

# **Annex: Reasons for directions and determination under Special Licence Condition G - Northern Electric Distribution Limited**

## **1. Introduction**

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

1.2 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 NEDL’s 2001/2 reported performance for inaccuracy;
- Section 3 sets out an explanation of the determination under paragraph 7 of the Condition to define NEDL’s interim targets;
- Section 4 sets out the reasons for the direction under paragraph 7C of the Condition to adjust NEDL’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 NEDL’s incentive rates;
- Section 5 sets out an explanation of the direction under paragraph 7D of the Condition to adjust NEDL’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 some of the adjustments and the revised version of Annex A of the Condition incorporating all of the adjustments.

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

### Examiners 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 examiner’s<sup>1</sup> audit report shows that NEDL’s data for the duration of interruptions is below the minimum LV level of accuracy specified in the Regulatory Instructions and Guidance (“the RIGS”) due to under-reporting. Under paragraph 8 of the

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<sup>1</sup> “Information and Incentives Project – Audit of incident reporting for 2001/2 - Appendix I Northern Electric Distribution (NEDL)”, Mott-MacDonald and British Power International, February 2003

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 NEDL

- 2.2 NEDL did not submit any additional information to the Authority regarding the accuracy of its 2001/2 reported performance.

Authority's draft direction

- 2.3 The Authority has considered the evidence contained in the examiner's report and other relevant circumstances. In the light of these and of its principle objective and general duties the Authority considers that it is appropriate to exercise its powers under paragraph 8 of the Condition to adjust NEDL's 2001/2 data for the duration of interruptions.
- 2.4 The Authority therefore proposes that the adjustment to NEDL's data for the duration of interruptions should be based on the accuracy figures set out in Table A-1 of the examiner's report.
- 2.5 Based on this analysis, the Authority proposes that CMLIS<sub>t</sub> for 2001/2 should be adjusted upwards by 3.17% from 85.35 to 88.05. 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	71.92	63.09			71.92	63.09
LV	11.93	22.03		12.27%	11.93	24.73
NGC or other transmission co	9.81	2.23			9.81	2.23
Embedded generators	0.00	0.00			0.00	0.00
Other connected systems	0.00	0.00			0.00	0.00
Total unweighted CI/CML	93.65	87.35		3.10%	93.65	90.06
<b>Total weighted CIIS/CMLIS</b>	<b>83.84</b>	<b>85.35</b>		<b>3.17%</b>	<b>83.84</b>	<b>88.05</b>

- 2.6 In reaching its decision the Authority took into account the fact that NEDL'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

- 2.7 The company made no comments on the draft direction under paragraph 8 of the Condition.

### Authority's final direction

- 2.8 The Authority is therefore satisfied that the adjustments set out in the draft direction are appropriate.

## **3. Explanation of draft 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 the years 2002/3 and 2003/4 will be the higher of:

- $CIIS_t$  and  $CMLIS_t$  respectively for the year 2001/2 adjusted for inaccuracy; and
- $TA_t$  and  $TB_t$  for respectively 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 are determined as being 83.84; and
- $TB_t$  for 2002/3 and 2003/4 are determined as being 90.46.

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

- 4.1 NEDL gave notice to the Authority on 7 June 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 2004/5 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.

### NEDL's submission

- 4.2 NEDL is requesting further changes to its 2004/5 targets to reflect additional evidence of the impact of definitions on its reported performance. It has asked for the Authority's original adjustment for definitions to be revised to take into account:

- the actual level of re-interruptions in its 2001/2 performance data; and
- an error in its original estimate of the impact of using the first customer call as the start time of an interruption.

- 4.3 NEDL has also requested additional changes to its 2004/5 targets to reflect further information on the impact of new measurement systems. The main cause of the change in reporting being claimed by NEDL is the progressive introduction of its Trouble Management System ("TMS") for central reporting,

which began in April 1998 and was largely complete by May 1999. It was not possible for NEDL to report incidents using both the old and new systems in parallel since that time so the effect of the system changes could not be directly measured. NEDL therefore based its approach on cumulative sum (cusum) analysis, which indicates step changes in time series data

