

# **2004/05 Electricity Distribution Quality of Service Report**

November 2005

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## Summary

Ofgem considers quality of service to be one of its key priorities in network regulation. Ofgem has been undertaking a programme of work to improve regulation of electricity distribution companies to ensure they deliver an appropriate level of service to customers.

This report sets out the quality of service performance in the period 1 April 2004 to 31 March 2005 for the 14 electricity distribution network operators (DNOs). 2004/05 was the third year that the DNOs faced financial incentives on their quality of service performance and it was the final year of the third distribution price control period.

Since the introduction of the incentive scheme in April 2002 the underlying average number of customer interruptions per 100 customers has fallen by 16 per cent and the number of customer minutes lost has reduced by 16 per cent. There has also been an improvement in the quality of telephone response since the introduction of the scheme.

## Introduction

All licensees who operate electricity transmission or distribution systems are required to report annually to Ofgem on their performance in maintaining system security, availability and quality of service. This information provides a picture of the continuity and quality of service experienced by final customers.

Ofgem has made a commitment to publish an annual report on the overall performance of all 14 Distribution Network Operators (DNOs) and this report is the fourth of its kind. The aim of the report is to pull together the key information on the DNOs' quality of service in a format that is easy to understand. Transmission system information is published by the three companies responsible for transmission networks in the UK, National Grid Electricity, SP Transmission and Scottish & Southern.

The document contains the following sections:

- Section 1 – Background to the Electricity Distribution Network Operators
- Section 2 – Explanation of the Key Quality of Service Measures
- Section 3 – Performance in 2004/05
- Section 4 – Ongoing Work

Summary tables and additional information are contained in the appendices.

Data for 2004/05 was audited in respect of reporting accuracy in the summer of 2005, although no data required adjusting as all DNOs met the required accuracy thresholds. This was the fourth year of such audits as well as audits for exceptional events for which Ofgem made adjustments to 13 DNOs' reported information. Ofgem intends to make the complex information relating to the distribution network operators as meaningful and user friendly as possible and welcomes any comments or suggestions for the format of future reports.

Publication of the Guaranteed and Overall Standards (GOSPs) is now the responsibility of energywatch and information for 2002/03 and 2003/04 can be found on their website<sup>1</sup>. Following consultation in the Price Control Review, as of 1<sup>st</sup> April 2005 the Guaranteed Standards have been amended and the Overall Standards have been revoked.

Ofgem intends to publish the 2005/06 Quality of Service Report before the end of 2006.

Any comments on this report should be sent by the end of April 2006 to:

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<sup>1</sup> <http://www.energywatch.org.uk/>

## **Section 1 - Background on the 14 Electricity Distribution Network Operators**

At privatisation, the Public Electricity Suppliers (PESs) were responsible for both the distribution and supply of electricity, taking the place of the former regional electricity boards. However, with the introduction of competition in supply, it was important to ensure that all supply businesses, both new and old, had fair access to the distribution networks.

The Utilities Act 2000 introduced separate licences for distribution and supply, and required that these be held by separate legal entities.

### **Distribution**

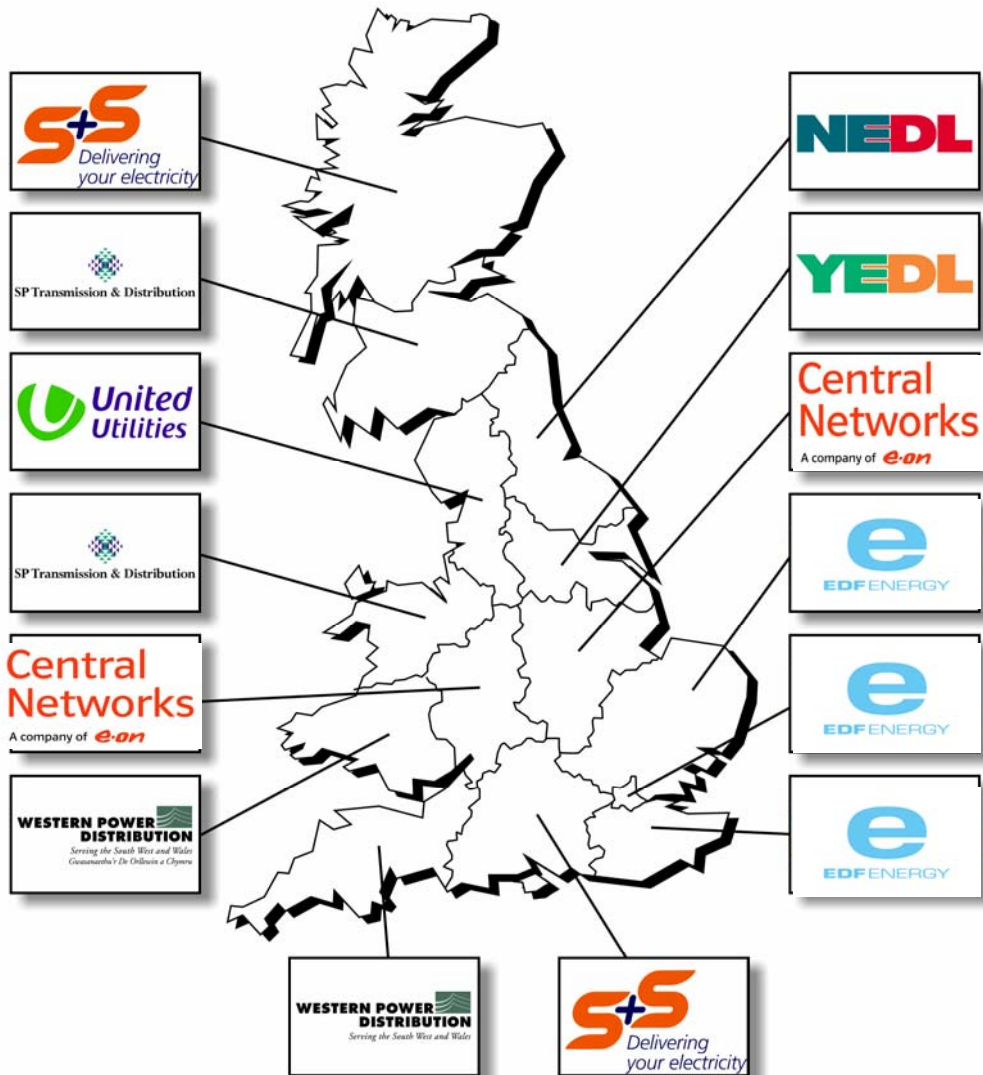
Distribution Network Operators are responsible for local distribution of electricity along overhead wires and through underground cables. This includes responsibility for ensuring that customers have a reliable electricity supply and restoring customers promptly in the event of an interruption to their electricity supply as set out in the Guaranteed and Overall Standards and the Quality of Service Incentive Scheme, which are discussed later in this document. Following privatisation and a number of corporate acquisitions, during 2004/05 the 14 distribution licenses were owned by 7 separate companies (see Map).

### **How much does distribution cost the customer?**

Electricity distribution charges account for around £3 billion annually and make up around 20 per cent of customers' electricity bills.

For a typical domestic electricity customer, based on consumption of 3300 kWh of electricity a year, the distribution element of their bill would be approximately £60.

## Map of Great Britain showing the Geographical Areas of the 14 Distribution Network Operators



Name in the report	Name on Map
CN West	Central Networks
CN East	Central Networks
EDFE EPN	EDF Energy
SSE Hydro	Scottish & Southern
EDFE LPN	EDF Energy
CE NEDL	NEDL
SP Distribution	SP Transmission & Distribution
EDFE SPN	EDF Energy
SSE Southern	Scottish & Southern
SP Manweb	SP Transmission & Distribution
UU	United Utilities
WPD S Wales	Western Power Distribution
WPD S West	Western Power Distribution
CE YEDL	YEDL

## Section 2 - Key Quality of Service Measures

There are two main sets of quality of service measures for the DNOs.

- Overall measures of the quality of service the DNOs provide; and
- Guaranteed Standards of Performance.

### Overall Measures of Quality of Service

The quality of service incentive scheme which was introduced in April 2002 financially incentivises the DNOs with respect to the overall quality of service they deliver in the following areas:

- **the number and duration of interruptions to supply per year** – these are defined as the number of customers affected by power cuts per 100 customers per year and the average minutes without power per customer per year, only including power cuts that last 3 minutes or longer. Where several outages occur affecting the same customer as part of the same fault, this will only count as one power cut<sup>2</sup>. DNOs are incentivised based on their annual performance against the targets for each of these measures; and
- **the quality of telephone response** – is assessed through a customer survey carried out on a monthly basis by Accent Marketing and Research. Accent survey a sample of customers who have recently called their DNO with respect to power cuts or a dangerous situation, asking for customers' views in four key areas as set out in the telephony section on page 15.

In addition, DNOs are required to report the following information:

- **the number of short interruptions to supply per year** – the number of customers affected by power cuts lasting less than three minutes per 100 customers per year; and
- **disaggregated information on interruptions** by source, voltage and HV circuit.

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<sup>2</sup> Unless the second or subsequent power cuts occurred more than 3 hours after all customers in the first power cut were restored, or after 18 hours in the case of temporary restoration.

## **Guaranteed Standards of Performance**

A summary of the standards of performance is set out in Appendix 2.

This report sets out performance on the Overall measures of quality of service and penalties/rewards under the incentive scheme. Publication of data on standards of performance is now energywatch's responsibility.

## **Revised Standard of Performance for supply arrangements**

As part of the price control review Ofgem consulted on a range of improvements to the Standards of Performance arrangements. Ofgem has made changes to the standards to strengthen the incentives for DNOs to restore customers promptly and efficiently following severe weather events and streamlined the arrangements for compensation for prolonged outages.

There are now separate standards<sup>3</sup> for supply restoration under "normal weather" conditions and severe weather. Under normal weather conditions domestic customers will be entitled to £50 compensation (non-domestic £100) after being off supply for 18 hours, with a further £25 for each subsequent 12 hour period. The level of compensation continues to be uncapped.

Under severe weather conditions the trigger period for payment (i.e. the time at which customers are entitled to compensation) will depend on the scale of event. This is summarised in Table 2.2 in Appendix 2.

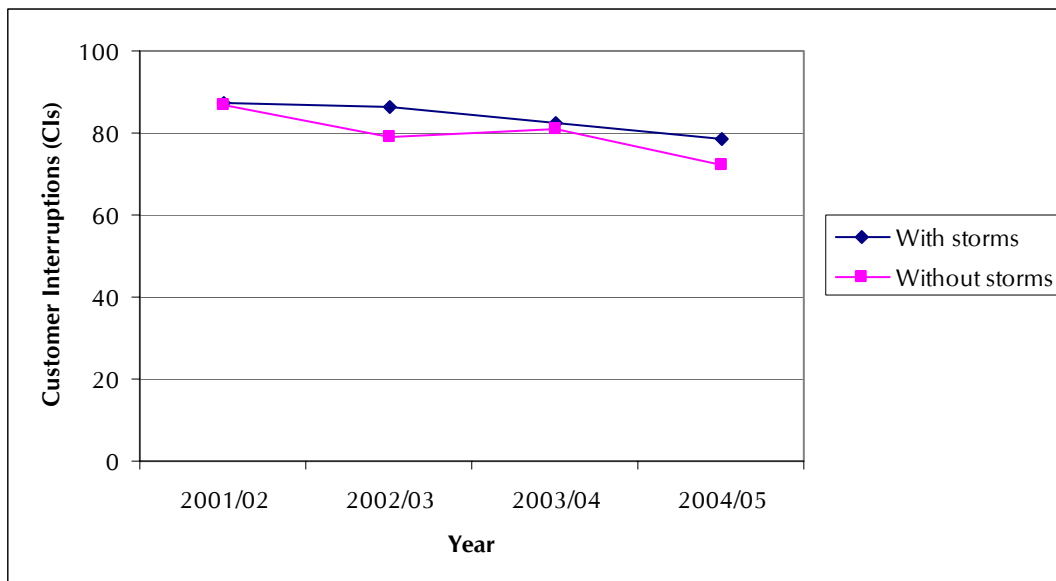
Both domestic and non-domestic customers will be entitled to £25 compensation after the trigger period has passed and a further £25 for each additional period of 12 hours up to a cap of £200 per customer.

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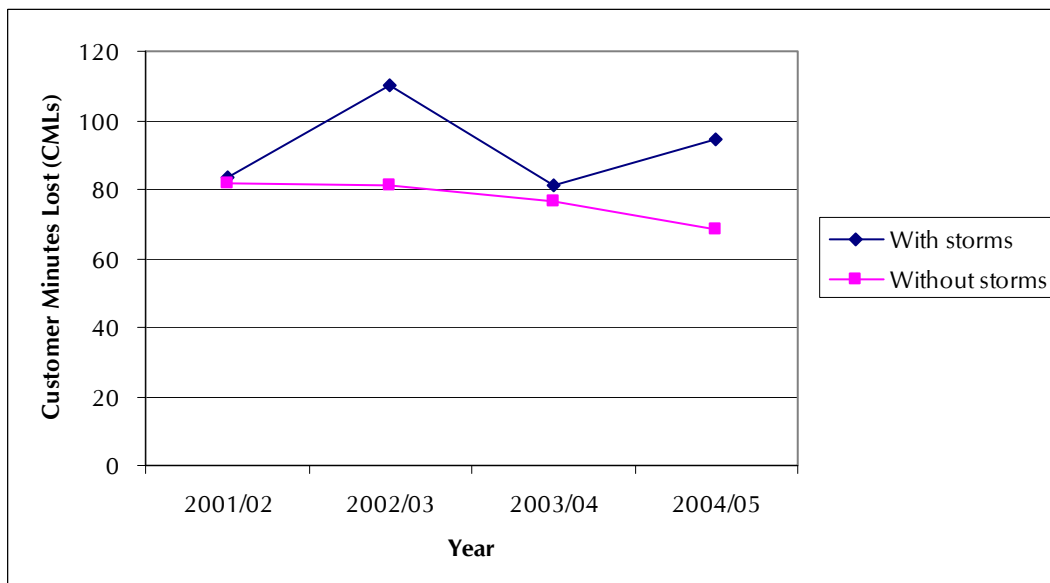
<sup>3</sup> Only the "normal weather" 18 hour standard applies in the Highland and Islands of Scotland. SSE – Hydro is entitled to claim an exemption from paying compensation for severe weather but customers are able to apply for a determination if they feel that compensation has been withheld unreasonably.

## Section 3a – Trends in GB Performance

**Figure 3.1 Average Customer Interruptions (CIs) per 100 customers 2001/02 to 2004/05 with and without major storms**



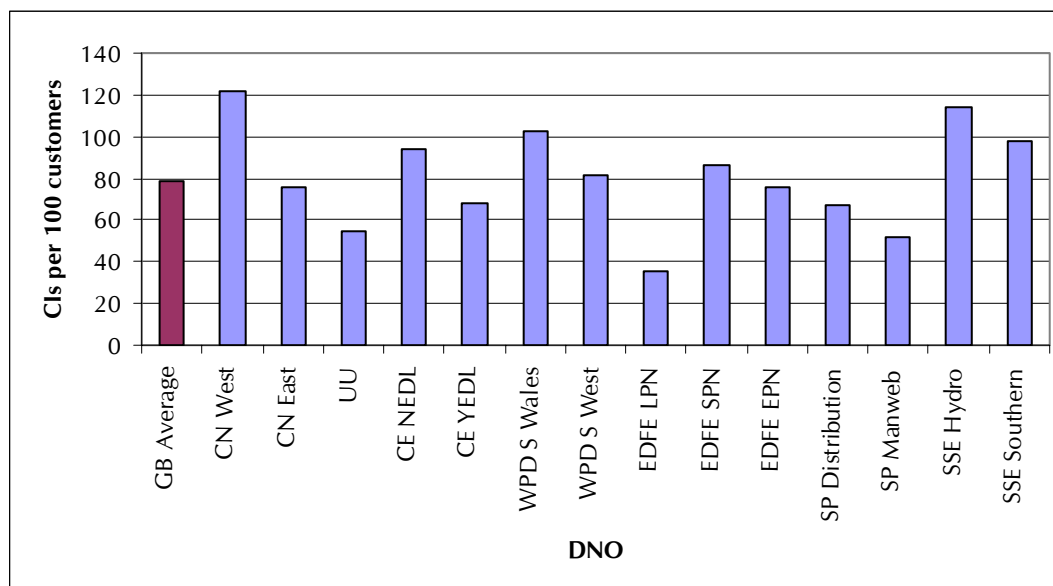
**Figure 3.2 Average Customer Minutes Lost (CMLs) 2001/02 to 2004/05 with and without major storms**



Figures 3.1 and 3.2 show average performance for Britain's distribution networks from 2001 onwards. As part of the Information and Incentive Project, more robust definitions and consistent reporting of interruptions data was introduced from April 2001. Historically data had been significantly under-reported. There has been a significant improvement in underlying performance for both the number and duration of interruptions, although the October storms had a significant impact on the duration of interruptions in 2002/03 and similarly, storms in January 2005 had a significant impact on the duration of interruptions in 2004/05.

