.17	90.85
<b>Total weighted CIIS/CMLIS</b>	<b>95.73</b>	<b>89.70</b>	<b>4.20%</b>	<b>0</b>	<b>99.75</b>	<b>89.70</b>

Note: No adjustment has been proposed to the HV CI data as the examiner found that the CI data met the minimum overall level of accuracy. No adjustment has been proposed to the CML data as the examiner found that this met the minimum LV and overall levels of accuracy.

2.11 In reaching its decision the Authority took into account the fact that SEPD's 2001/2 reporting was partially based on old measurement systems and therefore that special considerations applied. In future years with the new measurement systems in place, it may be appropriate to use an alternative approach to calculating adjustments for inaccuracy. The new measurement systems provide connectivity down to the LV feeder level and therefore provide much more robust information on the number of customers affected by faults at each voltage level.

DNO response to paragraph 10A consultation

2.12 The Authority held a meeting with Southern on 11 March 2003 to discuss a number of issues relating to the draft directions and determination. SEPD had five main concerns, of which the following apply to the direction under paragraph 8:

- 1) SEPD argues that during December 2001 it was attempting to replicate the reporting that would be in place once its new measurement systems had been introduced. However, as the new measurement systems had not been completed by this stage, it is inappropriate to include this

month in the calculation of the final seed value in the rebasing calculations.

- 2) SEPD suggests that the introduction of centralised LV reporting since April 2002 has reduced CMLs, so that extending the final seed period past March 2002 results in a lower percentage change for measurement systems, than would otherwise have been the case.
- 3) The use of data up to the end of September 2002 picks up improvements in performance.

In its 18 March e-mail SPD queried a difference between the final seed value for CHLs in the latest CUSUM analysis and the seed value used in the revised normalisation analysis.

#### Authority's Final Direction

- 2.13 The Authority, having taken account of the evidence presented by SEPD, has moved the beginning of the final seed period to January 2002.
- 2.14 The Authority believes that January 2002 to March 2002 is too short a period to derive the final seed values used in estimating the percentage impact of new measurement systems at LV. For all the reasons in section 4.11 below the Authority believes it is appropriate for the final seed values to be based on the period January 2002 to September 2002.
- 2.15 In response to SPD's query, the Authority investigated the difference between the CUSUM and normalisation factor seed values and in the course of this analysis found that the normalisation factor data supplied by SEPD was not consistent with the raw data supplied for the CUSUM analysis. For consistency, the Authority has applied the same method it used for a number of other DNOs to calculate the required changes to SEPD's 2001/2 CI and CML data. This approach involved taking CI and CHL seed values for the months April to May 2001, June to December 2001 and January to March 2002, multiplying each of these values by the number of months for which they applied and summing them. The result was then compared with the final CI and CHL seed values multiplied by an equivalent number of months.<sup>2</sup> The analysis indicated that the appropriate changes to 2001/2 CIs and CHLs were 37.45% and 26.29% respectively as shown in Table 4 in the Appendix.
- 2.16 As explained for the draft directions, the examiner's audit report shows that SEPD's data for the number of interruptions is below the minimum LV level of accuracy. Under paragraph 8 of the Condition the Authority may therefore make adjustments to SEPD's 2001/2 data for the number of interruptions at LV. Taking into account the issues outlined in this section, the Authority is satisfied that the adjustment set out in Table 2.2 below is appropriate.

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<sup>2</sup> This is equivalent to taking a weighted average of the seed values during 2001/2, weighted according to the number of months for which they apply, and then comparing this weighted average with the final seed values for January to September 2002.

**Table 2.2: Final adjustments to 2001/2 performance data for inaccuracy**

	Disaggregated reported performance figures for 2001/02		Estimated % change due to inaccuracy		Adjusted disaggregated performance figures for 2001/02	
	CI	CML	CI	CML	CI	CML
HV & above	84.99	63.55	0	0	84.99	63.55
LV	10.74	26.03	37.45%	0	14.76	26.03
NGC or other transmission co	3.42	1.28	0	0	3.42	1.28
Embedded generators	0.00	0.00	0	0	0.00	0.00
Other connected systems	0.00	0.00	0	0	0.00	0.00
Total unweighted CI/CML	99.15	90.85	4.06%	0	103.17	90.85
<b>Total weighted CIIS/CMLIS</b>	<b>95.73</b>	<b>89.70</b>	<b>4.20%</b>	<b>0</b>	<b>99.75</b>	<b>89.70</b>

No adjustment has been made to the HV CI data as the examiner found that the CI data met the minimum overall level of accuracy. No adjustment has been made to the CML data as the examiner found that this met the minimum LV and overall levels of accuracy.

### 3. Explanation of determination under paragraph 7 of the Condition

3.1 Under the mechanism set out in paragraph 7 of the Condition, the (interim) targets  $TA_t$  and  $TB_t$  for 2002/3 and 2003/4 will be the higher of:

- $CIIS_t$  and  $CMLIS_t$  respectively for 2001/2 adjusted for inaccuracy; and
- $TA_t$  and  $TB_t$  respectively for 2004/5 set out in Annex A of the Condition.