- 4.4 The outstanding issue regarding new measurement systems from the previous rebasing in April 2002 is the number of faults per day at Low Voltage. NEDL applied cusum analysis to its data on the number of LV underground incidents per day data for the period 1 April 1990 to 30 November 2002. The cusum analysis generated an average (or seed) value of 13.28 incidents per day for the period prior to the introduction of TMS and 17.32 incidents per day for the period after the introduction of TMS and before the introduction of autoreclosers, which affected its underlying performance. The cusum analysis clearly illustrated that the introduction of the new TMS measurement system in May 1999 led to a significant increase in faults per day, from an otherwise stable position.
- 4.5 NEDL considers that its 2004/5 targets should be adjusted to take into account step changes between the average number of incidents per day, which underpinned its original 2004/5 targets, and the average number of incidents per day post-TMS, adjusted for underlying network growth. It therefore repeated the linear trend calculation that Ofgem used to predict the 1999/00 base year performance for the price control targets. This resulted in a predicted number of LV faults per day of 14.17 for 1999/2000 compared with an average number of incidents per day of 17.29 post-TMS, a step change of 22%. NEDL then multiplied this figure by the agreed 33.2% increase in the number of customers per fault, resulting in their suggested increase of 62.5% for the number and duration of interruptions at LV.
- 4.6 Table 1 in the appendix of this document shows the adjustments suggested by NEDL to rebase its 2004/5 targets to take account of the impact of new definitions and measurement systems on its reported performance. In line with this NEDL proposes the following adjustments to its 2004/5 targets:
- $TA_t$  for the year commencing 1 April 2004 should be increased by 6.15% from 83.71 to 88.86
  - $TB_t$  for the year commencing 1 April 2004 should be increased by 5.32% from 90.46 to 95.28

#### Examiner's report

- 4.7 In section 4.2 of its report, the examiner indicates that NEDL has adopted a reasonable methodology for identifying step changes in the numbers of reported incidents and number of customers affected by reported incidents at the LV level. Whilst it is recognised that, by its nature, the cusum analysis requires a degree of judgement and may be subject to inaccuracy, discussions with NEDL have reached agreement on the conclusions that can be drawn from this analysis.
- 4.8 The examiner is of the opinion that the NEDL submission represents a fair and reasonable statement of the effects that changes to definitions and changes to

NEDL's measurement systems have had upon the company's reported performance.

Authority's draft direction

- 4.9 The Authority has considered the examiner's report, NEDL's submission and other relevant circumstances. In the light of these, and of its principle objective and general duties, the Authority is satisfied that the calculation of the impact of new definitions at higher voltages and lower voltages and the impact of new measurement systems at higher voltages is robust. Whilst the Authority is satisfied that NEDL's underlying data is robust, it is concerned with how this data has been analysed to identify the impact of measurement system changes at LV. The principal concern is with the calculation of a "predicted" value for the number of faults per day for 1999/2000. The Authority believes that to ensure a consistent approach across DNOs and with the previous rebasing process carried out in April 2002, the calculation of the impact of new measurement systems should be based on step changes in reported performance between the periods prior to and after the introduction of the new measurement systems.
- 4.10 The Authority has applied this methodology, using NEDL's base data on LV faults per day to re-calculate the average (seed) values for the number of faults per day over the same periods as identified by NEDL. Having derived average numbers of incidents per day of 13.19 and 17.12 for the periods pre- and post-TMS respectively and reduced the post TMS- value for the underlying network growth, the Authority calculated an increase of 27.55% in the number of faults per day. Applying this change to the agreed 33.2% increase in the number of customers per fault, results in a 69.90% increase in both the number and duration of interruptions at LV due to new measurement systems.
- 4.11 On this basis the Authority proposes that;
- $TA_t$  for the year commencing 1 April 2004 should be increased by 7.15% from 83.71 to 89.70
  - $TB_t$  for the year commencing 1 April 2004 should be increased by 6.72% from 90.46 to 96.54

The calculations used to derive these adjustments are set out in Table 2 in the Appendix of this document.

- 4.12 The associated changes to NEDL'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 0.03 to 0.028;
  - $IRA_t$  for the years commencing 1 April 2003 and 2004 should be reduced from 0.06 to 0.056;
  - $IRB_t$  for the year commencing 1 April 2002 should be reduced from 0.03 to 0.028;
  - $IRB_t$  for the years commencing 1 April 2003 and 2004 should be reduced from 0.08 to to 0.075.

DNO response to paragraph 10A consultation

- 4.13 NEDL made no comments on the draft direction under paragraph 7C of the Condition.

Authority's final direction

- 4.14 The Authority has requested and received further information to consider whether additional Cusum analysis would impact on the adjustments set out in the draft direction. Based on the analysis provided by NEDL and its own further work the Authority considers the adjustments set out in the draft direction remain appropriate.