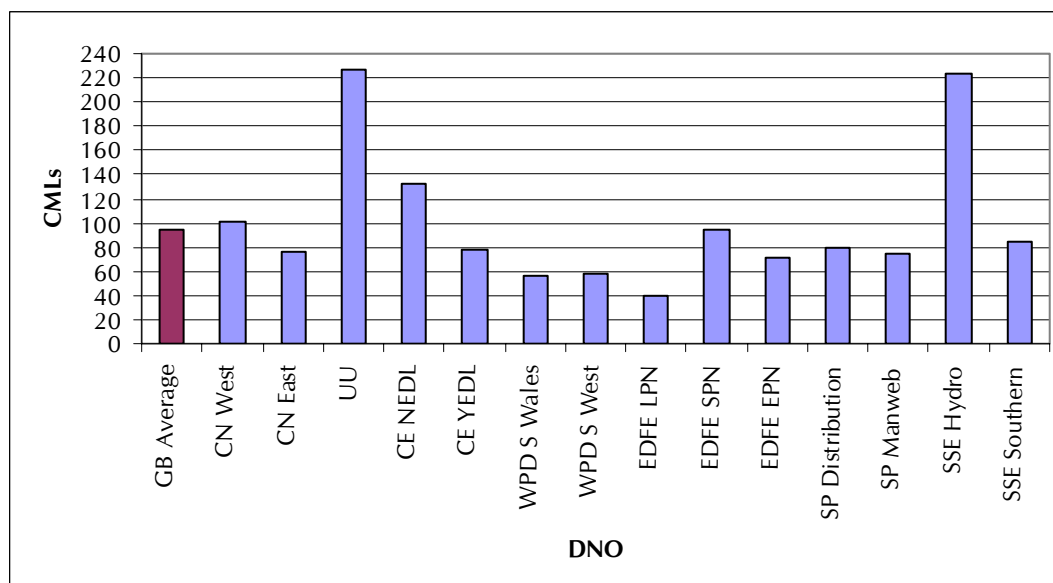
## Section 3b - DNOs' Performance in 2004/05

Figure 3.3 Average Customer Interruptions (CIs) per 100 customers 2004/05



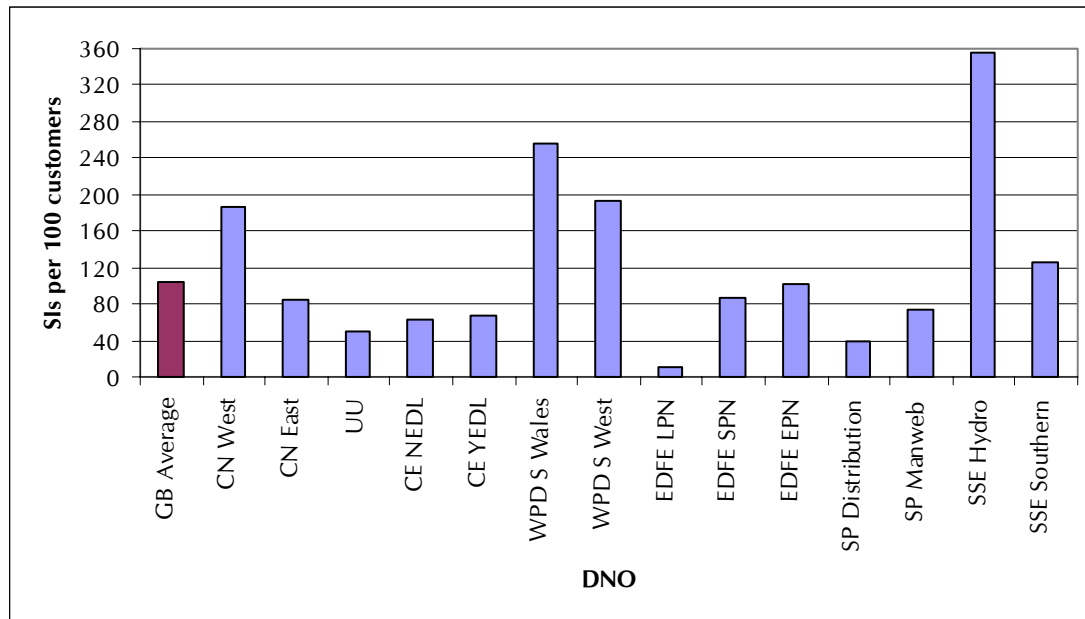
The average number of customer interruptions per 100 customers in 2004/05 across Great Britain was 78.4, an improvement of 4.2 from 2003/04. Figure 3.3 shows the performance of each DNO. The data covers all interruptions, including those caused by bad weather, faults and pre-arranged shutdowns for maintenance and construction.

Figure 3.4 Average Customer Minutes Lost (CMLs) 2004/05



The average number of minutes customers were off supply in 2004/05 across Great Britain was 94.3 an increase of 13.2 from 2003/04, principally as a result of the January storms. Figure 3.4 shows the performance of each DNO. Restoration of supplies in remote areas and those with low population density can sometimes be delayed by difficult terrain and longer distances between DNO depots and customers and similarly in urban areas the time taken to reach a fault may be affected by traffic congestion. DNOs are typically tackling these issues by investing in protection, network automation, remote control and more recently, satellite navigation and in some cases mobile tracking for restoration crews.

**Figure 3.5 Short Interruptions per 100 Connected Customers 2004/05**



The average number of short interruptions per 100 connected customers across Great Britain was 103. Figure 3.5 shows the performance of each of the DNOs. As in 2003/04, CN West, SSE - Hydro, SSE - Southern, WPD South Wales and WPD South West all reported significantly above the GB average. CN East, EDF - LPN, CE - NEDL, SP Distribution, EDF - SPN, SP Manweb, United Utilities and CE - YEDL were all below the GB average as was the case in 2003/04.

Short interruptions are brought about by operations of the network designed to reduce the length of interruptions. The majority of short interruptions are associated with automatic restoration schemes, such as:

- pole mounted auto reclosers;
- ground mounted auto-reclosers;
- rural automation schemes; and
- load transfer schemes.

## 2004/05 Performance<sup>4</sup> against Targets

Figure 3.6 Customer Interruptions – 2004/05 Performance Relative to 2004/05 Targets

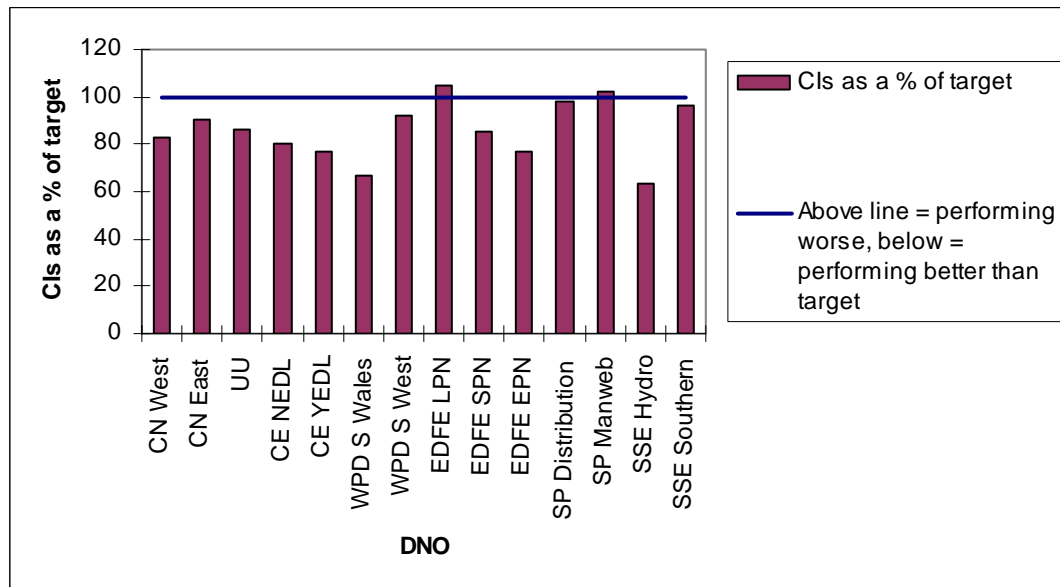
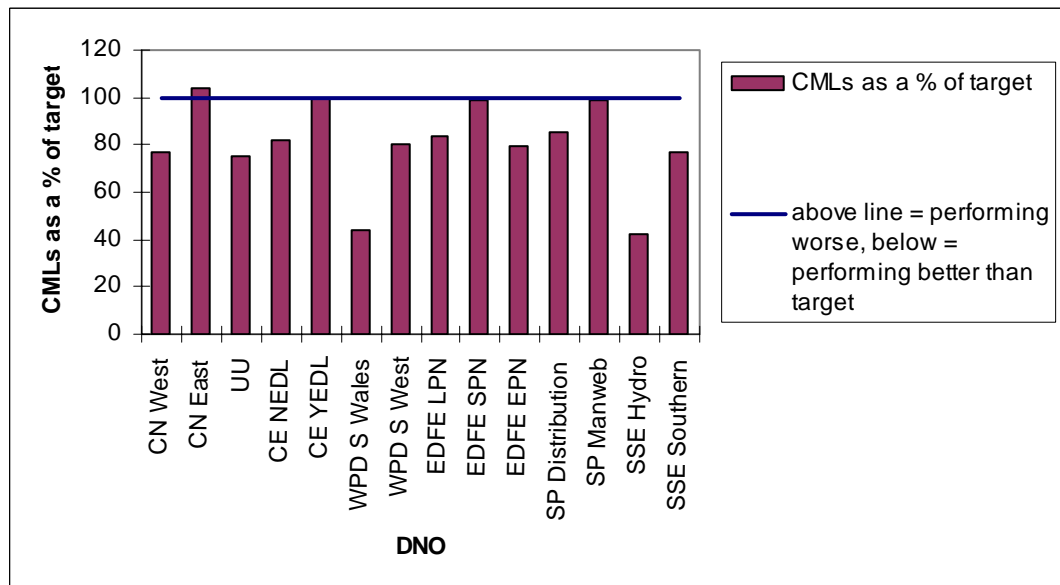


Figure 3.7 Customer Minutes Lost – 2004/05 Performance Relative to 2004/05 Targets



Figures 3.6 and 3.7 show DNOs' 2004/05 performance relative to their targets for the year. In 2004/05 most DNOs outperformed their targets.

It is important to note that comparisons against the Price Control targets are only one way of assessing performance; many of the DNOs have made substantial improvements in performance year on year.

As part of the Price Control Review, Ofgem and the DNOs undertook work on improving comparisons of quality of supply performance, helping to ensure that robust targets were set for all DNOs as part of the fourth Price Control Review (see section on benchmarking and comparing quality of supply performance).

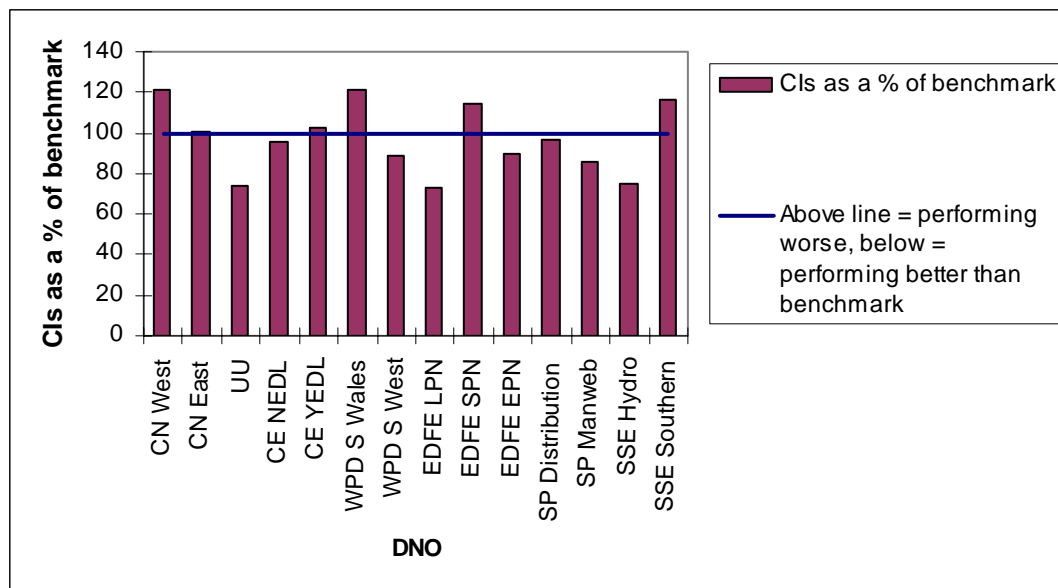
<sup>4</sup> Incentive scheme performance, following adjustments for reporting accuracy and exceptional events.

In measuring DNOs' performance against the targets, Ofgem recognises that the number of interruptions arising on other networks (e.g. transmission networks) are outside the DNO's control. They are therefore excluded. However, a DNO can take appropriate actions to mitigate the duration of these interruptions. 10 per cent of the duration of interruptions on other networks is therefore included in assessing performance against targets.

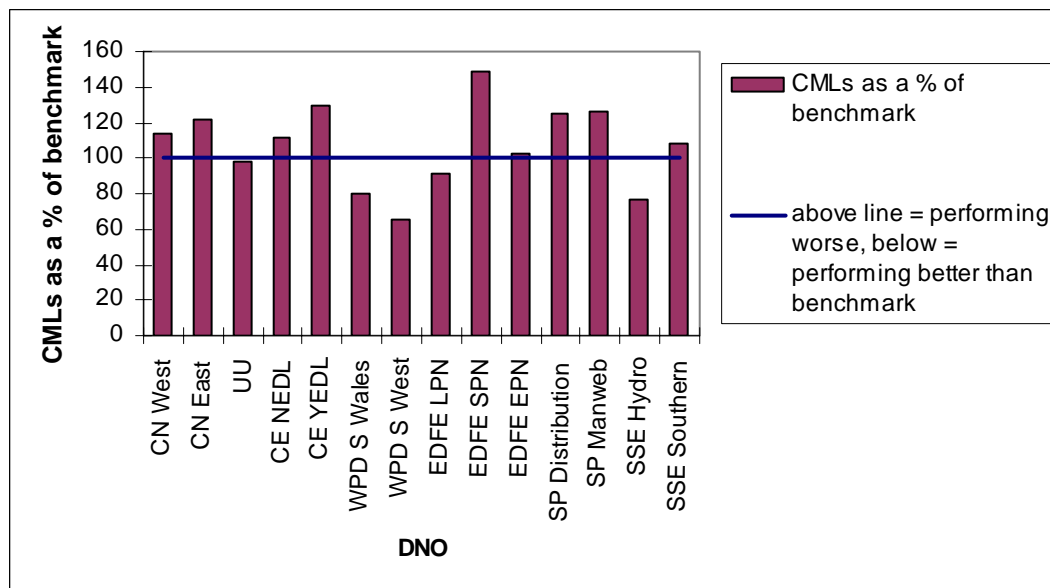
DNOs may also claim an adjustment for events which they believe were exceptional and had a significant impact on their performance. Ofgem will only make such an adjustment if the event is found to be exceptional. In deciding the extent of any adjustment Ofgem will take into account whether the DNO has taken all reasonable steps to restore customers in an efficient and effective manner.