3.2 Given the direction under paragraph 8 of the Condition:

- $TA_t$  for 2002/3 and 2003/4 is determined as being 99.75; and
- $TB_t$  for 2002/3 and 2003/4 is determined as being 89.70.

### 4. Reasons for direction under paragraph 7C of the Condition – Rebasing 2004/5 targets

4.1 SEPD gave notice to the Authority on 26 September 2002 under paragraph 7A of the Condition that it considered its existing targets  $TA_t$  and  $TB_t$  (for the number and duration of interruptions to supply respectively) for the year 2004/05 to be inappropriate. The Authority therefore needs to direct the appropriate targets for that year prior to 1 April 2003 so as to ensure that such targets will have effect for the purposes of the Condition after that date.

#### Summary of SEPD's case

4.2 SEPD is requesting changes to its 2004/5 targets to reflect additional evidence of the impact of measurement systems on its reported performance. It provided information on 26 September 2002, 29 November 2002, 3 January 2003 and 8 January 2003 supporting its case.

4.3 As set out in section 3.3 of the examiner's report, SEPD identifies 4 distinct phases in the development of its measurement systems:

- Phase I covers the period prior to 01 November 2000 in which the site operatives estimated the number of customers affected and the duration of interruptions to supplies. It was usual practice for the restorations to be combined into one single stage. The site operative was only required to report 'job completion' to SEPD's emergency service centre. SEPD states that little or no management or internal audit processes existed to verify any data. The data was entered into the company's National Fault Interruption and Reporting Scheme ("NaFIRS") reporting system by "one of several depot clerks". During this period SEPD suggests that the number of interruptions remained relatively constant but that the duration of interruptions showed a steady reduction due to a "basic driver for improving efficiency in supply restoration";
- Phase II covers the period between 01 November 2000 and 31 December 2001. During this period SEPD states that an "improving managerial focus" was being applied to "gain more accurate information from site" and that this resulted in improved accuracy in the estimates provided by the site operatives, including the numbers of customers affected by incidents at the sub-feeder level. SEPD states that, "by the summer of 2001, increasing management focus ..... resulted in an increase of approximately 65% in reported CI and CML". SEPD carried-out a retrospective audit of all LV incidents that had occurred during June 2001 in order to gain an understanding of the likely impact of the proposed new measurement system which would include LV connectivity. SEPD concluded "that the site estimates were still under-reporting customer numbers but the true extent of the issue was not clear";
- Phase III covers the period between 01 January 2002 and 31 March 2002 during which SEPD's IIP-compliant LV connectivity model was introduced. SEPD's narrative states that the "improving managerial focus" was continuing and that the "site operative is now made aware of customers on LV feeder in real time". The introduction of the LV connectivity model "completely removed the requirement to estimate customers for whole feeder incidents". The narrative states that the input of the data into NaFIRS was still being completed by "one of several depot clerks". SEPD states that "any underlying improvement in efficiency would have been hidden by the significant changes in reported performance during Phases 2 and 3";
- Phase IV covers the period from 01 April 2002 onwards. SEPD states that "considerable managerial focus to gain more accurate and timely information from site" is inherent in its new measurement systems. SEPD's new measurement systems include the centralisation of incident data in real time and an interactive communication link between site and office so that regular updates are entered onto SEPD's database, enabling better information to be relayed to customers. SEPD concludes "in this Phase, because the measurement system is now stable, the underlying steady improvement in CHLs per incident seen in Phase I is again revealed".

4.4 SEPD suggests that given this background it is not possible to accurately determine the relationship between LV CIs and LV CMLs. It therefore

believes that its targets should be adjusted to reflect step changes in reported LV CIs and reported LV CMLs between the end of phase 1 (April to November 2000) and the beginning of phase 3 (January 2002 to March 2002). Using monthly data SEPD identifies a 114% step change in its reported LV CIs and a 142% step change in its reported LV CMLs.

- 4.5 In light of this, SEPD is proposing the following changes to its 2004/5 targets:
- $TA_t$  for the year commencing 1 April 2004 should be increased by 8.06% from 87.22 to 94.26.
  - $TB_t$  for the year commencing 1 April 2004 should be increased by 24.32% from 85.54 to 106.35.

The detailed calculations to derive these adjustments are set out in Table 2 in the Appendix.

#### Examiner's report

- 4.6 The examiner has carried out checks on the accuracy of the data that SEPD has used to support its rebasing case. In section 4 of its report, the examiner notes that the data used by SEPD is reasonably consistent with the raw NaFIRs data.
- 4.7 However, the examiner has concerns over SEPD's analysis. It considers that the hand-drawn trend lines produced by SEPD cannot be relied upon for the rebasing of SEPD's targets. Further, the examiner's Cumulative Sum (CUSUM) analysis on the raw data provided by SEPD indicates two clear step changes in both the average CI and CHLs per incident over the period April 1999 to September 2002, which do not precisely match the phases set out by SEPD.
- 4.8 The examiner notes that it is unable to support SEPD's assertion that average CHLs per incident have been steadily decreasing over the period in question due to performance improvements because the company has been unable to provide any robust data supporting this.
- 4.9 The examiner therefore recommends that the average values of customer interruptions and customer hours lost per incident for the periods April 1999 to June 2001 (inclusive) and December 2001 to September 2002 (inclusive) be used in identifying step changes in performance due to measurement systems and in calculating the resulting adjustments to SEPD's targets.