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

- 5.1 The Authority is proposing a modification under paragraph 7C of the Condition of NEDL's targets  $TA_t$  and  $TB_t$  for 2004/5. NEDL has also requested that the provisions under paragraph 7D of the Condition be applied. The Authority is therefore satisfied that it is appropriate to make adjustments to the targets  $TA_t$  and  $TB_t$  for the years 2002/3 and 2003/4 to ensure that they are consistent with NEDL's adjusted 2001/2 performance and modified 2004/5 targets.
- 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, but substituting in the adjusted 2004/5 targets. The Authority therefore proposes the following adjustments to  $TA_t$  and  $TB_t$  for 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)	83.84	6.98%	89.70
$TB_t$ (years commencing 1 April 2002 & 2003)	90.46	6.72%	96.54

DNO response to paragraph 10A consultation

- 5.3 The company made no comments on the draft direction under paragraph 7D of the Condition.

Authority's final direction

- 5.4 The Authority is therefore satisfied that the adjustments set out in the draft direction are appropriate.

## Appendix – Further Information

APPENDIX TABLE 1 – NEDL 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	10.4	15.0			10.4	15.0	-2.10	9.00	62.50	62.50	60.40	71.50	16.68	25.79						
LV OH Networks	1.9	4.0			1.9	4.0	-2.10	9.00	62.50	62.50	60.40	71.50	3.05	6.86						
HV UG Networks	39.8	29.9			39.8	29.9	-6.40	5.60	5.00	5.00	-1.40	10.60	39.27	33.10						
HV OH Networks	27.6	32.0			27.6	32.0	-6.40	5.60	5.00	5.00	-1.40	10.60	27.24	35.34						
EHV UG Networks	1.6	1.0			1.6	1.0	-7.40	-0.27	5.00	5.00	-2.40	4.73	1.55	1.04						
EHV OH Networks	6.4	1.7			6.4	1.7	-7.40	-0.27	5.00	5.00	-2.40	4.73	6.27	1.81						
Subtransmission UG Nets	0.3	0.0			0.3	0.0	-0.20	-0.20	5.00	5.00	4.80	4.80	0.32	0.00						
Subtransmission OH Nets	3.9	2.4			3.9	2.4	-0.20	-0.20	5.00	5.00	4.80	4.80	4.12	2.48						
Unallocated	0.0	0.0			0.0	0.0					0.00	0.00	0.00	0.00						
TOTAL	92.0	86.0	0.0	0.0	92.0	86.0	-5.6	6.0	12.7	17.7	7.1	23.7	98.51	106.43	83.00	77.00	83.71	90.46	88.86	95.28
	Validated TOTAL % change:												7.06%	23.74%					6.15%	5.32%

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 2 – AUTHORITY PROPOSAL

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	10.4	15.0			10.4	15.0	-2.07	8.95	69.90	69.90	67.83	78.85	17.45	26.90								Old 02/03
LV OH Networks	1.9	4.0			1.9	4.0	-2.07	8.95	69.90	69.90	67.83	78.85	3.19	7.15								0.030 0.030
HV UG Networks	39.8	29.9			39.8	29.9	-6.38	5.62	5.00	5.00	-1.38	10.62	39.28	33.11								New 02/03
HV OH Networks	27.6	32.0			27.6	32.0	-6.38	5.62	5.00	5.00	-1.38	10.62	27.25	35.34								0.028 0.028
EHV UG Networks	1.6	1.0			1.6	1.0	-7.38	-0.28	5.00	5.00	-2.38	4.72	1.55	1.04								
EHV OH Networks	6.4	1.7			6.4	1.7	-7.38	-0.28	5.00	5.00	-2.38	4.72	6.27	1.81								Old 03/04 & 04/05
Subtransmission UG Nets	0.3	0.0			0.3	0.0	-0.18	-0.18	5.00	5.00	4.82	4.82	0.32	0.00								0.06 0.08
Subtransmission OH Nets	3.9	2.4			3.9	2.4	-0.18	-0.18	5.00	5.00	4.82	4.82	4.12	2.48								New 03/04 & 04/05
Unallocated	0.0	0.0			0.0	0.0					0.00	0.00	0.00	0.00								0.056 0.075
TOTAL	92.0	86.0	0.0	0.0	92.0	86.0	-5.6	6.0	13.7	19.4	8.1	25.4	99.44	107.84	83.00	77.00	83.71	90.46	89.70	96.54		
	Validated TOTAL % change:												8.07%	25.38%							7.15%	6.72%

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.

Proposed 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>	89.70	89.70	89.70
<b>IRA<sub>t</sub> (£ million 2000/01 prices)</b>	0.028	0.056	0.056
<b>RLA<sub>t</sub></b>	0.25	0.5	0.5
<b>RLOPA</b>			0.6
<b>TB<sub>t</sub></b>	96.54	96.54	96.54
<b>IRB<sub>t</sub> (£ million 2000/01 prices)</b>	0.028	0.075	0.075
<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