## 2004/05 Performance<sup>5</sup> against Average Benchmarks

**Figure 3.8 Unplanned Customer Interruptions – 2004/05 Performance Relative to 2004/05 Benchmarks**



**Figure 3.9 Unplanned Customer Minutes Lost – 2004/05 Performance Relative to 2004/05 Benchmarks**



Although the number of unplanned power cuts per 100 customers (CIs) and the number customer minutes lost per customer (CMLs) take account of different customer numbers in each DNO, performance still varies significantly. The difference in performance can be as a result of a number of different factors such as;

- Inherited Differences - differences in the business inherited at privatisation such as network design and configuration;

<sup>5</sup> Performance for 2004/05 does not include HV CIs and CMLs which DNOs could not attribute to circuits.

- Inherent Differences - differences in the area in which the DNO operates which may include topographic factors such as length of network, customers' location and customer density etc;
- Exceptional Events - events outside the control of the DNO which can affect performance such as severe weather;
- Incurred Differences - differences that are a direct result of management decisions including the strategy taken for operating and maintaining the network

In order to take these factors into account when comparing quality of supply, Ofgem jointly with the Quality of Supply Working Group, has developed a method for calculating benchmarks for CIs and CMLs taking into account inherited and inherent differences in the DNOs' networks (and excluding exceptional events). In essence this method involves looking at physically similar parts of networks and comparing performance at a more disaggregated level.

Each DNO's performance is compared to their benchmark (actual performance divided by benchmark, expressed as a percentage). As the benchmarks are calculated based on similar groups of circuits and take into account DNOs' own customer numbers per circuit and average circuit length, this method provides a more robust basis for comparing quality of supply performance.

Care should be taken in interpreting the results as there are a range of factors that may explain the remaining performance gaps. Appendix 1 contains a more detailed explanation of the disaggregation and benchmarking process.

## 2004/05 Quality of Telephone Response Performance

Each of the DNOs are assessed on customer satisfaction with the quality of telephone response through a customer survey carried out on a monthly basis. Performance is assessed across four key areas:

1. the politeness of the member of staff;
2. their willingness to help;
3. the accuracy of the information given (if information was given); and
4. the usefulness of the information given (if information was given)

Customers are asked to score the DNOs on a scale of 1 (very dissatisfied) to 5 (very satisfied) based on their experience of the telephone conversation they had with the DNO. An overall performance score is calculated for each DNO.

Under the telephony incentive mechanism in place until 31 March 2005, DNOs were assessed on their relative performance. This performance ranking penalises companies that have a level of performance below the average of all the DNOs and rewards companies whose performance is above average.

Table 1 below shows the combined means scores for the period from 1 April 2004 until 31 March 2005 for each DNO for the four assessed attributes listed above. The performance scores and rankings reported here are at the upper 95% confidence interval limit, which is the 'deemed' performance score for each DNO, as established under the scheme.

**Table 3.1 2004/05 Overall Performance Scores (All Assessed Attributes)**

<b>Ranking 04/05 (03/04)</b>	<b>Company</b>	<b>04/05 Score</b>	<b>Rewards/Penalties</b>
1 (1)	SSE Hydro	4.59	£199,000
2 (4)	WPD S Wales	4.50	£107,000
3 (2)	CE NEDL	4.44	£84,000
4 (5)	SSE Southern	4.43	£150,000
5 (3)	WPD S West	4.43	£85,000
6 (11)	UU	4.41	£83,000
7 (7)	CE YEDL	4.39	£65,000
8 (6)	CN East	4.39	£72,000
9 (13)	EDFE EPN	4.36	£43,000
10 (10)	CN West	4.34	£0
11 (9)	SP Distribution	4.34	£0
12 (8)	SP Manweb	4.30	- £44,000
13 (12)	EDFE SPN	4.26	- £102,000
14 (14)	EDFE LPN	4.19	- £286,000
	<b>Overall Mean</b>	<b>4.35</b>	

Only three companies' deemed performance scores for 2004/05 were statistically below the overall mean, resulting in a penalty. As CN West and SP Distribution's results were not statistically significantly different from the mean no penalty or reward is applicable. The remaining 9 DNOs received a reward for statistically outperforming the mean.

Despite overall performance decreasing from 2003/04 results (industry mean 4.39), telephony performance remained at a high standard in 2004/05 with all DNOs achieving a result between 'quite satisfied' (4) and 'very satisfied' (5).

The five highest performing DNOs in 2003/04 were the same in 2004/05, although in slightly different ranking order. Overall mean scores are higher in 2004/05 for the politeness and willingness to help attributes than were achieved in 2002/03 and 2003/04.

Under the 2005-2010 Electricity Distribution Price Control, changes have been made to the telephony incentive scheme which will be applicable from 1 April 2005. Customers will also be surveyed on 'satisfaction with the speed of telephone response'.

Performance on this has been measured on a trial basis since April 2004. Also, from 1 April 2005, DNOs will only be subject to a sliding-scale penalty if their annual mean performance deteriorates below 4.1 (the minimum average performance level at the time of revising the scheme). A DNO will be liable for the full penalty of 0.25 per cent of revenue if its annual mean score falls below 3.6. There is a small reward of 0.05 per cent of revenue for those DNOs with annual mean scores greater than 4.5. This revised and simplified structure ensures that DNOs are incentivised to maintain a high level of performance with regard to telephony and that exceptional performance is rewarded.

### 2004/05 Speed of Telephone Response Performance

DNOs are required to report to Ofgem each month their performance on the speed of telephone response by an agent, once a customer has decided to speak to an agent. This includes calls to the following lines operated by the DNO (or by its appointed agents or contractors):

- the "freephone power outage telephone number" (and its equivalents);
- the security and safety enquiry service telephone number (if different from the above); and
- to contractors and/or agents of the DNO who act as an overflow or crisis management facility during peak periods.

DNOs use two generic types of telephony systems:

- those that allow customers to hold for an agent following an initial fault message ("hold" telephony systems); and
- those that require customers to call the DNO back on an alternative number to speak to an agent following a fault message ("redial" telephony systems).

Table 2 below shows the average speed of response (in seconds) for the period from 1 April 2004 until 31 March 2005 for each DNO for each type of telephony system.

**Table 3.2 2004/05 Average Speed of Telephone Response by Telephony System**

Hold telephony system		Redial telephony system	
DNO	Response time (s)	DNO	Response time (s)
WPD S Wales	2.9	CN East	19.6
WPD S West	3.1	EDFE SPN	24.2
SSE Hydro	8.1	CE YEDL	26.1
SSE Southern	8.3	CN West	30.6
SP Distribution	17.5	EDFE EPN	49.2
SP Manweb	18.3	UU	51.6
CE NEDL	25.7	EDFE LPN	52.8
<b>Average</b>	<b>11.98</b>	<b>Average</b>	<b>35.96</b>

## Section 3c – DNO Summaries

This section contains a page on the performance of each of the 14 DNOs. It sets out their:

- 2001/02, 2002/03, 2003/04 and 2004/05 performance for the number and duration of interruptions;
- 2004/05 targets;
- 2002/03, 2003/04 and 2004/05 quality of telephone response performance<sup>6</sup>;
- 2002/03, 2003/04 and 2004/05 rewards/penalties<sup>7</sup>;
- 2002/03, 2003/04 and 2004/05 unplanned performance against benchmarks<sup>8</sup>;
- and
- fault rates per 100km of circuits.

Note: Comparisons of the number of faults in 2001/02 and subsequent years with levels in previous years should be treated with caution due to the impact of reporting changes.

In addition each DNO has provided commentary on its 2004/05 performance.

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<sup>6</sup> Telephone response performance is based on a DNO's upper 95% confidence score.

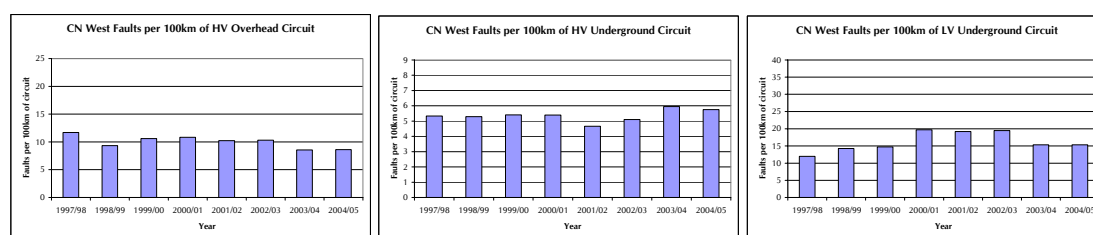
<sup>7</sup> There are no rewards for outperforming 2002/03 or 2003/04 CI and CML targets, only penalties if either or both are failed, in 2004/05 there are penalties and rewards. There are rewards or penalties for telephony performance in all years, although if a company reaches the maximum reward for interruptions and duration in 2004/05 then any telephony reward for that year is set to zero so as not to breach the overall cap on the scheme.

<sup>8</sup> The unplanned performance used here is based on disaggregated performance with a different treatment for exceptional events. Therefore, these figures may differ from performance reported elsewhere.

## CN West – Quality of service and network performance for 2004/05

	Year	Incentive Scheme		Disaggregation and benchmarking	
		CI	CML	Unplanned CI	Unplanned CML
Performance	2001/02	123.54	125.87		
	2002/03	103.34	137.94	96.3	92.1
	2003/04	116.01	107.09	110.2	93.1
	2004/05	108.70	89.61	107.1	77.4
Target/benchmark	2004/05	131.00	116.90	88.5	67.9

	Quality of telephone response performance		Rewards/Penalties (£ million)		
	DNO score	Industry mean	Telephony	CI	CML
2002/03	4.24	4.25	0	0	-0.04
2003/04	4.43	4.39	0.05	0	0
2004/05	4.34	4.35	0	1.50	3.50



### Commentary provided by CN West

Central Networks West continues to improve quality of supply for its customers.

During 2004/5 it outperformed CI and CML targets by 17% and 23% respectively. This also represents a significant improvement over the previous year, particularly CMLs, which were reduced by over 17 minutes. The adoption of enhanced operational response techniques was reflected in the improvement in average fault duration (CML/CI), which reduced from 92 minutes in 2003/04 to 82 minutes in 2004/05.

Severe weather affected the network on three occasions during 2004/05: gales in both June 2004 and January 2005; and lightning storms in August 2004. During all of these exceptional events, the company's emergency plans were activated to minimise disruption and ensure supplies were restored as quickly as possible.

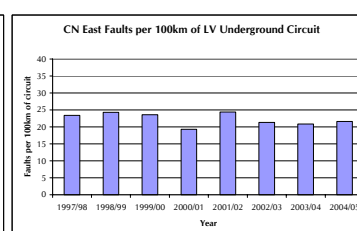
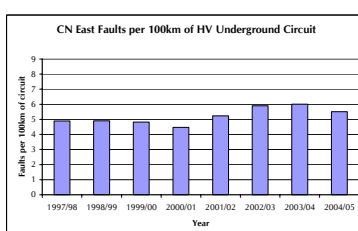
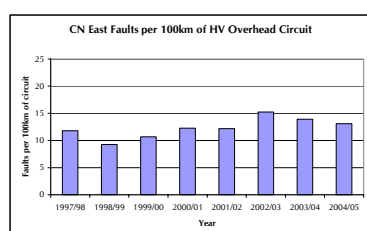
Throughout the year the company continued to invest in network replacement and refurbishment programmes to reduce fault rates, including the replacement of less reliable 'small cross-section' overhead lines and the targeted replacement of 'Consac' underground cable. This activity was supplemented by the installation of technology which reduces the numbers of customers affected by faults or restores them more quickly through remote control operations. Work programmes were prioritised to address worst performing circuits and therefore improve the quality of supply for customers experiencing most faults.

Central Networks is determined to improve customer service and will continue to invest to maintain the underlying reliability of the network and develop operational incident response to further reduce the number and duration of interruptions.

## CN East – Quality of service and network performance for 2004/05

	Year	Incentive Scheme		Disaggregation and benchmarking	
		CI	CML	Unplanned CI	Unplanned CML
Performance	2001/02	78.82	92.73		
	2002/03	75.97	83.09	73.4	75.3
	2003/04	85.32	89.50	81.5	80.1
	2004/05	73.80	73.67	69.2	65.8
Target/benchmark	2004/05	81.30	71.00	69.0	54.2

	Quality of telephone response performance		Rewards/Penalties (£ million)		
	DNO score	Industry mean	Telephony	CI	CML
2002/03	4.35	4.25	0.08	0	0
2003/04	4.49	4.39	0.14	-0.39	0
2004/05	4.39	4.35	0.07	-0.47	0



### Commentary provided by CN East

Central Networks East continues to improve quality of supply for its customers.

During 2004/5 there were significant reductions in both CIs, which were reduced by over 13%, and CMLs, which were improved by over 15 minutes from the previous year. The adoption of enhanced operational response techniques was reflected in the improvement in average fault duration (CML/CI), which reduced from 104 minutes in 2003/04 to 100 minutes in 2004/05.

The network was severely affected by gales during June 2004, however the company's emergency plans were activated to minimise disruption and ensure supplies were restored as quickly as possible.

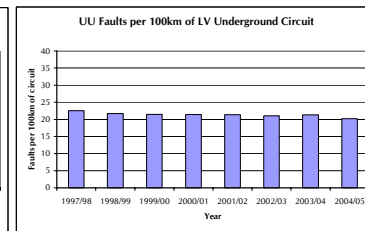
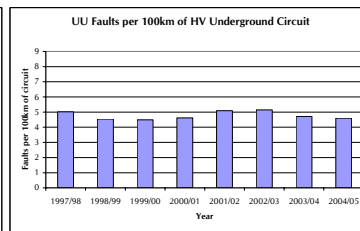
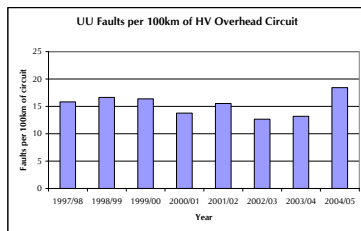
Throughout the year the company continued to invest in network replacement and refurbishment programmes to reduce fault rates. This activity was supplemented by the installation of technology which reduces the numbers of customers affected by faults or restores them more quickly through remote control operations. Work programmes were prioritised to address worst performing circuits and therefore improve the quality of supply for customers experiencing most faults.

Central Networks is determined to improve customer service and will continue to invest to maintain the underlying reliability of the network and develop operational incident response to further reduce the number and duration of interruptions.

## United Utilities – Quality of service and network performance for 2004/05

	Year	Incentive Scheme		Disaggregation and benchmarking	
		CI	CML	Unplanned CI	Unplanned CML
Performance	2001/02	56.45	64.41		
	2002/03	66.48	67.71	64.9	63.4
	2003/04	50.97	59.30	49.7	55.6
	2004/05	47.01	51.52	41.7	47.2
Target/benchmark	2004/05	54.80	68.20	56.2	48.3

	Quality of telephone response performance		Rewards/Penalties (£ million)		
	DNO score	Industry mean	Telephony	CI	CML
2002/03	4.26	4.25	0	-0.53	0
2003/04	4.42	4.39	0.03	0	0
2004/05	4.41	4.35	0	1.30	3.04



### Commentary provided by United Utilities

UUE has achieved significant improvements in the quality of supply delivered to customers in the Northwest over the last four years, improving CIs and CMLs by 17% and 20% respectively. In doing so, we outperformed Ofgem's targets for 2004/05.

Much of this improvement has been due to changes in operational response and the delivery of an investment programme targeted at reducing the impact of HV faults through the use of remote control and automation technology. As a consequence, we now outperform the CI benchmark by 20% and meet the CML benchmark for our network.

Underlying fault rates over this period have also remained stable in line with our investment strategy (it should be noted that the HV Overhead figures for 2004/05 include the effect of the Cumbria storm discussed below). Our future investment programme aims to maintain stability of fault rates despite an ageing asset base.

2004/05 was notable for the occurrence of a single major incident. On 8<sup>th</sup> January 2005, the northern part of our operating region was hit by severe storm force winds. This combined with extensive flooding in Carlisle, Keswick and Appleby to cause widespread disruption to the electricity distribution system in Cumbria and north Lancashire. At its peak, 178,000 customers were off supply, representing 8% of our customer base. Over 1,400 faults were experienced, representing 9% of the average expected annual total.