#### Authority's draft direction

- 4.10 The Authority has considered the evidence put forward by SEPD, the examiner's report on rebasing, the other matters referred to in paragraph 7A of the Condition and its principal objectives and general duties. The Authority does not consider that the analysis presented by SEPD is sufficiently robust to support SEPD's proposed adjustments at LV. There was no statistical analysis identifying when step changes in reported performance occurred. The examiner's analysis indicates that the second major change in reporting began in December 2001 rather than in January 2002.

- 4.11 Further, the Authority does not consider that data for the period January to March 2002 alone are sufficiently stable to identify the average level of customer interruptions and customer hours lost per incident after the introduction of the new measurement systems. There is likely to have been some initial instability in reporting during the introduction of the final stage of the SIMs connectivity model. Further, in its submissions SEPD indicates that it has made further improvements in reporting since April 2002. In its 3 January submission, SEPD explains that for the period April 2002 onwards there has been “Considerable management focus to gain more accurate and timely information from site” and that the “Emergency Service Centre capture customer and duration information in real time”. The Authority believes that it is important to use a longer series of data to identify average customer effects per incident, including the more accurate information for the period April to September 2002.
- 4.12 The Authority does not consider that the data for the period April to November 2000 are sufficient to calculate the initial averages in reported customer interruptions and customer hours lost per incident before the introduction of the new measurement systems. SEPD itself recognises that reporting for this period “incorporates estimates for customer numbers and a generalisation of duration periods. There were few validation processes.” Given the lack of robustness in reporting the Authority believes it is important to use a longer series of data to estimate the customer effects of incidents, which is why it asked SEPD to provide data back to April 1999.
- 4.13 Taking these points into consideration, the Authority is satisfied that is appropriate to calculate the adjustments to SEPD’s targets at LV using the average values for customer interruptions and customer hours per incident for the periods April 1999 to June 2001 (inclusive) and December 2001 to September 2002 (inclusive). This results in a 101% and 103% increase in the LV element of the CI and CML targets respectively. The Authority does not consider that the CML adjustment needs to be increased to reflect underlying improvements in performance. The examiner has made clear that there is a lack of robust evidence supporting the assertion that average CHLs per incident have been steadily decreasing over the period in question.
- 4.14 On this basis the Authority proposes the following changes to SEPD’s targets;
- $TA_t$  for the year commencing 1 April 2004 should be increased by 7.06% from 87.22 to 93.38.
  - $TB_t$  for the year commencing 1 April 2004 should be increased by 17.14% from 85.54 to 100.20.
- The calculations to derive these adjustments are set out in Table 3 in the Appendix.
- 4.15 The associated changes to SEPD’s incentive rates under paragraph 7E of the Condition are set out below:

- $IRA_t$  for the year commencing 1 April 2002 should be reduced from 0.06 to 0.056;
- $IRA_t$  for the years commencing 1 April 2003 and 2004 should be reduced from 0.11 to 0.103;
- $IRB_t$  for the year commencing 1 April 2002 should be reduced from 0.07 to 0.060;
- $IRB_t$  for the years commencing 1 April 2003 and 2004 should be reduced from 0.17 to 0.145.

#### DNO response to paragraph 10A consultation

4.16 As discussed in section 2.12 SEPD raised five points of concern with the draft directions and determination, all of which apply to the direction under paragraph 7C. SEPD's points were:

- 1) The initial seed period for the CUSUM analysis should not include June 2001. SEPD suggested that the first period should run until January 2001, whereas in the Authority's draft direction the initial seed period ran until the end of May 2001.
- 2) SEPD argues that during December 2001 it was attempting to replicate the reporting that would be in place once its new measurement systems had been introduced. However, as the new measurement systems had not been completed by this stage, it is inappropriate to include this month in the calculation of the final seed value.
- 3) SEPD suggests that the introduction of centralised LV reporting since April 2002 has reduced CMLs, so that extending the final seed period past March 2002 results in a lower percentage change for measurement systems, than would otherwise have been the case.
- 4) The use of data up to the end of September 2002 picks up improvements in performance.
- 5) SEPD noted that its systems now capture data in real-time, therefore there should be some consideration of the additional pressure on field staff which it believes is driving down reported and actual restoration times.

#### Authority's Final Direction

4.17 The Authority has considered changing the initial seed period to April 1999 to January 2001 inclusive. However the Authority does not consider this to be appropriate as it is important to have a long series of data to establish the initial seed value and there is no evidence in the data of significant changes in performance over this period.

The Authority, having taken account of the evidence presented by SEPD, has moved the beginning of the final seed period to January 2002.

The Authority believes that January 2002 to March 2002 is too short a period to derive the final seed value used in estimating the percentage impact of

new measurement systems at LV. As noted in section 4.11 above, SEPD explains that for the period April 2002 onwards there has been “Considerable management focus to gain more accurate and timely information from site” and that the “Emergency Service Centre capture customer and duration information in real time”. The Authority believes that it is important to use a longer series of data to identify average customer effects per incident, including the more accurate information for the period April to September 2002. The Authority also notes that there is a relatively stable CUSUM line for the period January 2002 to September 2002 for both CIs and CHLs. Using this data results in increases of 104% and 105% for the LV elements of the CI and CML targets respectively, as shown in Charts 1 and 2 in the Appendix.

The Authority has not received any robust information to support SEPD’s claim for an additional adjustment over and above the 105% increase for CHLs identified by the Authority’s revised CUSUM analysis and therefore intends to make no further adjustment to this figure.

4.18 On this basis the Authority is making the following changes to SEPD’s targets;

- $TA_t$  for the year commencing 1 April 2004 shall be increased by 7.26% from 87.22 to 93.56.
- $TB_t$  for the year commencing 1 April 2004 shall be increased by 17.58% from 85.54 to 100.58.

The calculations to derive these adjustments are set out in Table 5 in the Appendix.

4.19 The associated changes to SEPD’s incentive rates under paragraph 7E of the Condition are set out below:

- $IRA_t$  for the year commencing 1 April 2002 shall be reduced from 0.06 to 0.056;
- $IRA_t$  for the years commencing 1 April 2003 and 2004 shall be reduced from 0.11 to 0.103;
- $IRB_t$  for the year commencing 1 April 2002 shall be reduced from 0.07 to 0.060;
- $IRB_t$  for the years commencing 1 April 2003 and 2004 shall be reduced from 0.17 to 0.145.

## **5. Reasons for direction under paragraph 7D of the Condition – Adjustment to interim targets.**

5.1 The Authority is making a modification under paragraph 7C of the Condition to modify SEPD’s targets for 2004/5. SEPD has also requested that the provisions of paragraph 7D of the Condition be applied. The Authority therefore believes that it is appropriate to make adjustments to the (interim) targets  $TB_t$  for 2002/3 and 2003/4 to ensure that they are consistent with SEPD’s adjusted 2001/2 performance, its modified

2004/5 targets and reflect any relevant information relating to the 2001/2 performance figures not captured by the IIP audit.

- 5.2 This is best achieved by repeating the mechanism used to set the interim targets in the draft determination under paragraph 7 of the Condition (referred to in paragraph 3.1 of this document), but substituting the adjusted 2004/5 targets. The Authority therefore proposes the following adjustments to  $TB_t$  for the years 2002/3 and 2003/4 set out in Table 5.1 below.

**Table 5.1 Revision to interim targets**

	Original interim target	Percentage increase in interim target	Revised interim target
$TA_t$ (years commencing 1 April 2002 & 2003)	99.75	0	99.75
$TB_t$ (years commencing 1 April 2002 & 2003)	89.70	11.71%	100.20

- 5.3 In reaching its conclusion on the appropriate revision to  $TB_t$  the Authority has considered whether an adjustment needs to be made to reflect inaccuracy in the 2001/2 data for the duration of interruptions at LV, which has been identified by the normalisation analysis discussed in paragraphs 2.4 and 2.7 above, but not captured by the audit. Making a further adjustment of 28.81% to this data (by normalising performance from April to November 2001 using the factors calculated in Table 1 in the Appendix) would have no impact on the 2002/3 and 2003/4 interim targets.

- 5.4 No adjustment is needed to  $TA_t$  for the years 2002/3 and 2003/4 as the adjusted 2004/5 target (discussed in section 4 above) remains below the adjusted 2001/2 performance.

DNO response to paragraph 10A consultation

- 5.5 The points raised by SEPD in paragraphs 2.15 and 4.16 also apply to the adjustment of the interim targets under paragraph 7D of the Condition.

Authority's Final Direction

- 5.6 The Authority is satisfied that the adjustment to SEPD's 2004/5 targets, discussed in paragraph 4.17, are appropriate. For the reasons outlined in paragraph 5.1, the Authority is making an adjustment to the interim CML target to reflect this change. The interim targets for the years 2002/3 and 2003/4 shall be as set out in Table 5.2 below.

**Table 5.2 Final revised interim targets**

	Original interim target	Percentage increase in interim target	Revised interim target
TA <sub>t</sub> (years commencing 1 April 2002 & 2003)	99.75	0	99.75
TB <sub>t</sub> (years commencing 1 April 2002 & 2003)	89.70	12.13%	100.58

- 5.7 In reaching its conclusion on the appropriate revision to TB<sub>t</sub> the Authority has considered whether an adjustment needs to be made to reflect inaccuracy in the 2001/2 data for the duration of interruptions at LV, which has been identified by the CUSUM analysis discussed in paragraph 2.12 above, but not captured by the audit. Making a further adjustment of 26.29% to this data (using the factor calculated in Table 4 in the Appendix) would have no impact on the 2002/3 and 2003/4 interim targets.
- 5.8 No adjustments are needed to TA<sub>t</sub> for the years 2002/3 and 2003/4 as the adjusted 2004/5 target (discussed in section 4 above) remains below the adjusted 2001/2 performance.