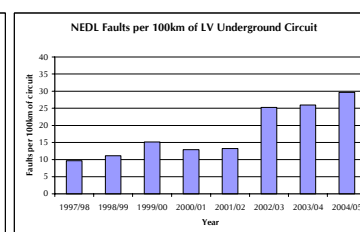
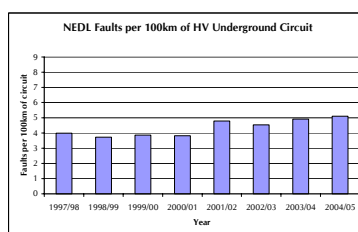
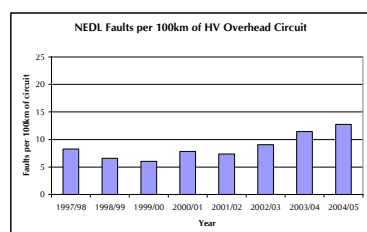
This event was of such a magnitude that service standard exemptions came into force which altered the arrangements for paying customer compensation and triggered a review process to exclude the effect of the incident from the figures noted above.

Our telephone response scores have consistently outperformed the industry mean by a small margin and we remain committed to improving this measure of service to our customers in the future.

## CE NEDL – Quality of service and network performance for 2004/05

	Year	Incentive Scheme		Disaggregation and benchmarking	
		CI	CML	Unplanned CI	Unplanned CML
Performance	2001/02	83.84	88.05		
	2002/03	79.04	72.89	73.9	62.2
	2003/04	67.50	71.19	62.3	60.2
	2004/05	71.98	79.46	71.5	71.1
Target/benchmark	2004/05	89.70	96.54	75.1	63.5

	Quality of telephone response performance		Rewards/Penalties (£ million)		
	DNO score	Industry mean	Telephony	CI	CML
2002/03	4.51	4.25	0.13	0	0
2003/04	4.55	4.39	0.14	0	0
2004/05	4.44	4.35	0.08	0.96	1.97



### Commentary provided by CE NEDL

#### Network Performance in 2004/05

The NEDL network continues to perform well and in 2004/05 beat both the CI and CML performance targets set by Ofgem by a wide margin. The small increase in both CI and CML relative to the previous years was caused by a return to more normal weather compared with the very benign conditions experienced in 2002/03 and 2003/04.

Severe storms also had an impact on the performance seen by customers with the distribution network being particularly disrupted by a lightning storm on 18 August 2004 and a violent wind storm on 8 January 2005. These two storms affected over 270,000 customers and caused over 30% of the overhead line faults seen in the whole year. Severe storms of these types seem to be becoming more regular occurrences and we welcome the current debate within the industry on what economically justifiable investments can be undertaken to improve network resilience.

#### Benchmark Performance

A disaggregation process has been introduced to take into account some of the inherited and inherent differences in DNOs' networks so that more meaningful comparisons can be made of the performances of DNOs. While not fully accounting for all the differences, the process is a step forward from where we were previously. The results of this process show that NEDL's network performs well against the interruption (CI) benchmark but not so well against the restoration (CML) benchmark.

#### Improvement Initiatives

As a result of the output of the disaggregation process we have moved the focus of our improvement initiatives towards restoration time. In particular we have already introduced a "Power in an hour" initiative which aims to restore as many customers as possible within an hour of the start of an interruption and we are using the latest mobile phone technology to locate and contact the nearest persons able to deal with faults. In addition to this we are continuing with our investments to expand the remote control of the distribution network. We expect that customers will start to see the benefits of these and other smaller initiatives in 2005/06.

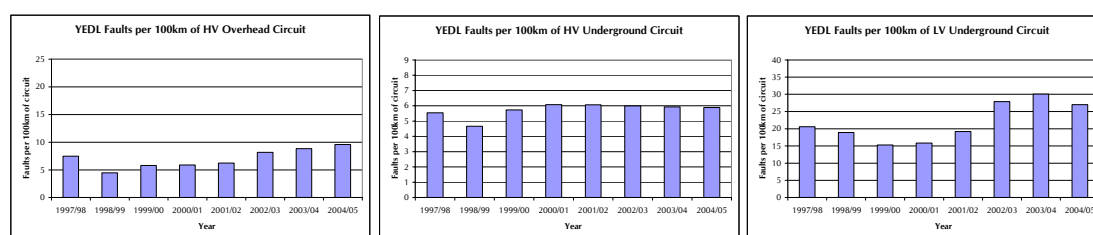
#### Telephone Response

NEDL has put a great deal of effort into improving both the speed and usefulness of the information provided to customers through its call centre. This is reflected in the figures on telephony performance. NEDL aims to maintain this performance going forward.

## CE YEDL – Quality of service and network performance for 2004/05

	Year	Incentive Scheme		Disaggregation and benchmarking	
		CI	CML	Unplanned CI	Unplanned CML
Performance	2001/02	78.08	54.60		
	2002/03	63.61	68.33	62.1	64.2
	2003/04	66.99	73.88	65.0	69.8
	2004/05	64.88	66.44	62.6	65.8
Target/benchmark	2004/05	84.82	66.69	60.9	50.8

	Quality of telephone response performance		Rewards/Penalties (£ million)		
	DNO score	Industry mean	Telephony	CI	CML
2002/03	4.40	4.25	0.10	0	0
2003/04	4.47	4.39	0.10	0	0
2004/05	4.39	4.35	0.06	1.34	1.68



### Commentary provided by CE YEDL

#### Network Performance in 2004/05

The YEDL network continues to perform well and in 2004/05 beat both the CI and CML performance targets set by Ofgem. The long term trend for both CI and CML continues to improve despite a return to more normal weather compared with the very benign conditions experienced in 2002/03 and 2003/04. A violent wind storm on 8 January 2005 had a major effect on the distribution network when the supplies to some 76,000 customers were interrupted. Although YEDL's network tends to be more resilient in severe weather than those of surrounding DNOs we still welcome the current debate in the industry on what economically justifiable investments can be undertaken to improve network resilience.

#### Benchmarked Performance

A disaggregation process has been introduced to take into account some of the inherited and inherent differences in DNOs' networks so that more meaningful comparisons can be made of the performances of DNOs. While not fully accounting for all the differences, the process is a step forward from where we were previously. The results of this process show that YEDL's network performs in line with the interruption (CI) benchmark but less favourably against the restoration (CML) benchmark.

#### Improvement Initiatives

As a result of the output of the disaggregation process we have moved the focus of our improvement initiatives towards restoration time. In particular we have already introduced a "Power in an hour" initiative which aims to restore as many customers as possible within an hour of the start of an interruption and we are using the latest mobile phone technology to locate and contact the nearest persons able to deal with faults. In addition to this we are continuing with our investments to expand the remote control of the distribution network. We expect that customers will start to see the benefits of these and other initiatives in 2005/06.

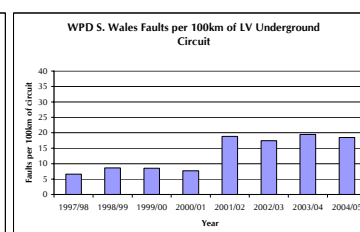
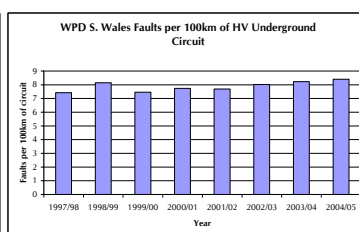
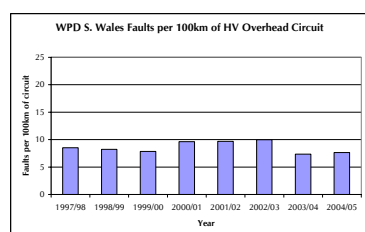
#### Telephone Response

YEDL has put a great deal of effort into improving both the speed and usefulness of the information provided to customers through its call centre. This is reflected in the figures on telephony performance. YEDL aims to maintain this performance going forward.

## WPD S Wales – Quality of service and network performance for 2004/05

	Year	Incentive Scheme		Disaggregation and benchmarking	
		CI	CML	Unplanned CI	Unplanned CML
Performance	2001/02	120.65	91.75		
	2002/03	105.30	87.65	86.7	51.3
	2003/04	101.06	76.42	88.4	50.8
	2004/05	102.41	56.55	91.2	47.6
Target/benchmark	2004/05	152.80	129.20	75.1	59.8

	Quality of telephone response performance		Rewards/Penalties (£ million)		
	DNO score	Industry mean	Telephony	CI	CML
2002/03	4.37	4.25	0.05	0	0
2003/04	4.52	4.39	0.09	0	0
2004/05	4.50	4.35	0	0.78	1.83



### Commentary provided by WPD S Wales

Western Power Distribution (WPD) South Wales delivers electricity supplies to customers in the south west of Wales including Cardiff and Swansea, the South Wales valleys, Carmarthenshire, Pembrokeshire and parts of Ceredigion in West Wales and Powys in Mid Wales.

### Network Performance

The South Wales network continues to demonstrate a strong underlying improvement trend and we have out-performed the service targets set by Ofgem for both customer interruptions (CIs) and customer minutes lost (CMLs) by a significant margin. Over the four years of the operation of the incentive scheme CIs have improved by 15% and CMLs by 38%. The low level of CMLs relative to the targets set by Ofgem is particularly gratifying as it shows the results of our focus on operational excellence.

Our IIP performance includes all interruptions to the WPD South Wales network including those caused by weather, faults and pre-arranged shutdowns for maintenance and construction. The 11kV network is the principal driver of customer minutes lost with faults on overhead lines being the major contributor and almost one third of these incidents are due to weather related causes.

There were no exceptional events reported to Ofgem during the year. There were two periods of gales in June and July 2005 but the effect on our customers was minimised when we demonstrated our ability to swiftly restore customers following severe weather.

### Quality of Telephone Response

WPD has continued to focus on both the speed of response and the quality of information a customer receives when they telephone our contact centre. For the 2004/05 year WPD South Wales was ranked second in the league table of all DNOs for the quality of its call centre performance and aims to maintain this performance going forward

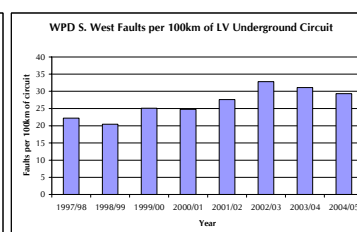
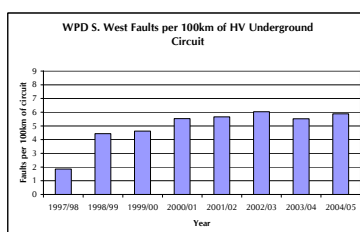
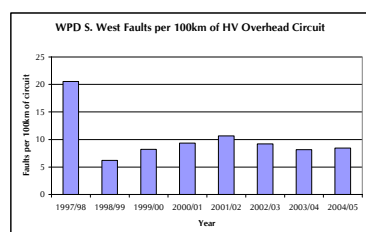
### Disaggregation and Benchmarking

The disaggregation and benchmarking processes have enabled us to identify and compare, on an equitable basis, parts of our network which perform better or worse than similar types of networks in other parts of the country. We continue to support its further development.

## WPD S West – Quality of service and network performance for 2004/05

	Year	Incentive Scheme		Disaggregation and benchmarking	
		CI	CML	Unplanned CI	Unplanned CML
Performance	2001/02	103.86	84.54		
	2002/03	85.47	64.57	78.1	51.3
	2003/04	74.22	56.59	67.7	43.8
	2004/05	74.23	50.12	71.4	42.8
Target/benchmark	2004/05	80.50	62.60	80.2	65.0

	Quality of telephone response performance		Rewards/Penalties (£ million)		
	DNO score	Industry mean	Telephony	CI	CML
2002/03	4.46	4.25	0.11	0	0
2003/04	4.54	4.39	0.14	0	0
2004/05	4.43	4.35	0	1.06	2.47



### Commentary provided by WPD S West

Western Power Distribution (WPD) South West delivers electricity supplies to customers in the south west of England incorporating the major towns and cities of Bristol, Taunton, Exeter and Plymouth. We serve all of the counties of Somerset, Devon and Cornwall and parts of Dorset and South Gloucestershire.

### Network Performance

The South West network continues to perform extremely well and we have out-performed the service targets set by Ofgem for both customer interruptions (CIs) and customer minutes lost (CMLs) by a significant margin.

There were two periods of exceptional weather during the year caused by gale force winds occurring during June and July 2004. In total over 100,000 customers were affected. For both events, over 70% of customers were restored within one hour with no customer being off more than 20 hours. These periods of exceptional weather are excluded from IIP performance and Ofgem's auditors have verified that we took all steps necessary to restore customers in an efficient and effective manner.

In August 2004, WPD played a major role following a natural disaster in Cornwall which devastated the village of Boscastle. An unusually high amount of rain resulted in flash floods which uprooted trees and washed away both vehicles and buildings. Our overhead network in the area was virtually destroyed and WPD played an integral part in the emergency re-connecting homes and restoring supplies to normal where possible.

### Quality of Telephone Response

WPD has continued to focus on both the speed of response and the quality of information a customer receives when they telephone our contact centre. For the 2004/05 year WPD South West was ranked fourth in the league table of all DNOs for the quality of its call centre performance and aims to, at minimum, maintain this performance going forward.

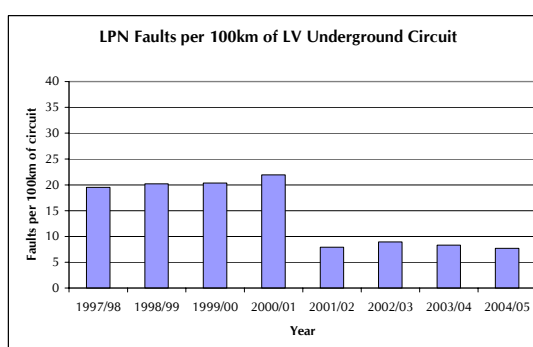
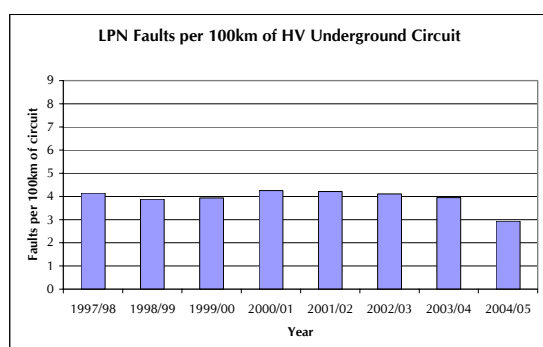
### Disaggregation and Benchmarking

The disaggregation and benchmarking processes have enabled us to identify and compare, on an equitable basis, parts of our network which perform better or worse than similar types of networks in other parts of the country. We continue to support its further development.

## EDF Energy (LPN) – Quality of service and network performance for 2004/05

	Year	Incentive Scheme		Disaggregation and benchmarking	
		CI	CML	Unplanned CI	Unplanned CML
Performance	2001/02	38.62	42.28		
	2002/03	36.44	43.17	35.2	40.2
	2003/04	35.25	39.49	34.1	36.3
	2004/05	33.41	37.86	32.1	35.2
Target/benchmark	2004/05	31.82	45.03	44.1	38.7

	Quality of telephone response performance		Rewards/Penalties (£ million)		
	DNO score	Industry mean	Telephony	CI	CML
2002/03	3.95	4.25	-0.23	0	0
2003/04	4.19	4.39	-0.28	0	0
2004/05	4.19	4.35	-0.29	0.83	0



### Commentary provided by EDF Energy (LPN)

Customers in EDF Energy Networks (LPN) plc's distribution area continue to enjoy the most secure electricity supplies in the country. In 2004/05 our performance was 33.41 interruptions per 100 connected customers (CI) and 37.86 customer minutes lost (CML). The company met Ofgem's 2004/05 Customer Minutes Lost target but was just below target for customer interruptions by 0.6 CI. However, LPN was permitted to participate in the reward element of the IIP scheme by Ofgem as it was one of the frontier performers with respect to CI performance.