## Appendix – Further Information

APPENDIX TABLE 1 – AUTHORITY CALCULATION OF NORMALISATION FACTORS

	Otgem version April 2001 - November 2002																Seed value from Dec 01 - Sept 02						
	Apr	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September	sum whole period	sum apr-mar			
CHL	49437	81679	97135	102039	89400	63579	100541	77006	97099	159441	142221	114359	94334	119567	94428	120753	105564	84985	1793567	1173936		113275.1	
CI	11736	19410	24125	24477	19934	16273	24560	20467	25019	40605	35826	28265	25689	30480	26488	36649	30664	26158	466825	290697		30584.3	
Number	1255	1810	1649	2182	1738	1490	2112	1568	1503	1932	1873	1393	1320	1617	1431	1752	1555	1275				1565.1	
	9.4	10.7	14.6	11.2	11.5	10.9	11.6	13.1	16.6	21.0	19.1	20.3	19.5	18.8	18.5	20.9	19.7	20.5					
Customer Hours per Incident	39.392	45.127	58.905	46.764	51.438	42.670	47.605	49.111	64.603	82.526	75.932	82.095	71.465	73.944	65.987	68.923	67.887	66.655				72.376	
Customers per incident	9.351	10.724	14.630	11.218	11.470	10.921	11.629	13.053	16.646	21.017	19.128	20.291	19.461	18.850	18.510	20.918	19.720	20.516				19.541	
CHL Normalisation	1.837	1.604	1.229	1.548	1.407	1.696	1.520	1.474	1.120	0.877	0.953	0.882	1.013	0.979	1.097	1.050	1.066	1.086					
CI Normalisation	2.090	1.822	1.336	1.742	1.704	1.789	1.680	1.497	1.174	0.930	1.022	0.963	1.004	1.037	1.056	0.934	0.991	0.952					
Normalised CHL	90831	131000	119347	157924	125789	107840	152857	113485	97099	159441	142221	114359	94334	119567	94428	120753	105564	84985	2131824	1512193		28.81%	
Normalised CI	24525	35370	32224	42639	33963	29117	41272	30641	25019	40605	35826	28265	25689	30480	26488	36649	30664	26158	575593	399465		37.42%	

TABLE 2 – SEPD SUBMISSION

Revised 2004/5 targets	A		B		C		D		E		F		G		H		I		J	
Voltage category	Disaggregated forecast performance figures for 1999/00		Estimated % change for historic changes to measurement systems		Estimated performance for 1999/00		Estimated % change from definitions		Estimated % change from measurement systems this price control period		Estimated total % change		Estimated performance for 1999/00		DPCR target		April 2002 licence condition target		Final licence condition target	
	CIIS	CMLIS	CIIS	CMLIS	CIIS	CMLIS	CIIS	CMLIS	CIIS	CMLIS	CIIS	CMLIS	CIIS	CMLIS	CIIS	CMLIS	CIIS	CMLIS	CIIS	CMLIS
LV UG Networks	6.4	11.3			6.4	11.3			114.0	142.0	114.00	142.00	13.65	27.39						
LV OH Networks	0.8	1.3			0.8	1.3			114.0	142.0	114.00	142.00	1.71	3.12						
HV UG Networks	24.9	13.7			24.9	13.7		9.00	37.0	66.0	37.00	75.00	34.06	23.89						
HV OH Networks	25.2	13.7			25.2	13.7		9.00	37.0	66.0	37.00	75.00	34.54	23.89						
EHV UG Networks	4.8	2.2			4.8	2.2			37.0	66.0	37.00	66.00	6.59	3.67						
EHV OH Networks	4.2	1.0			4.2	1.0			37.0	66.0	37.00	66.00	5.74	1.59						
Subtransmission UG Nets	0.0	0.0			0.0	0.0			37.0	66.0	37.00	66.00	0.00	0.00						
Subtransmission OH Nets	2.8	0.9			2.8	0.9			37.0	66.0	37.00	66.00	3.77	1.53						
Unallocated	0.0	0.0			0.0	0.0					0.00	0.00	0.00	0.00						
TOTAL	69.0	44.0	0.0	0.0	69.0	44.0	0.0	5.6	45.0	87.8	45.0	93.4	100.06	85.08	65.00	55.00	87.22	85.54	94.26	106.35
	Validated TOTAL % change:												45.01%	93.37%					8.06%	24.32%

Footnote:

- Any adjustments to measurement systems for historic changes were finalised in April 2002, so columns A, B and C are fixed.
- The updated percentage changes for definitions and measurement systems in columns D and E are added together to give the total percentage change in column F.
- The total percentage changes in column F are applied to the estimated performance figures for 1999/2000 in column C to derive the revised estimated performance figures for 1999/2000 in column G.
- The revised total performance figures for CIIS and CMLIS in column G are compared with those in column A to derive the percentage changes which should be applied to the DPCR targets in column H.
- The percentage changes in column G are applied to the DPCR targets to give the final proposed licence condition targets in column J.
- The final licence condition targets in column J are compared with the licence condition targets set out in April 2002 in column I to derive the percentage changes as a result of the rebasing.