In 2004/05 we continued with our highly successful HV automation programme. During the year 950 11kV feeders were automated resulting in a saving of 10 CI.

In 2004/05 we also instigated a project to gain a better understanding of our customers' experience of the emergency telephone service we provide. The project has been highly informative and its output is being used in a variety of ways to improve customer service.

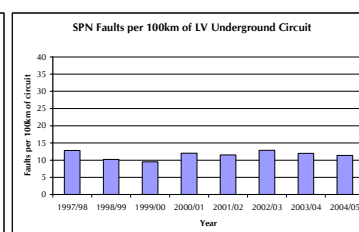
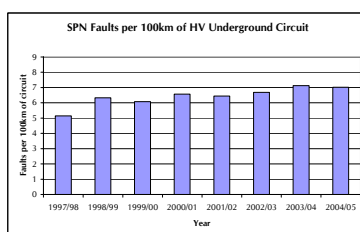
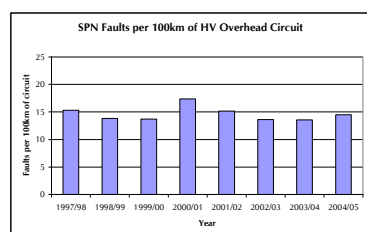
Over the 2005-10 period we will be:

- Investing in further improvements to the HV automation; and
- Removing poorly performing low voltage circuit breakers to improve reliability on the low voltage network

## EDF Energy (SPN) – Quality of service and network performance for 2004/05

	Year	Incentive Scheme		Disaggregation and benchmarking	
		CI	CML	Unplanned CI	Unplanned CML
Performance	2001/02	93.29	96.65		
	2002/03	90.42	81.25	86.5	73.6
	2003/04	97.77	90.04	94.5	83.4
	2004/05	82.57	84.02	77.4	74.6
Target/benchmark	2004/05	96.80	85.17	67.9	50.1

	Quality of telephone response performance		Rewards/Penalties (£ million)		
	DNO score	Industry mean	Telephony	CI	CML
2002/03	4.22	4.25	-0.02	0	0
2003/04	4.38	4.39	0	-0.06	0
2004/05	4.26	4.35	-0.10	0.96	1.50



### Commentary provided by EDF Energy (SPN)

We are pleased to report that customers in EDF Energy Networks (SPN) plc's distribution area continue to enjoy quality of supply improvements with performance for 2004/05 being 82.57 interruptions per 100 connected customers (CI) and 84.02 customer minutes lost (CML) – achieving both Ofgem's CML and CI targets.

In order to achieve our 2004/05 targets we invested in a range of initiatives to improve network performance. These included refurbishment of underperforming high and low voltage overhead line networks and the development of improved operational response techniques.

In 2004/05 we also instigated a project to gain a better understanding of our customers' experience of the emergency telephone service we provide. The project has been highly informative and its output is being used in a variety of ways to improve customer service.

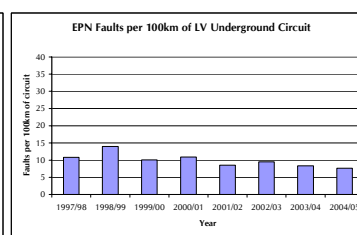
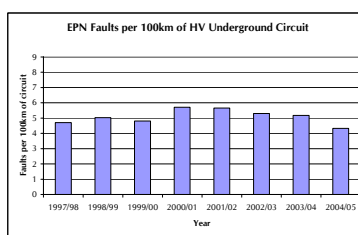
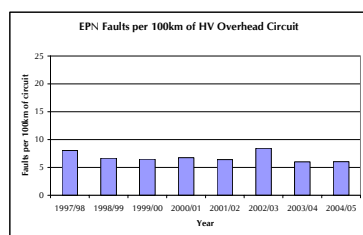
SPN has been set challenging quality of supply targets for 2005-10, particularly with respect to CMLs. In order to achieve these targets we will be implementing a number of additional performance improvement initiatives, including:

- Automation of the HV network supported by the introduction of a new network control system
- Introduction of remotely monitored fault passage indicators; and
- Improved earth fault protection

## EDF Energy (EPN) – Quality of service and network performance for 2004/05

	Year	Incentive Scheme		Disaggregation and benchmarking	
		CI	CML	Unplanned CI	Unplanned CML
Performance	2001/02	102.02	80.21		
	2002/03	89.40	101.62	83.7	71.7
	2003/04	90.68	76.51	88.5	70.3
	2004/05	70.75	65.49	67.5	60.2
Target/benchmark	2004/05	92.02	82.31	75.6	58.7

	Quality of telephone response performance		Rewards/Penalties (£ million)		
	DNO score	Industry mean	Telephony	CI	CML
2002/03	4.10	4.25	-0.15	0	0
2003/04	4.27	4.39	-0.22	0	0
2004/05	4.36	4.35	0	1.80	4.20



### Commentary provided by EDF Energy (EPN)

We are pleased to report that customers in EDF Energy Networks (EPN) plc's distribution area continue to enjoy quality of supply improvements with performance for 2004/05 being 70.75 interruptions per 100 connected customers (CI) and 65.49 customer minutes lost (CML) – achieving both Ofgem's CML and CI targets for 2004/05.

In 2004/05 we continued with the implementation of our highly successful high voltage (HV) automation programme. During the year 1,700 11kV feeders were automated resulting in a saving of 10 CI. The installation of HV automation has also improved restoration performance during severe weather events. During the two major storms in 2004/05, 90% of customers were restored within three hours. This compares with a 60% restoration rate after the October 2002 storm.

In 2004/05 we also instigated a project to gain a better understanding of our customers' experience of the emergency telephone service we provide. The project has been highly informative and its output is being used in a variety of ways to improve customer service.

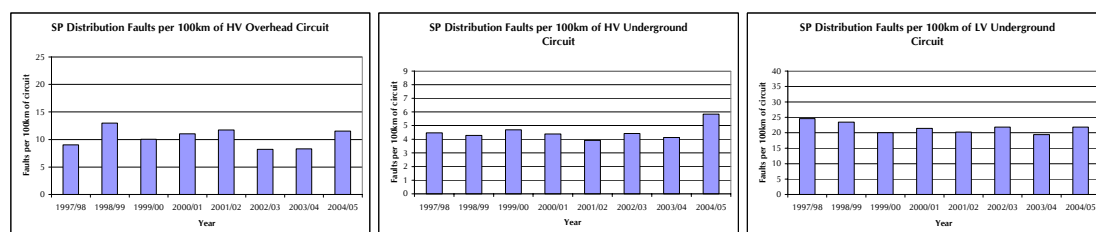
In order to achieve the quality of supply targets set for 2005-10 we will be investing in a number of performance improvement initiatives, including:

- Replacement of drop out expulsion fuses with auto-sectionalisers on the HV overhead network
- Introduction of remotely monitored fault passage indicators; and
- Further automation on the HV network

## SP Distribution – Quality of service and network performance for 2004/05

	Year	Incentive Scheme		Disaggregation and benchmarking	
		CI	CML	Unplanned CI	Unplanned CML
Performance	2001/02	59.93	63.75		
	2002/03	64.99	74.13	61.7	66.3
	2003/04	61.59	76.40	58.9	69.9
	2004/05	64.91	74.89	58.6	68.7
Target/benchmark	2004/05	66.40	87.70	60.9	55.1

	Quality of telephone response performance		Rewards/Penalties (£ million)		
	DNO score	Industry mean	Telephony	CI	CML
2002/03	4.31	4.25	0.05	0	0
2003/04	4.44	4.39	0.07	0	0
2004/05	4.34	4.35	0	0.24	2.79



### Commentary provided by SP Distribution

SP Distribution Ltd, part of the ScottishPower Group, owns the distribution network which supplies electricity to over 1,988,000 customers in Southern Scotland. The area comprises contrasting environments from the heavily populated areas of the Clyde and Forth valley to the exposed, sparsely populated areas of the Borders and Dumfries and Galloway.

### Network Performance

We are pleased to report that in 2004/05 our network performance was better than the targets we had agreed with Ofgem for both the number and duration of interruptions to supply. We experienced one exceptional event during the year when severe gales swept across Southern Scotland between 8-13 January 2005 disrupting supplies to over 39,000 customers. Timely activation of our emergency plans ensured that our repair teams restored supplies to over 93% of our customers within the first 12 hours of the event.

### Targeted investment

SP Distribution Ltd remains committed to providing high levels of customer service, and throughout 2004/05 we continued to look for innovative ways of improving the quality of service to our customers. During the year we completed targeted programmes of work aimed at preventing faults from happening on our overhead and underground networks, and also further work aimed at minimising the disruption caused by faults when they occur. Customer feedback plays a vital part in our investment decisions, and during the year we improved the way in which this vital information is used to target our work programmes.

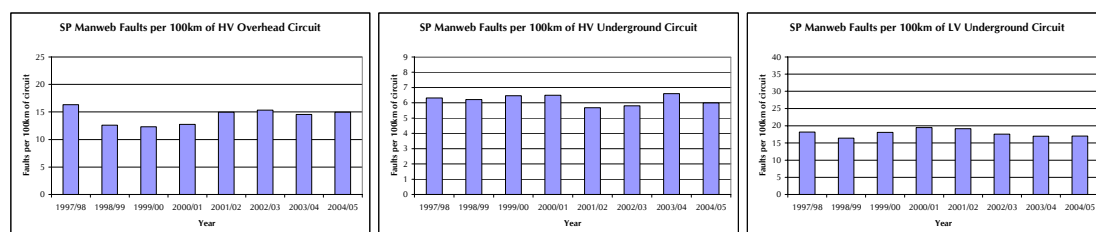
### Disaggregation and benchmarking

Historically, SP Distribution Ltd has targeted investment at ensuring as few customers as possible are interrupted during network faults. This is highlighted in the disaggregation and benchmarking results above, where, for the last two years, SP Distribution Ltd performed better than the benchmark for the number of customers interrupted during faults. The regulatory emphasis is now on reducing the duration of customer interruptions after faults occur, and SP Distribution Ltd is working hard to improve its performance in this area. The gap between our current performance and the benchmark reflects the level of performance improvements we aim to achieve over the next 5-years.

## SP Manweb – Quality of service and network performance for 2004/05

	Year	Incentive Scheme		Disaggregation and benchmarking	
		CI	CML	Unplanned CI	Unplanned CML
Performance	2001/02	47.06	52.51		
	2002/03	42.55	56.39	39.4	45.8
	2003/04	50.97	64.31	47.5	57.6
	2004/05	48.07	65.21	49.0	65.7
Target/benchmark	2004/05	47.20	65.80	57.0	51.9

	Quality of telephone response performance		Rewards/Penalties (£ million)		
	DNO score	Industry mean	Telephony	CI	CML
2002/03	4.31	4.25	0.03	0	0
2003/04	4.46	4.39	0.06	-0.44	0
2004/05	4.30	4.35	-0.04	-0.10	0



### Commentary provided by SP Manweb

SP Manweb plc, part of the ScottishPower Group, owns the distribution network which supplies electricity to over 1,484,000 customers in the Merseyside, north and mid Wales and parts of Cheshire, Shropshire and Staffordshire. The area comprises contrasting environments from the heavily populated area of Merseyside to the exposed, sparsely populated areas of Wales.

### Network Performance

Between 7-9 January 2005, severe gales swept across our network area and caused widespread disruption to the supplies of over 37,500 of our customers. Two other major incidents, at our Rhydlydan (Aberystwyth) and Wavertree (Liverpool) substations, resulted in the loss of supplies to over 45,000 customers. In all cases, the timely activation of our emergency plans ensured that our repair teams quickly restored supplies to minimise the disruption. Without the impact of these events we would have achieved both of our regulatory targets, however we are still pleased to report that despite these events this year's network performance was better than our regulatory target for the duration of interruptions to supply.

### Targeted investment

SP Manweb plc remains committed to providing high levels of customer service, and throughout 2004/05 we continued to look for innovative ways of improving the quality of service to our customers. During the year we completed targeted programmes of work aimed at preventing faults from happening on our overhead and underground networks, and also further work aimed at minimising the disruption caused by faults when they occur. Customer feedback plays a vital part in our investment decisions, and during the year we improved the way in which this vital information is used to target our work programmes.

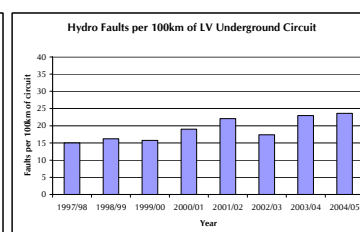
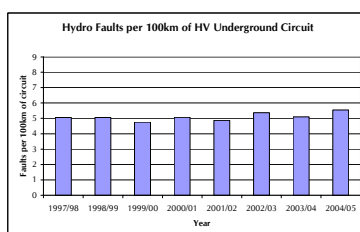
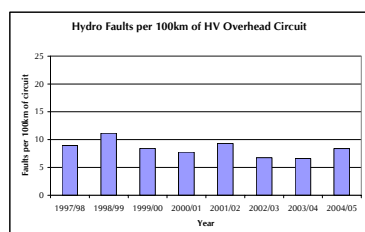
### Disaggregation and benchmarking

Historically, SP Manweb plc has targeted investment at ensuring as few customers as possible are interrupted during network faults. This is highlighted in the disaggregation and benchmarking results above, where it can be seen that SP Manweb's performance continues to be far better than the benchmark for the number of customers interrupted during faults. The regulatory emphasis is now on reducing the duration of customer interruptions after faults occur, and SP Manweb plc is working hard to improve its performance in this area. The gap between our current performance and the benchmark reflects the level of performance improvements we aim to achieve over the next 5-years.

## SSE Hydro – Quality of service and network performance for 2004/05

	Year	Incentive Scheme		Disaggregation and benchmarking	
		CI	CML	Unplanned CI	Unplanned CML
Performance	2001/02	119.87	142.10		
	2002/03	94.56	87.22	83.3	71.3
	2003/04	89.07	84.14	77.1	66.0
	2004/05	85.91	81.95	74.2	73.3
Target/benchmark	2004/05	135.10	195.80	99.3	95.4

	Quality of telephone response performance		Rewards/Penalties (£ million)		
	DNO score	Industry mean	Telephony	CI	CML
2002/03	4.57	4.25	0.16	0	0
2003/04	4.62	4.39	0.20	0	0
2004/05	4.59	4.35	0	0.96	2.23



### Commentary provided by SSE Hydro

Scottish Hydro-Electric Power Distribution [SHEPD] delivers electricity supplies to customers in the north of Scotland, including the Western and Northern Isles, a territory which covers 25% of the UK land mass.

#### Network Performance

The system performance for SHEPD in 2004/5 was yet again the best ever with reductions in both the number of interruptions and the duration of those interruptions. This performance has been achieved through two main factors: effective operating procedures, and system investment.

The weather is memorable because of the hurricane force winds which struck the territory on 11 January 2005. The maximum recorded wind gust was 133mph, and the measuring equipment at some weather stations were broken in the storm. Ofgem's auditors report identified that SHEPD had taken all reasonably practicable steps to safeguard our network and we did all we could in response to the event.

#### Disaggregation and Benchmarking

The disaggregation and benchmarking processes have enabled us to identify and compare parts of our network which perform better or worse than similar networks across the nation. Overall, our network and our supply restoration teams are performing very well.

#### Investment

We invested £42M during 2004/5 on our network, bringing the total over this price review period to £232M. In the year we refurbished 2,220 km of our overhead line network and continued to install system automation. These actions improve general network resilience, reduce the number of customers affected by faults, and also reduce the duration of supply loss.

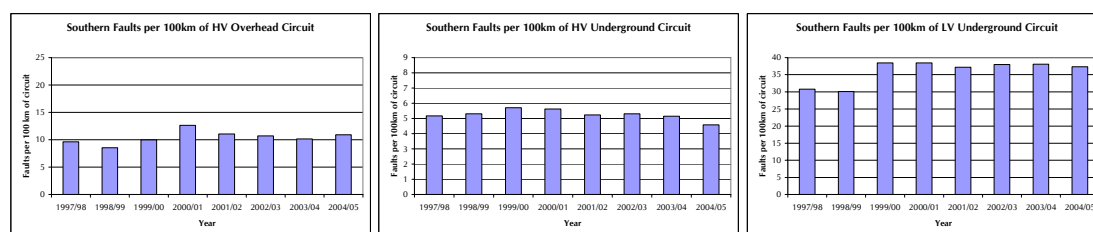
#### Quality of Telephone Response

We are proud that 'Hydro' has maintained first place for another year in the quality of telephone response surveys. The overall standard across the nation has increased and considerable effort has been made by our teams to continue to deliver the highest level of customer service.

## SSE Southern – Quality of service and network performance for 2004/05

	Year	Incentive Scheme		Disaggregation and benchmarking	
		CI	CML	Unplanned CI	Unplanned CML
Performance	2001/02	99.75	89.70		
	2002/03	93.23	83.00	89.7	74.5
	2003/04	88.01	81.05	84.1	71.4
	2004/05	89.74	77.54	87.1	67.4
Target/benchmark	2004/05	93.56	100.58	75.0	62.4

	Quality of telephone response performance		Rewards/Penalties (£ million)		
	DNO score	Industry mean	Telephony	CI	CML
2002/03	4.43	4.25	0.17	0	0
2003/04	4.51	4.39	0.20	0	0
2004/05	4.43	4.35	0.15	1.26	4.41



### Commentary provided by SSE Southern

Southern Electric Power Distribution [SEPD] delivers electricity supplies to customers in central southern England, ranging from remote rural communities to dense conurbations in West London.

#### Network Performance

The system performance for SEPD in 2004/5 showed a reduction in the duration of interruptions over the previous year. This performance has been achieved through effective operating procedures and system investment.

Two inherited network issues continue to challenge SEPD's performance:

- the topography of our high voltage network interrupts more customers per fault than the national average; and
- the poor performance of Consac cable which makes up around 19% of our low voltage network.

The high voltage issue has been being tackled mainly using automation technology, however the cost to replace the consac network remains prohibitive.

#### Disaggregation and Benchmarking

The disaggregation and benchmarking processes have enabled us to identify and compare parts of our network that perform better or worse than similar networks across the nation. However, the benchmarks do not take account of all the inherited and inherent network factors of SEPD. Overall, our network and our supply restoration teams are performing very well.

#### Investment

During 2004/5 we continued to significantly invest in our network, spending £111M on improvements to our overhead lines, underground cables and plant. During the current price review we have now invested £525M which continues to show benefit in reducing customer minutes lost and improving our overall network resilience. We refurbished another 2,250km of overhead lines during the year and continued to increase our use of covered conductor on both HV and LV Circuits (BLX and ABC). A high proportion of our network now has the benefit of remotely controlled circuit breakers and switches, which enable blocks of customers to be restored more quickly, although these programmes now suffer from diminishing returns.

#### Quality of Telephone Response

We are proud that 'Southern' has maintained its high score in quality of telephone response surveys. The overall standard across the nation has increased and considerable effort has been made by our teams to continue to deliver the highest level of customer service.

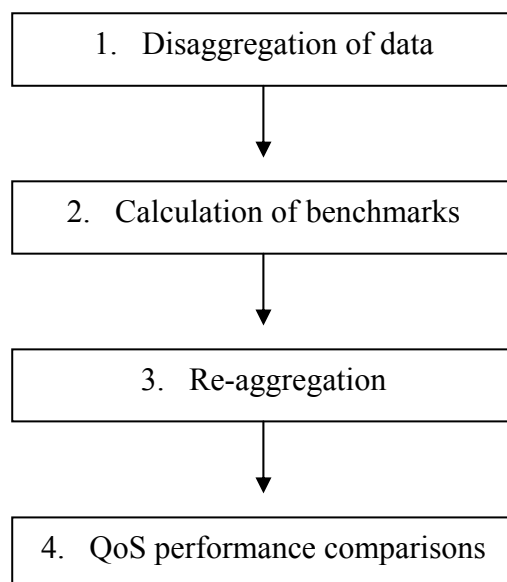
## **Section 4 - Ongoing Work**

Ofgem is carrying out further work with the DNOs to improve understanding of their quality of service performance, including further work on performance comparisons, network resilience and telephony performance following storms, with a view to implementing a storms telephony incentive in 2007. Ofgem is also developing a discretionary reward scheme to encourage best practice in areas that cannot easily be measured or incentivised through more mechanistic incentives. This will cover the areas such as priority customer care initiatives, initiatives relating to corporate social responsibility (e.g. activities with schools such as promoting safety awareness) and wider communication strategies implemented by DNOs.

## APPENDIX 1 - Comparing and Benchmarking Quality of Supply Performance

This section describes the disaggregation process and the methodology Ofgem has adopted to calculate average benchmark performance levels for each DNO, which are presented in this paper. The disaggregation process is a four-stage process, this is illustrated in Figure A.1.

**Figure A.1 Four-stage disaggregation process**



The first step in disaggregation is to consider the four voltage levels within a distribution network (Low Voltage - LV, High Voltage – HV, Extra High Voltage - EHV and 132 kV<sup>9</sup>) separately. The disaggregation process and benchmark calculations are specific to each voltage level and are summarised below.

### Low voltage

As DNOs have limited ability to influence the number of power cuts at LV, the CI benchmark is based on DNO own performance for the year 2004/05. However, as they have more influence over the restoration process, the benchmarks for CML were calculated as follows:

- Derive the national average of CML/CI
- Derive DNO own CML index by multiplying national average CML/CI by DNO own CI
- If DNO actual CML is less than then their CML index, then their CML index is taken as the benchmark.
- If DNO actual performance is greater than CML index then the benchmark value for that DNO is taken as 75% of their CML index plus 25% of DNO own actual performance.

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<sup>9</sup> A LV system is a system that operates at a nominal voltage level of 1kV or less. A HV system refers to voltage levels above 1kV up to and including 22 kV and EHV refers to voltages greater than 22 kV but below 132 kV. The 132 kV networks are only part of the distribution networks in England and Wales. In Scotland they form part of the transmission network and therefore have not been considered in this analysis.

## High voltage

The HV network has been disaggregated into a number of circuit groups (bands) with physically similar characteristics. The bands are defined so that the differences in key characteristics such as the percentage of overhead line, length and the number of connected customers are minimised and that no group is dominated by a single DNO.

For each circuit group the following key physical and performance statistics have been calculated:

- average circuit length;
- average customer density (number of customers per circuit);
- average faults per km;
- average number of customers interrupted per fault; and
- average and upper quartile CML per CI.

Ofgem has calculated benchmark levels of performance for each circuit group for 2004/05. The CI benchmark is based on the DNO's own value for average circuit length and customer density, but the national average for fault rates and customers interrupted per fault relative to customer density. The benchmarks for each band have then been aggregated for 2004/05.

The CML benchmarks are based on the same approach but then applying the average upper quartile level of performance for restoration times (CML per CI) for 2004/05.

## Extra High Voltage and 132 kV

For EHV and 132 kV circuits there are relatively few incidents each year, which tends to result in volatile performance. In order to address the volatility, the CI and CML benchmarks are based on each DNO's average performance over the last ten years.

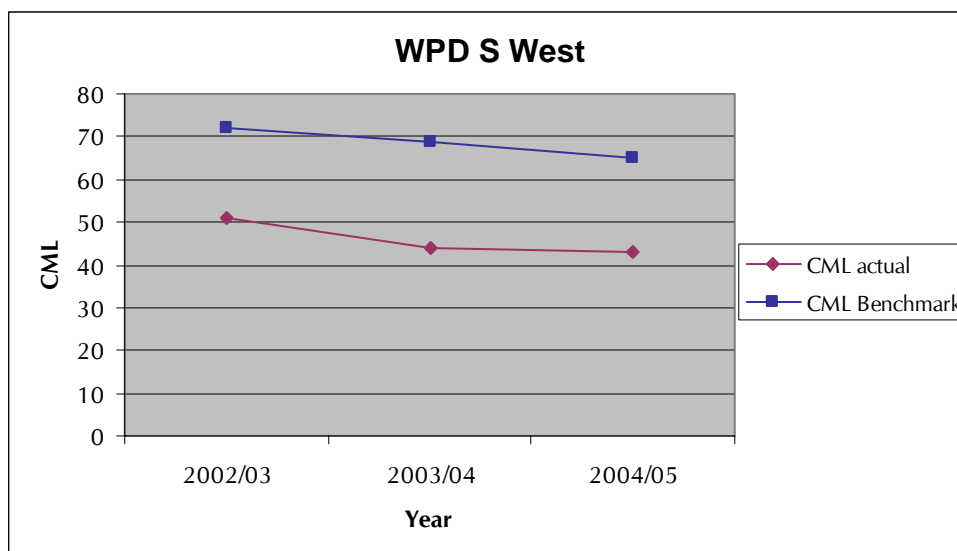
## Aggregation and Comparison

The benchmarks at each voltage level have then been summed to give an aggregate benchmark for each DNO. Actual DNO performance<sup>10</sup> can then be compared with their average benchmark as set out in section 3c. As the benchmarks are calculated based on similar groups of circuits and take into account DNOs' own customer numbers per circuit and average circuit length, this method provides a more robust basis for comparing quality of supply performance.

However it should be noted that the benchmarks for CI and CML's (as calculated above) have become tighter over the years even if the DNO has performed better than the benchmark. For example, the following graph shows the CML figures for WPD South West over a period of 3 years where the company has been performing better than the benchmark and the benchmark figure also has become tighter in the next period.

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<sup>10</sup> The actual 2004/05 unplanned interruptions data used for the performance comparison analysis comprises HV disaggregation data (excluding exceptional events and unattributable incidents) plus unplanned incident data for all other voltages. There are therefore some differences between these figures and the figures used for the purposes of the quality of service incentive scheme.



However, care should be taken in interpreting the results as there are a number of potential factors that may explain the remaining performance gaps. These include factors such as:

- management performance;
- local environmental differences (e.g. tree density);
- other differences in network design; and,
- historic network investment (e.g. some DNOs invested in large volumes of LV Consac cable, which has performed significantly worse than was generally expected).

#### **Further work**

Ofgem intends to carry out further disaggregation and benchmarking work on an annual basis with the DNOs to improve understanding of quality of service performance and as part of Quality of Service Working Group is carrying out work to understand in more detail the performance of LV, EHV and 132kV networks.

## APPENDIX 2 - Guaranteed Standards of Performance

Standards of performance are an important element in the regulatory framework and serve to protect the interests of customers in key service areas.

As of 1<sup>st</sup> April 2005 there is only one type of standard in electricity distribution:

- Guaranteed Standards (GS) set service levels that must be met in each individual case and are established by a series of Statutory Instruments. If the licence holder fails to provide the level of service required, it must make a payment to the customer affected subject to certain exemptions.

Guaranteed Standards<sup>11</sup> (GS) cover 12 service areas, which are shown in Table A2.1. These standards have been set to guarantee a level of service that it is reasonable to expect companies to deliver in all cases. A customer who does not receive the required level of service is entitled to a compensation payment, subject to certain exemptions. It is for the DNO to consider the application of the standards of performance regulations and decide whether an exemption applies. However, customers may challenge the application of the exemption and refer the issue to energywatch and then if appropriate, Ofgem. In such cases Ofgem decides whether or not the DNO has acted consistently with its legal obligations and whether the customer is due compensation.

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<sup>11</sup> GS6, GS7 and GS10 relate solely to electricity supply businesses and are therefore not shown in this report.

<b>Table A2.1 Guaranteed Standards of Performance</b>			
Reporting code	Service	Performance Level	Penalty Payment
GS1	Respond to failure of distributors fuse (Regulation 10)	All DNOs to respond within 3 hours on a working day (at least) 7 am to 7 pm, and within 4 hours on other days between (at least) 9 am to 5 pm , otherwise a payment must be made	£20 for domestic and non-domestic customers
GS2*	Supply restoration: normal conditions (Regulation 5)	Supply must be restored within 18 hours, otherwise a payment must be made	£50 for domestic customers and £100 for non-domestic customers, plus £25 for each further 12 hours
GS2A*	Supply restoration: multiple interruptions (Regulation 9)	If four or more interruptions each lasting 3 or more hours occur in any single year (1 April – 31 March) , a payment must be made	£50 for domestic and non-domestic customers
GS3	Estimate of charges for connection (Regulation 11)	5 working days for simple work and 15 working days for significant work, otherwise a payment must be made	£40 for domestic and non-domestic customers
GS4*	Notice of planned interruption to supply (Regulation 12)	Customers must be given at least 2 days notice, otherwise a payment must be made	£20 for domestic and non-domestic customers
GS5	Investigation of voltage complaints (Regulation 13)	Visit customer’s premises within 7 working days or dispatch an explanation of the probable reason for the complaint within 5 working days, otherwise a payment must be made	£20 for domestic and non-domestic customers
GS8	Making and keeping appointments (Regulation 17)	Companies must offer and keep a timed appointment, or offer and keep a timed appointment where requested by the customer, otherwise a payment must be made	£20 for domestic and non-domestic customers
GS9	Payments owed under the standards (Regulation 19)	Payment to be made within 10 working days, otherwise a payment must be made	£20 for domestic and non-domestic customers
GS11A*	Supply restoration: Category 1 severe weather conditions (Regulation 6)	Supplies must be restored within 24 hours (see table 2.2 below), otherwise a payment must be made	£25 for domestic and non domestic customers, plus £25 for each further 12 hours up to a cap of £200 per customer
GS11B*	Supply restoration: Category 2 severe weather conditions (Regulation 6)	Supplies must be restored within 48 hours, otherwise a payment must be made	£25 for domestic and non domestic customers, plus £25 for each further 12 hours up to a cap of £200 per customer
GS11C*	Supply restoration: Category 3 severe weather conditions (Regulation 6)	Supplies must be restored within the period calculated using the following formula: $48 \times \left( \frac{\text{total number of customers interrupted}}{\text{category 3 threshold number of customers}} \right)^2$	£25 for domestic and non domestic customers, plus £25 for each further 12 hours up to a cap of £200 per customer
GS12*	Supply restoration: Highlands and Islands (Regulation 7)	Supply must be restored within 18 hours, otherwise a payment must be made	£50 for domestic customers and £100 for non-domestic customers, plus £25 for each further 12 hours

\* Customers need to claim under these standards, for the remaining standards payments are automatic

**Table A2.2 Severe Weather Banding**

Category of severe weather	Definition	Trigger period for compensation
Category 1 (medium events)	Lightning events ( $\geq 8$ times daily mean faults at higher voltage and less than 35% of exposed customers <sup>12</sup> affected)	24 hours
	Non-lightning events ( $\geq 8$ and $< 13$ times daily mean faults at higher voltage and less than 35% of exposed customers affected)	
Category 2 (large events)	Non-lightning events ( $\geq 13$ times daily mean faults at higher voltage and less than 35% of exposed customers affected)	48 hours
Category 3 (very large events)	Any severe weather events where $\geq 35\%$ of exposed customers are affected	$48 \text{ hours} \times \left( \frac{\text{Number of customers affected}}{35\% \text{ of exposed customers}} \right)^2$

**Table A2.3 Thresholds for Normal and Severe Weather Conditions**

	Category 1 - Medium severe weather events	Category 2 - Large severe weather events	Category 3 - Very large severe weather events
<b>DNO</b>	<b>8*mean HV and above</b>	<b>13*mean HV and above</b>	<b>35% of exposed customers</b>
CN West	63	103	348,000
CN East	58	95	410,000
UU	47	77	262,000
CE NEDL	36	59	218,000
CE YEDL	35	57	347,000
WPD S Wales	46	75	208,000
WPD S West	54	88	270,000
EDFE LPN	10	17	331,000
EDFE SPN	46	74	284,000
EDFE EPN	72	117	484,000
SP Distribution	79	129	226,000
SP Manweb	61	99	188,000
SSE Hydro	61	99	119,000
SSE Southern	62	101	417,000

<sup>12</sup> Exposed customers are defined as customers on mixed or overhead circuits (i.e. those customers that may be affected by a severe weather event.) In the case of EDF (LPN) a different approach has been used to calculate the threshold as its circuits are almost entirely underground. Ofgem has calculated 35 per cent of exposed customers as a percentage of total customers for all other DNOs and then applied this figure to EDF (LPN)'s total number of customers to arrive at the threshold.