TABLE 3 – AUTHORITY DRAFT SUBMISSION

Revised 2004/5 targets	A		B		C		D		E		F		G		H		I		J		K		
Voltage category	Disaggregated forecast performance figures for 1999/00		Estimated % change for historic changes to measurement systems		Estimated performance for 1999/00		Estimated % change from definitions		Estimated % change from measurement systems this price control period		Estimated total % change		Estimated performance for 1999/00		DPCR target		April 2002 licence condition target		Final licence condition target		Incentive Rates		
	CIIS	CMLIS	CIIS	CMLIS	CIIS	CMLIS	CIIS	CMLIS	CIIS	CMLIS	CIIS	CMLIS	CIIS	CMLIS	CIIS	CMLIS	CIIS	CMLIS	CIIS	CMLIS	CIIS	CMLIS	
LV UG Networks	6.4	11.3			6.4	11.3			101.0	103.0	101.00	103.00	12.82	22.98									Old 02/03
LV OH Networks	0.8	1.3			0.8	1.3			101.0	103.0	101.00	103.00	1.61	2.62									0.060 0.070
HV UG Networks	24.9	13.7			24.9	13.7		9.00	37.0	66.0	37.00	75.00	34.06	23.89									New 02/03
HV OH Networks	25.2	13.7			25.2	13.7		9.00	37.0	66.0	37.00	75.00	34.54	23.89									0.056 0.060
EHV UG Networks	4.8	2.2			4.8	2.2			37.0	66.0	37.00	66.00	6.59	3.67									
EHV OH Networks	4.2	1.0			4.2	1.0			37.0	66.0	37.00	66.00	5.74	1.59									Old 03/04 & 04/05
Subtransmission UG Nets	0.0	0.0			0.0	0.0			37.0	66.0	37.00	66.00	0.00	0.00									0.110 0.170
Subtransmission OH Nets	2.8	0.9			2.8	0.9			37.0	66.0	37.00	66.00	3.77	1.53									New 03/04 & 04/05
Unallocated	0.0	0.0			0.0	0.0					0.00	0.00	0.00	0.00									0.103 0.145
TOTAL	69.0	44.0	0.0	0.0	69.0	44.0	0.0	5.6	43.7	76.6	43.7	82.2	99.13	80.16	65.00	55.00	87.22	85.54	93.38	100.20			
	Validated TOTAL % change:												43.66%	82.19%									7.06% 17.14%

Footnote:

- Any adjustments to measurement systems for historic changes were finalised in April 2002, so columns A, B and C are fixed.
- The updated percentage changes for definitions and measurement systems in columns D and E are added together to give the total percentage change in column F.
- The total percentage changes in column F are applied to the estimated performance figures for 1999/2000 in column C to derive the revised estimated performance figures for 1999/2000 in column G.
- The revised total performance figures for CIIS and CMLIS in column G are compared with those in column A to derive the percentage changes which should be applied to the DPCR targets in column H.
- The percentage changes in column G are applied to the DPCR targets to give the final proposed licence condition targets in column J.
- The final licence condition targets in column J are compared with the licence condition targets set out in April 2002 in column I to derive the percentage changes as a result of the rebasing.
- The new incentive rates in column K are derived by dividing the old incentive rate by 1 + the percentage change in column J for CIIS and CMLIS respectively.

TABLE 4 – 2001/2 LV CHANGES

Period	Months	At CI per incident value	CI per incident result	At CHL per incident value	CHL per incident result
April 2001 – May 2001	2	9.79	19.58	40.37	80.73
June 2001 – December 2001	7	13.05	91.36	51.99	363.92
January 2002 – March 2002	3	20.06	60.17	78.43	235.29
Total			171.11		679.95
Present seed (January 2002 – September 2002)	12	19.60	235.18	71.56	858.72
Correction factor			1.37		1.26
Percentage change			<b>37.45%</b>		<b>26.29%</b>