### APPENDIX 3 - TABLES

**Table 3.1**

**Reported & Revised 2004/05 Customer Interruptions and Customer Minutes Lost**

DNO	Reported 2004/05 CIs	Overall accuracy adjustment	Revised 2004/05 CIs		Reported 2004/05 CMLs	Overall accuracy adjustment	Revised 2004/05 CMLs
CN West	121.63	0.00%	121.63		101.22	0.00%	101.22
CN East	75.28	0.00%	75.28		75.42	0.00%	75.42
UU	55.13	0.00%	55.13		227.09	0.00%	227.09
CE NEDL	93.92	0.00%	93.92		133.13	0.00%	133.13
CE YEDL	68.35	0.00%	68.35		77.76	0.00%	77.76
WPD S Wales	102.41	0.00%	102.41		56.56	0.00%	56.56
WPD S West	81.51	0.00%	81.51		57.54	0.00%	57.54
EDFE LPN	35.30	0.00%	35.30		39.04	0.00%	39.04
EDFE SPN	86.68	0.00%	86.68		93.56	0.00%	93.56
EDFE EPN	75.35	0.00%	75.35		71.39	0.00%	71.39
SP Distribution	66.88	0.00%	66.88		80.06	0.00%	80.06
SP Manweb	51.59	0.00%	51.59		74.88	0.00%	74.88
SSE Hydro	113.65	0.00%	113.65		223.06	0.00%	223.06
SSE Southern	97.62	0.00%	97.62		83.87	0.00%	83.87
Great Britain			78.37				94.29

Note: The figures in this table do not exclude exceptional events, the adjusted incentive scheme figures are shown in Table 3.5

**Table 3.2**

Short interruptions in 2004/05

<b>Short interruptions by "causes" (including LV)</b>	GB Average	CN West	CN East	UU	CE NEDL	CE YEDL	WPD S Wales	WPD S West	EDFE LPN	EDFE SPN	EDFE EPN	SP Distribution	SP Manweb	SSE Hydro	SSE Southern
Automatic operation and restored by automatic switching	26,152,153	3,362,419	1,655,219	1,069,130	721,705	1,403,101	2,634,136	2,670,137	159,282	1,785,640	3,452,600	633,890	981,380	2,254,523	3,368,991
Automatic operation and restored by manual or remote switching	1,512,588	948,929	58,856	-	97,861	74,296	37,341	96,012	-	86,187	-	8,858	18,489	22,279	63,480
Manual or remote operation	1,395,651	75,506	401,066	56,448	134,359	16,339	91,744	115,305	80,864	28,809	105,987	118,250	109,133	10,216	51,625
Operation of switchgear on other connected systems	178,616	-	-	-	-	-	-	-	-	-	-	-	-	178,616	-
<b>Total</b>	<b>29,239,008</b>	<b>4,386,854</b>	<b>2,115,141</b>	<b>1,125,578</b>	<b>953,925</b>	<b>1,493,736</b>	<b>2,763,221</b>	<b>2,881,454</b>	<b>240,146</b>	<b>1,900,636</b>	<b>3,558,587</b>	<b>760,998</b>	<b>1,109,002</b>	<b>2,465,634</b>	<b>3,484,096</b>
<b>Short interruptions per 100 connected customers</b>															
Automatic operation and restored by automatic switching	92	142	66	47	47	64	243	180	7	82	100	32	66	326	121
Automatic operation and restored by manual or remote switching	5	40	2	0	6	3	3	6	0	4	0	0	1	3	2
Manual or remote operation	5	3	16	2	9	1	8	8	4	1	3	6	7	1	2
Operation of switchgear on other connected systems	1	0	0	0	0	0	0	0	0	0	0	0	0	26	0
<b>Total</b>	<b>103</b>	<b>186</b>	<b>85</b>	<b>49</b>	<b>62</b>	<b>68</b>	<b>255</b>	<b>194</b>	<b>11</b>	<b>87</b>	<b>103</b>	<b>38</b>	<b>75</b>	<b>356</b>	<b>125</b>

**Table 3.3**

Revised 2004/05 Customer Interruptions &amp; Customer Minutes Lost: Split by Source

Customer numbers 2004/05	CN West	CN East	UU	CE NEDL	CE YEDL	WPD S Wales	WPD S West	EDFE LPN	EDFE SPN	EDFE EPN	SP Distribution	SP Manweb	SSE Hydro	SSE Southern		GB Total
	2364562	2502085	2297496	1528624	2192210	1083220	1485141	2247653	2187084	3464100	1988756	1484250	692495	2785018		28302694
<b>Number</b>																
Unplanned interruptions (000's)	2,710	1,803	1,241	1,297	1,458	1,036	1,144	775	1,832	2,503	1,296	711	681	2,618		21,105
Pre-arranged interruptions (000's)	114	81	25	79	41	73	67	18	64	96	34	54	69	101		915
Incidents on National Grid Company or Transmission Companies (000's)	51	0	0	60	0	0	0	0	0	0	0	0	33	0		145
Incidents on embedded generators (000's)	0	0	0	0	0	0	0	0	0	0	0	0	3	0		4
Incidents on any other connected systems (000's)	1	0	0	0	0	0	0	0	0	12	0	0	0	0		13
<b>Total (000's)</b>	<b>2,876</b>	<b>1,884</b>	<b>1,267</b>	<b>1,436</b>	<b>1,498</b>	<b>1,109</b>	<b>1,211</b>	<b>793</b>	<b>1,896</b>	<b>2,610</b>	<b>1,330</b>	<b>766</b>	<b>787</b>	<b>2,719</b>		<b>22,181</b>
<b>CIs</b>	<b>121.63</b>	<b>75.28</b>	<b>55.13</b>	<b>93.92</b>	<b>68.35</b>	<b>102.41</b>	<b>81.51</b>	<b>35.30</b>	<b>86.68</b>	<b>75.35</b>	<b>66.88</b>	<b>51.59</b>	<b>113.65</b>	<b>97.62</b>		<b>78.37</b>
<b>Duration</b>																
Unplanned interruptions (000's)	209,111	171,977	514,824	184,959	160,767	52,573	73,562	83,734	190,592	221,185	152,351	100,573	140,388	209,121		2,465,716
Pre-arranged interruptions (000's)	27,823	16,735	6,907	17,666	9,692	8,685	11,897	4,021	14,025	25,823	6,847	10,548	11,728	24,445		196,841
Incidents on National Grid Company or Transmission Companies (000's)	2,353	0	0	875	0	0	0	0	0	0	19	0	2,270	0		5,516
Incidents on embedded generators (000's)	0	0	5	0	2	1	0	0	0	3	0	21	35	0		66
Incidents on any other connected systems (000's)	46	0	0	0	0	6	0	0	0	297	0	0	50	0		399
<b>Total (000's)</b>	<b>239,333</b>	<b>188,712</b>	<b>521,736</b>	<b>203,500</b>	<b>170,460</b>	<b>61,264</b>	<b>85,458</b>	<b>87,755</b>	<b>204,617</b>	<b>247,308</b>	<b>159,216</b>	<b>111,143</b>	<b>154,470</b>	<b>233,566</b>		<b>2,668,538</b>
<b>CMLs</b>	<b>101.22</b>	<b>75.42</b>	<b>227.09</b>	<b>133.13</b>	<b>77.76</b>	<b>56.56</b>	<b>57.54</b>	<b>39.04</b>	<b>93.56</b>	<b>71.39</b>	<b>80.06</b>	<b>74.88</b>	<b>223.06</b>	<b>83.87</b>		<b>94.29</b>

Note: Figures may differ slightly due to rounding

Note: The figures in this table do not exclude exceptional events, the adjusted incentive scheme figures are shown in Table 3.5

**Table 3.4**

**2004/05 Sum of Customers Interrupted & Sum of Customer Minutes Lost: Split by Voltage Level**

	CN West	CN East	UU	CE NEDL	CE YEDL	WPD S Wales	WPD S West	EDFE LPN	EDFE SPN	EDFE EPN	SP Distribution	SP Manweb	SSE Hydro	SSE Southern		GB Total
Customer Numbers	2,364,562	2,502,085	2,297,496	1,528,624	2,192,210	1,083,220	1,485,141	2,247,653	2,187,084	3,464,100	1,988,756	1,484,250	692,495	2,785,018		28,302,694
Sum of number of Customers Interrupted																
132 kV (000's)	198	4	28	0	0	0	0	71	63	70	0	20	0	58		512
EHV (000's)	453	116	127	133	60	95	181	70	85	284	170	83	166	511		2,533
HV (000's)	1,824	1,541	913	1,031	1,215	923	842	431	1,581	1,953	974	547	513	1,780		16,067
LV (000's)	265	209	169	179	173	75	162	169	121	262	150	92	53	335		2,413
LV Services (000's)	84	14	30	33	51	17	26	52	46	31	36	24	18	35		496
Incidents on National Grid Company or Transmission Companies (000's)	51	0	0	60	0	0	0	0	0	0	0	0	33	0		145
Incidents on embedded generators (000's)	0	0	0	0	0	0	0	0	0	0	0	0	3	0		4
Incidents on any other connected systems (000's)	1	0	0	0	0	0	0	0	0	12	0	0	0	0		13
<b>Total (000's)</b>	<b>2,876</b>	<b>1,884</b>	<b>1,267</b>	<b>1,436</b>	<b>1,498</b>	<b>1,109</b>	<b>1,211</b>	<b>793</b>	<b>1,896</b>	<b>2,610</b>	<b>1,330</b>	<b>766</b>	<b>787</b>	<b>2,719</b>		<b>22,181</b>
<b>CIs</b>	<b>121.63</b>	<b>75.28</b>	<b>55.13</b>	<b>93.92</b>	<b>68.35</b>	<b>102.41</b>	<b>81.51</b>	<b>35.30</b>	<b>86.68</b>	<b>75.35</b>	<b>66.88</b>	<b>51.59</b>	<b>113.65</b>	<b>97.62</b>		<b>78.37</b>
Sum of customer minutes lost																
132 kV (000's)	4,450	32	252	0	0	0	0	5,479	2,108	11,399	0	357	0	466		24,543
EHV (000's)	11,320	4,276	112,154	4,589	5,175	2,353	1,765	1,070	3,737	19,676	7,984	8,771	33,549	15,406		231,827
HV (000's)	158,710	142,804	361,112	157,442	123,355	47,069	55,652	24,720	164,003	158,961	115,782	77,044	102,149	146,069		1,834,871
LV (000's)	52,727	38,491	39,493	36,767	34,988	10,155	25,217	44,705	26,636	52,103	29,259	18,729	14,888	67,043		491,202
LV Services (000's)	9,727	3,110	8,719	3,827	6,940	1,680	2,824	11,781	8,133	4,868	6,173	6,221	1,530	4,582		80,116
Incidents on National Grid Company or Transmission Companies (000's)	2,353	0	0	875	0	0	0	0	0	0	19	0	2,270	0		5,516
Incidents on embedded generators (000's)	0	0	5	0	2	1	0	0	0	3	0	21	35	0		66
Incidents on any other connected systems (000's)	46	0	0	0	0	6	0	0	0	297	0	0	50	0		399
<b>Total (000's)</b>	<b>239,333</b>	<b>188,712</b>	<b>521,736</b>	<b>203,500</b>	<b>170,460</b>	<b>61,264</b>	<b>85,458</b>	<b>87,755</b>	<b>204,617</b>	<b>247,308</b>	<b>159,216</b>	<b>111,143</b>	<b>154,470</b>	<b>233,566</b>		<b>2,668,538</b>
<b>CMLs</b>	<b>101.22</b>	<b>75.42</b>	<b>227.09</b>	<b>133.13</b>	<b>77.76</b>	<b>56.56</b>	<b>57.54</b>	<b>39.04</b>	<b>93.56</b>	<b>71.39</b>	<b>80.06</b>	<b>74.88</b>	<b>223.06</b>	<b>83.87</b>		<b>94.29</b>

Note: Figures may differ slightly due to rounding

Note: The 132kV network in Scotland forms part of the Transmission system

Note: The figures in this table do not exclude exceptional events, the adjusted incentive scheme figures are shown in Table 3.5

**Table 3.5**

**Incentive scheme: 2004/05 Customer Interruptions & Minutes Lost as a Percentage of Respective 2004/05 Targets**

DNO	2004/05 CI Target	2004/05 Incentive Scheme CIs	2004/05 Incentive Scheme CIs as % of 2004/05 Target		2004/05 CML Target	2004/05 Incentive Scheme CMLs	2004/05 Incentive Scheme CMLs as a % of 2004/05 Target
CN West*	131.00	108.70	83		116.90	89.61	77
CN East*	81.30	73.80	91		71.00	73.67	104
UU*	54.80	47.01	86		68.20	51.52	76
CE NEDL*	89.70	71.98	80		96.54	79.46	82
CE YEDL*	84.82	64.88	76		66.69	66.44	100
WPD S Wales	152.80	102.41	67		129.20	56.55	44
WPD S West*	80.50	74.23	92		62.60	50.12	80
EDFE LPN*	31.82	33.41	105		45.03	37.86	84
EDFE SPN*	96.80	82.57	85		85.17	84.02	99
EDFE EPN*	92.02	70.75	77		82.31	65.49	80
SP Distribution*	66.40	64.91	98		87.70	74.89	85
SP Manweb*	47.20	48.07	102		65.80	65.21	99
SSE Hydro*	135.10	85.91	64		195.80	81.95	42
SSE Southern*	93.56	89.74	96		100.58	77.54	77
GB average		71.86				68.25	

\*Note: CN West's 2004/05 CI and CML figures were reduced as a result of 3 exceptional events  
 CN East's 2004/05 CI and CML figures were reduced as a result of 1 exceptional event  
 United Utilities' 2004/05 CI and CML figures were reduced as a result of 1 exceptional event  
 CE NEDL's 2004/05 CI and CML figures were reduced as a result of 2 exceptional events  
 CE YEDL's 2004/05 CI and CML figures were reduced as a result of 1 exceptional event  
 WPD S West's 2004/05 CI and CML figures were reduced as a result of 3 exceptional events  
 EDF Energy LPN's 2004/05 CI and CML figures were reduced as a result of 1 exceptional event

EDF Energy SPN's 2004/05 CI and CML figures were reduced as a result of 2 exceptional events  
 EDF Energy EPN's 2004/05 CI and CML figures were reduced as a result of 2 exceptional events  
 SP Distribution's 2004/05 CI and CML figures were reduced as a result of 1 exceptional event  
 SP Manweb's 2004/05 CI and CML figures were reduced as a result of 2 exceptional events  
 SSE Hydro's 2004/05 CI and CML figures were reduced as a result of 2 exceptional events  
 SSE Southern's 2004/05 CI and CML figures were reduced as a result of 3 exceptional events

**Table 3.6**

Distribution Network Operator Information 2004/05

DNO	Total No of Customers	Length of circuit km									
		132kV		66kV		33kV		HV		LV	
		Overhead	Underground	Overhead	Underground	Overhead	Underground	Overhead	Underground	Overhead	Underground
CN West	2,364,562	1,393	304	801	16	1,041	363	14,632	11,693	6,215	24,495
CN East	2,502,085	2,448	196			2,777	1,509	12,812	12,701	5,168	31,877
UU	2,297,496	1,327	231			1,434	1,780	7,975	11,687	2,919	31,631
CE NEDL	1,528,624	603	73	1,012	447	360	394	10,200	7,566	3,076	16,968
CE YEDL	2,192,210	1,064	400	866	202	1,272	2,011	8,829	10,001	1,841	24,927
WPD S Wales	1,083,220	1,251	93	355	3	1,229	372	12,246	5,120	3,220	10,197
WPD S West	1,485,141	1,406	69			2,907	859	16,628	6,138	7,646	12,904
EDFE LPN	2,247,653	30	475	17	426	0	637	1	11,505	0	21,507
EDFE SPN	2,187,084	1,178	335			1,299	1,331	5,773	11,278	4,621	24,280
EDFE EPN	3,464,100	2,521	235			3,468	2,239	19,251	18,097	9,409	37,625
SP Distribution*	1,988,756					2,677	2,723	13,977	11,642	4,544	24,110
SP Manweb	1,484,250	1,299	213			1,935	1,625	12,586	6,621	5,643	17,727
SSE Hydro*	692,495					5,315	766	21,600	4,363	4,252	8,389
SSE Southern	2,785,018	1,868	423	6	188	3,487	2,088	13,370	15,194	8,947	30,575
Great Britain	28,302,694	16,387	3,048	3,057	1,282	29,202	18,698	169,880	143,605	67,502	317,212