CHART 1 – REVISED LV CI CUSUM ANALYSIS

### Cusum LV CI per Incident

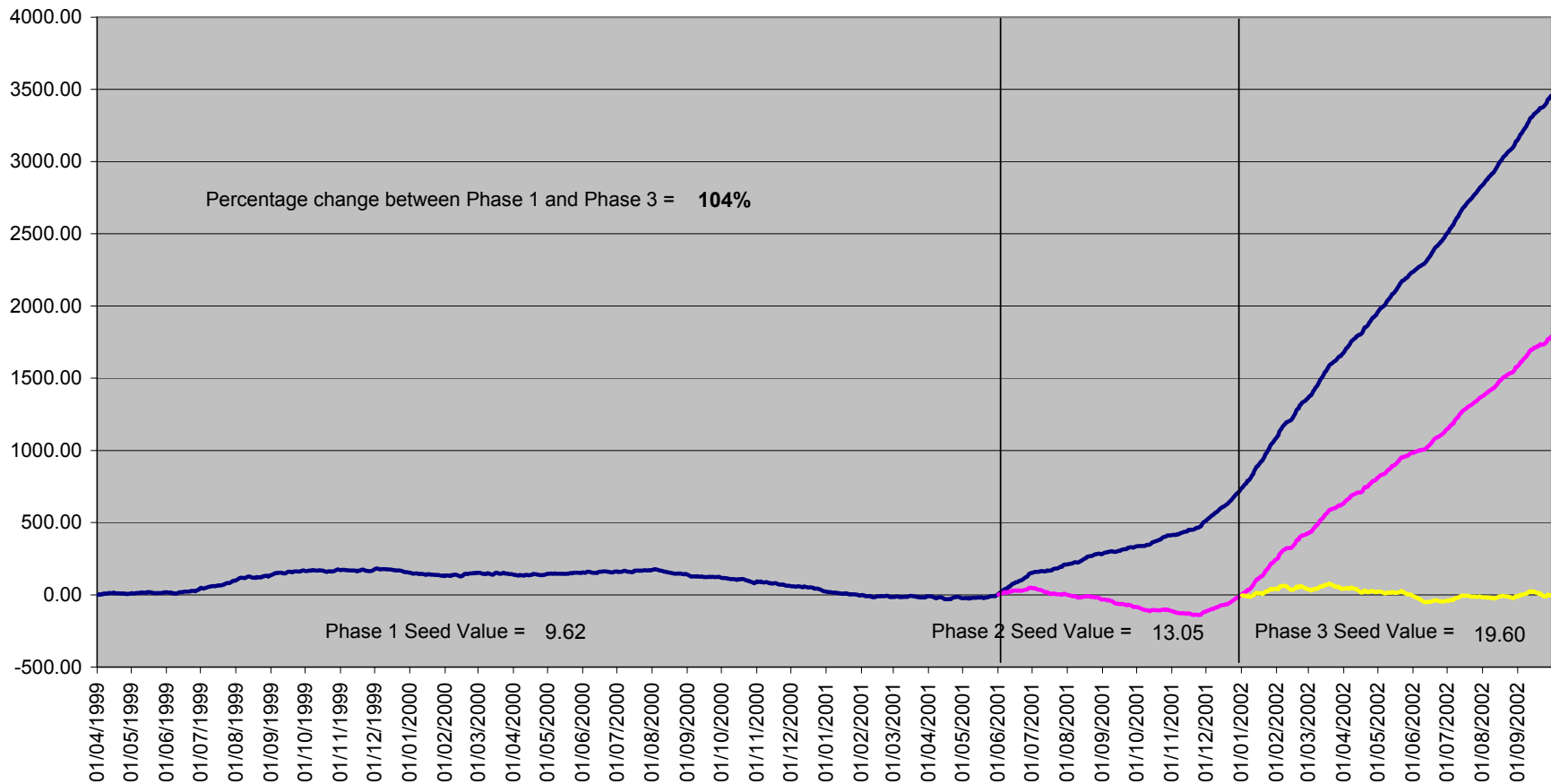


CHART 2 – REVISED LV CHL CUSUM ANALYSIS

### Cusum LV CHL per Incident

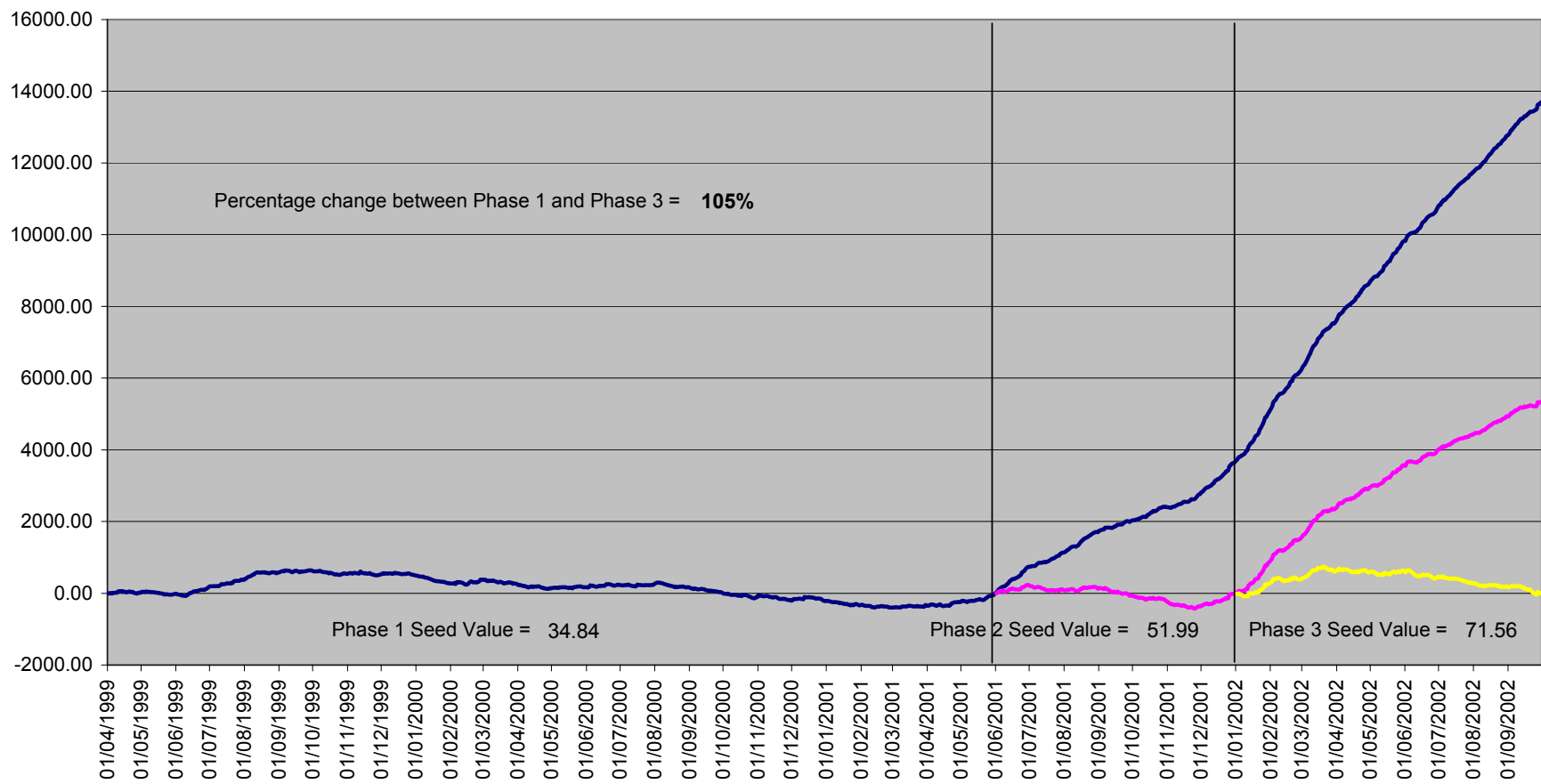


TABLE 5 – FINAL AUTHORITY SUBMISSION

Revised 2004/5 targets	A		B		C		D		E		F		G		H		I		J		K		
Voltage category	Disaggregated forecast performance figures for 1999/00		Estimated % change for historic changes to measurement systems		Estimated performance for 1999/00		Estimated % change from definitions		Estimated % change from measurement systems this price control period		Estimated total % change		Estimated performance for 1999/00		DPCR target		April 2002 licence condition target		Final licence condition target		Incentive Rates		
	CIIS	CMLIS	CIIS	CMLIS	CIIS	CMLIS	CIIS	CMLIS	CIIS	CMLIS	CIIS	CMLIS	CIIS	CMLIS	CIIS	CMLIS	CIIS	CMLIS	CIIS	CMLIS	CIIS	CMLIS	
LV UG Networks	6.4	11.3			6.4	11.3			103.66	105.41	103.66	105.41	12.99	23.25									Old 02/03
LV OH Networks	0.8	1.3			0.8	1.3			103.66	105.41	103.66	105.41	1.63	2.65									0.060 0.070
HV UG Networks	24.9	13.7			24.9	13.7	9.00		37.00	66.00	37.00	75.00	34.06	23.89									New 02/03
HV OH Networks	25.2	13.7			25.2	13.7	9.00		37.00	66.00	37.00	75.00	34.54	23.89									0.056 0.060
EHV UG Networks	4.8	2.2			4.8	2.2			37.00	66.00	37.00	66.00	6.59	3.67									
EHV OH Networks	4.2	1.0			4.2	1.0			37.00	66.00	37.00	66.00	5.74	1.59									Old 03/04 & 04/05
Subtransmission UG Nets	0.0	0.0			0.0	0.0			37.00	66.00	37.00	66.00	0.00	0.00									0.110 0.170
Subtransmission OH Nets	2.8	0.9			2.8	0.9			37.00	66.00	37.00	66.00	3.77	1.53									New 03/04 & 04/05
Unallocated	0.0	0.0			0.0	0.0					0.00	0.00	0.00	0.00									0.103 0.145
TOTAL	69.0	44.0	0.0	0.0	69.0	44.0	0.0	5.6	43.94	77.30	43.9	82.9	99.32	80.47	65.00	55.00	87.22	85.54	93.56	100.58			