Note: The 132kV network in Scotland forms part of the Transmission system

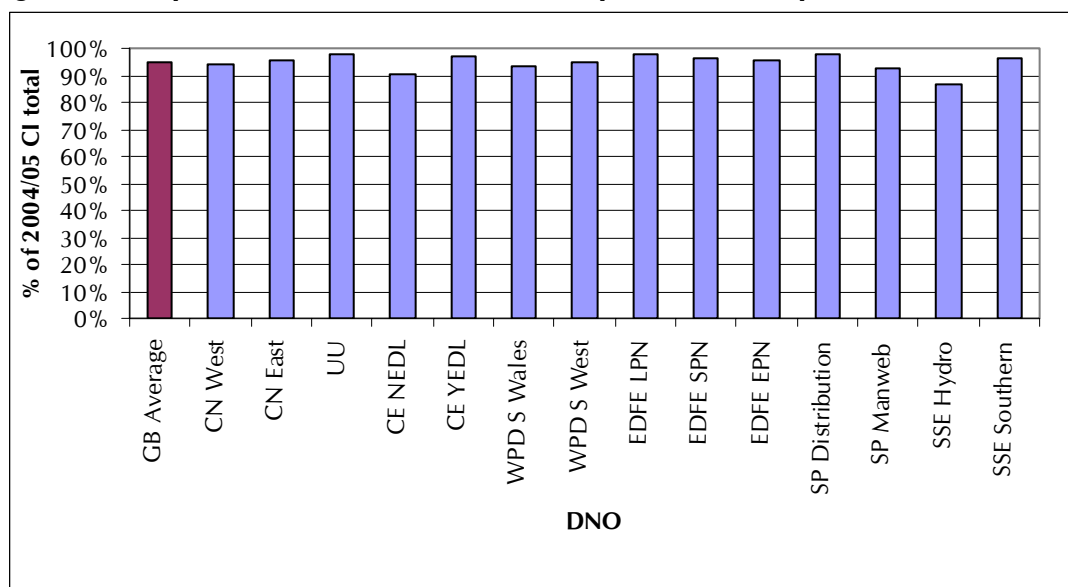
## APPENDIX 4

### Sources of 2004/05 Customer Interruptions (CIs) and Customer Minutes Lost (CMLs)

The number and duration of interruptions to supply can be broken down into the following five categories:

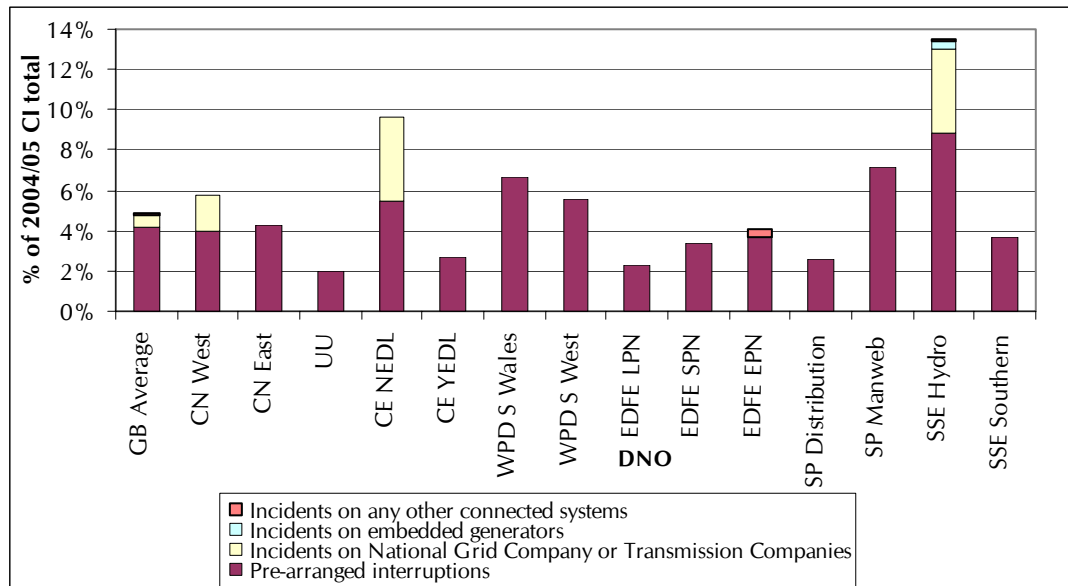
- unplanned interruptions arising on the DNO's own network;
- pre-arranged interruptions on the DNO's network;
- interruptions arising on the National Grid Company's system or the Transmission Companies' systems (in Scotland);
- interruptions arising from generators connected to the distribution network; and
- interruptions on any other connected systems.

Figure 4.1 Proportion of 2004/05 CIs due to Unplanned Interruptions<sup>13</sup>



<sup>13</sup> There are no "correct" proportions of customer interruptions and customer minutes lost across the various sources and improvements in one area will, if all else remains equal, lead to higher proportions being attributed to other sources. Figures 4.1, 4.2, 4.3 and 4.4 should be considered in conjunction with the actual levels of performance shown in Figures 1 and 2.

**Figure 4.2 Proportion of 2004/05 CIs by Sources other than Unplanned Interruptions**

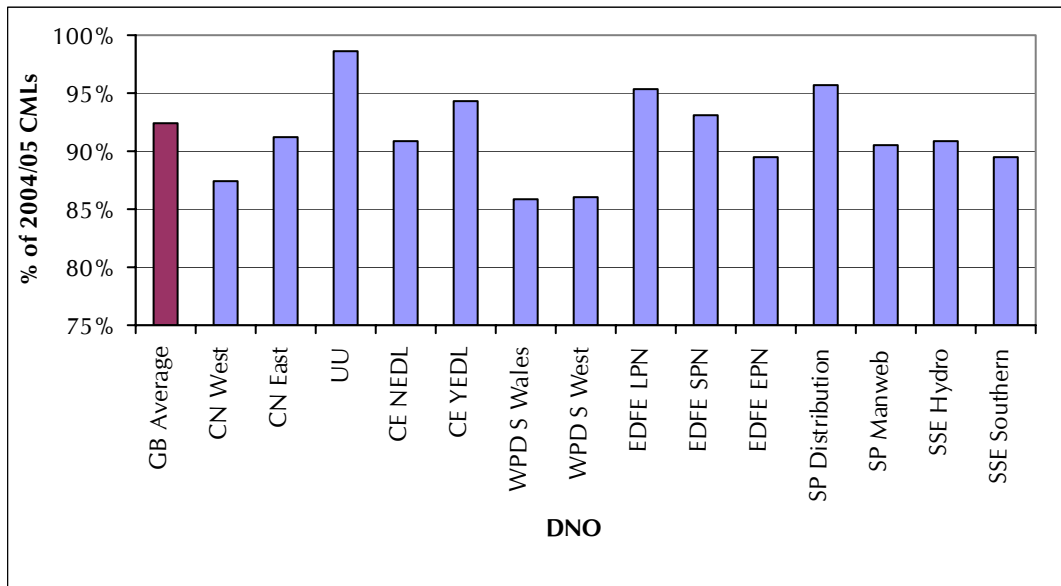


Figures 4.1 and 4.2 show the sources of interruptions to supply in 2004/05. Unplanned incidents are the most significant cause of interruptions, accounting for over 80 per cent of interruptions for all DNOs and exceeding 90 per cent for 12 DNOs. Unplanned interruptions are caused by many factors, such as;

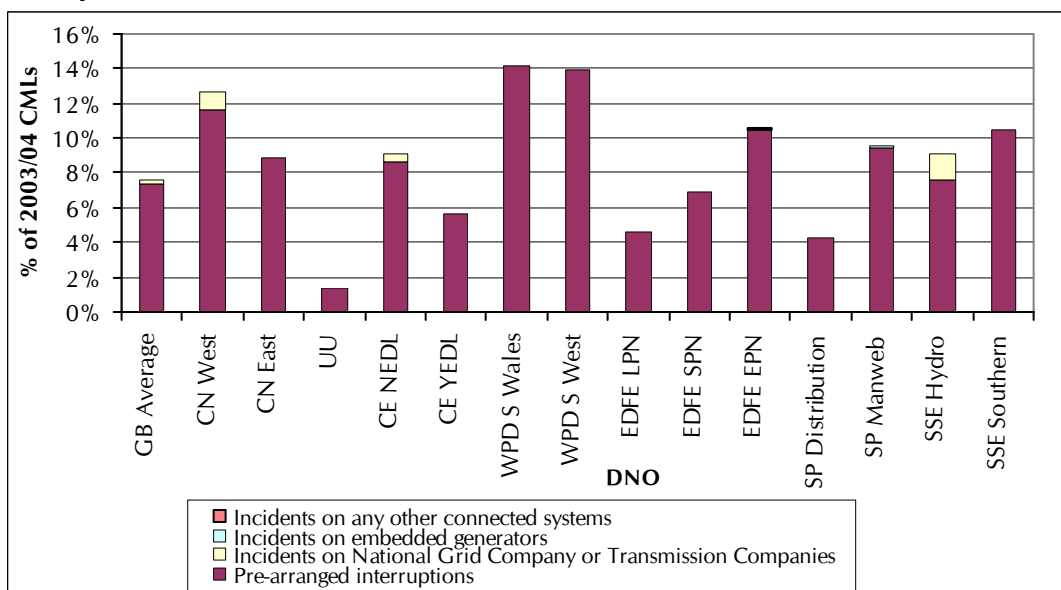
- failure of equipment;
- lightning hitting lines and damaging equipment;
- high winds blowing over poles and bringing power lines down;
- strikes by large wildfowl; and
- third party activity such as workers accidentally severing power cables.

Planned interruptions relate to the temporary suspension of supply for reasons such as carrying out repairs, maintenance and construction. Customers are required to be given two days notice prior to the start of such work. New industry working practices and techniques, such as “hot-glove” working are reducing the need to interrupt supplies to carry out repairs. Incidents on the National Grid Company or Transmission Companies are generally rare, but due to the voltages involved, when they do occur they affect large numbers of customers.

**Figure 4.3 Proportion of 2004/05 CMLs due to Unplanned Interruptions**



**Figure 4.4 Proportion of 2004/05 CMLs by Sources other than Unplanned Interruptions**



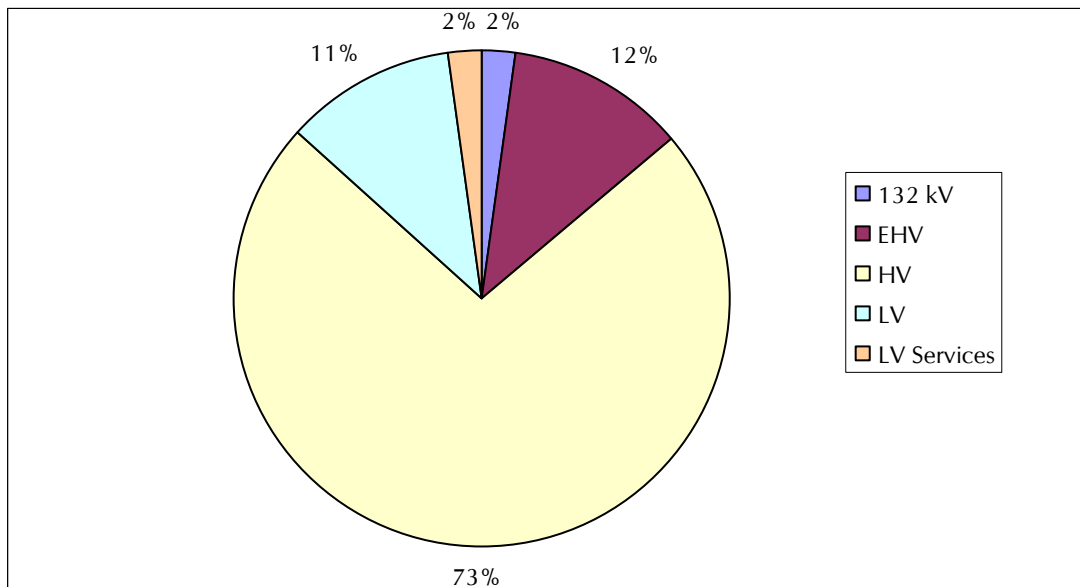
Figures 4.3 and 4.4 show the proportion of the duration of interruptions to supply in 2004/05 by source. Unplanned interruptions account for the bulk of customer minutes lost, with 11 DNOs having over 80 per cent of their minutes lost being due to this source. Within the remaining categories, planned work can be seen to be more significant in terms of customer minutes lost than it was in terms of customers interrupted.

## **2004/05 Customer Interruptions (CIs) and Customer Minutes Lost (CMLs): Split by Voltage Level**

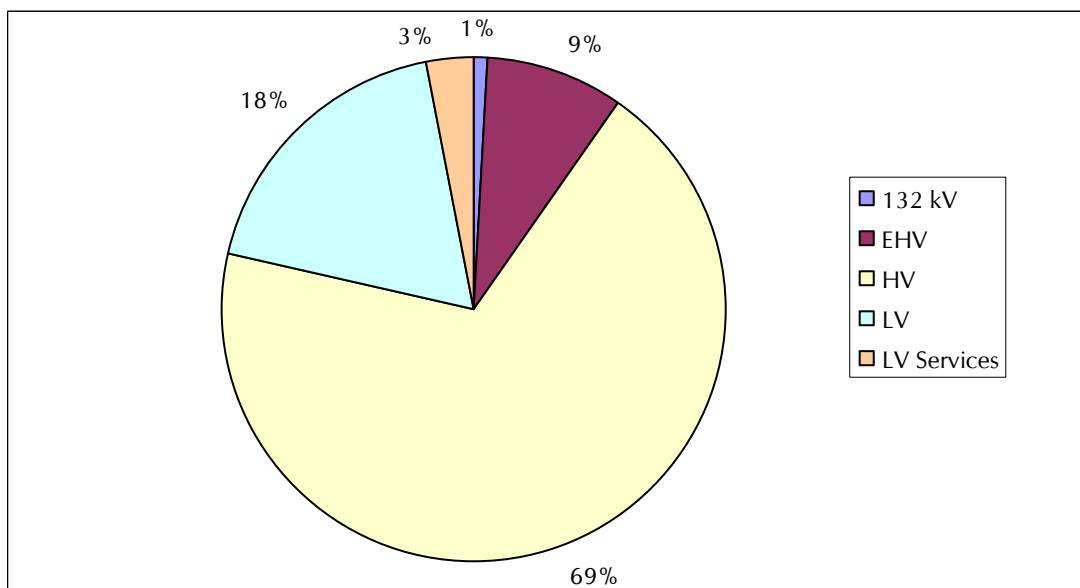
The number and duration of interruptions can also be disaggregated by the voltage level at which they occurred. The voltage levels are classified as follows:

- 132kV;
- Extra High Voltage (EHV) – voltages greater than 22kV but less than 132kV;
- High Voltage (HV) – voltages from 1kV up to 22kV;
- Low voltage (LV) voltages less than 1kV; and
- LV Services – the service line connecting the electricity main to the distribution company's protection device situated upon the customer's premises.

**Figure 4.5 Great Britain Average: 2004/05 Proportion of Customer Interruptions by Voltage**



**Figure 4.6 Great Britain Average: 2004/05 Proportion of Customer Minutes Lost by Voltage**



Figures 4.5 and 4.6 show on a Great Britain basis, the proportion of customer interruptions and customer minutes lost according to the voltage levels at which the faults occurred. As seen in both figures, around 70 per cent of interruptions and minutes lost nationwide were as a result of faults on the HV network. Amongst DNOs this proportion was generally typical, although EDF Energy (LPN), with 54 per cent of its interruptions and 28 per cent of its minutes lost coming from HV faults, is significantly below this level as nearly its entire HV network is underground.