	Validated TOTAL % change:												43.94%	82.88%									7.26% 17.58%

Footnote:

- Any adjustments to measurement systems for historic changes were finalised in April 2002, so columns A, B and C are fixed.
- The updated percentage changes for definitions and measurement systems in columns D and E are added together to give the total percentage change in column F.
- The total percentage changes in column F are applied to the estimated performance figures for 1999/2000 in column C to derive the revised estimated performance figures for 1999/2000 in column G.
- The revised total performance figures for CIIS and CMLIS in column G are compared with those in column A to derive the percentage changes which should be applied to the DPCR targets in column H.
- The percentage changes in column G are applied to the DPCR targets to give the final proposed licence condition targets in column J.
- The final licence condition targets in column J are compared with the licence condition targets set out in April 2002 in column I to derive the percentage changes as a result of the rebasing.
- The new incentive rates in column K are derived by dividing the old incentive rate by 1 + the percentage change in column J for CIIS and CMLIS respectively.

Revised Annex A

<b>Relevant year Commencing:</b>	<b>1 April 2002</b>	<b>1 April 2003</b>	<b>1 April 2004</b>
<b>TA<sub>t</sub></b>	99.75	99.75	93.56
<b>IRA<sub>t</sub> (£ million 2000/01 prices)</b>	0.056	0.103	0.103
<b>RLA<sub>t</sub></b>	0.25	0.5	0.5
<b>RLOPA</b>			0.6
<b>TB<sub>t</sub></b>	100.58	100.58	100.58
<b>IRB<sub>t</sub> (£ million 2000/01 prices)</b>	0.060	0.145	0.145
<b>RLB<sub>t</sub></b>	0.5	1.25	1.25
<b>RLOPB</b>			1.4
<b>RLD<sub>t</sub></b>	0.1	0.125	0.125