

May 1999

Supply interruptions following the Boxing Day storms 1998

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Contents

		Page
Chapter 1	Introduction	1
Chapter 2	Background	4
Chapter 3	Network performance	10
Chapter 4	Restoration of supplies	17
Chapter 5	Communication	27
Chapter 6	Payments to customers	41
Chapter 7	Conclusion	48
Chapter 8	Summary of recommendations	51

CHAPTER 1

Introduction

- 1.1 On 26 December 1998, large parts of northern England and Scotland were affected by very high winds which caused widespread damage to the overhead distribution system and, in some areas, the transmission system. Similar problems were also suffered in Northern Ireland. The worst affected areas were ScottishPower, NORWEB and Northern Electric, although Scottish Hydro-Electric, Manweb and Midlands Electricity also declared system emergencies. Although supply was restored to most customers within 24 hours, over 50,000 customers were without a supply for longer, with some supplies not being restored until the New Year. Throughout this period customers had difficulty contacting their Public Electricity Suppliers (PESs) and in obtaining up-to-date and accurate information on progress in restoring supplies.
- 1.2 These problems were very similar to those suffered by customers during the severe weather in December 1997. Following those storms OFFER published a report outlining PESs' performance and suggesting some improvements for the future. How effective the PESs have been in improving service to customers during periods of severe weather was tested to a certain extent in December 1998 although the same companies were not equally affected in both years with Manweb, NORWEB and Midlands being the worst affected in 1997.
- 1.3 Although companies had reviewed their emergency arrangements in the light of their experiences during the 1997 storms OFFER was concerned at the level of dissatisfaction again expressed by customers in 1998. In total some 1,000 customers contacted OFFER seeking advice, or complaining about some aspect of their PES's handling of the emergency. This led to the Director General announcing that OFFER would investigate what happened in December 1998 and publish a report.

- 1.4 Immediately following the storms OFFER asked all PESs (except London Electricity) for detailed information on the number of customers affected, the length of time they were without supply, the number of compensation payments made, the number and type of faults occurring on their networks, resources available for fault repair, the age and design standard of the affected parts of the network, and communications systems and performance. Companies submitted initial reports in mid-January, with further information being submitted as OFFER's investigations progressed. London Electricity was not asked to submit any information as they reported that they were not affected by the severe weather.
- 1.5 More detailed information was also sought for the three worst affected areas: ScottishPower, NORWEB and Northern Electric. This included additional correspondence and meetings with those companies and a detailed report from the Meteorological Office on the forecast and actual weather conditions in the worst affected areas. OFFER also sought the views of customers, local authorities, local police forces and other interested parties in those areas on their experiences and possible improvements for the future: over 100 responses were received. Thanks are due to all those people who contacted OFFER in the aftermath of the storms - their feedback was invaluable in the preparation of this report.
- 1.6 The worst affected companies have already indicated that they have instigated reviews covering management of internal and external communication, fault prioritisation and tree management policy. This report looks at these and other areas where improvements in performance are possible. These items are summarised in Chapter 8. Comments are invited on this list, together with suggestions for other areas where further investigation is merited.

1.7 Comments should be sent to:

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by 25 June 1999. This feedback will be used to inform OFFER's continuing review of the PESs' performance.

CHAPTER 2

BACKGROUND

Prevailing weather conditions

- 2.1 We asked companies to provide us with details of the forecast and actual maximum wind speeds for the period 26 - 31 December. Their responses are summarized in Table 1. We also asked the Meteorological Office for a full report into the prevailing weather conditions. They confirmed that the most severe weather was experienced from the afternoon of 26 December to the early hours of the morning of 27 December with gale force winds hitting the north of England, Scotland and Northern Ireland. From the southern boundaries of Manweb's and Northern Electric's areas and further south, winds were about the typical annual maximum.
- 2.2 The Meteorological Office reported that the highest speeds of wind were restricted to a period of about 12 hours when mean speeds over land reached nearly 60mph with gusts exceeding 90mph. Wind gusts of over 100mph were recorded at some locations. The wind direction veered gradually from southwest to west. The gales followed a period of wet weather. In the four month period from September to December stations measured rainfall of between 400mm and 800mm in the west, and 200mm to 300mm in the east. These levels of rainfall, combined with the relatively small amount of evaporation typical at this time of year, they considered to be sufficient to soften soil. This could increase the tendency for trees to be uprooted by the high winds. Companies generally confirmed that many supply interruptions were caused by tree damage.
- 2.3 The Meteorological Office further estimated that winds of this severity were seen on average about once in 20 years (this does not preclude the possibility of such winds recurring within 20 years, or not recurring for longer than 20 years). Such high winds tend to cover belts of the country about

200km wide. The chance of a storm of similar severity occurring at any point in Great Britain is probably of the order of one in four years.

- 2.4 The Meteorological Office also raised the possibility that such storms may become more frequent due to the effects of global warming, with an increase in the median annual maximum wind speed of some five per cent in the next few decades. This implies that an event which occurred on average once in 20 years in the past may be experienced about once in 10 years in future decades.
- 2.5 A particular problem in 1997 was that some PESs stated that the severe weather warnings they received from the Meteorological Office had substantially underestimated the severity of the storms to come. This, they say, led to resources being deployed late. This does not appear to have been a factor in 1998, with no company claiming to have had such difficulties, and the Meteorological Office confirmed that their forecasts tied in very closely with the actual weather conditions. Indeed, in several areas the Meteorological Office forecasts were for higher wind speeds than were actually experienced. Scottish Hydro-Electric commented that the centre of the storm had been forecast to be rather further north in their territory. However this does not appear to have had any significant impact on their response to the storm. The Meteorological Office have confirmed that the northern boundary of the strong winds was forecast to be over the Firth of Tay, whereas the observed position was over the Firth of Forth, about 35 miles further south.
- 2.6 Equally, companies commented that the Meteorological Office regularly issue warnings of severe weather where the actual weather conditions are not as severe as those forecast. It appears relatively rare for the Meteorological Office to underestimate the severity of forthcoming weather conditions.
- 2.7 The Meteorological Office typically issues daily forecasts for the following 24 hours to PESs in the early morning. Different PESs contract for slightly

different levels of service although all the companies receive regular reports. For example, ScottishPower receives dedicated weather hazard warnings that disaggregate data by three different elevations above sea level. Some companies (including Northern Electric, Yorkshire and Scottish Hydro-Electric) subscribe to MIST (Meteorological Information Self-briefing Terminal), an on-line screen based information system which gives immediate access to information on prevailing weather conditions. It is a matter for individual companies to determine the level of service they receive from the Meteorological Office, but they may wish to consider the merits of receiving information in different formats.

2.8 In total six companies declared a system emergency as a result of the effects of the high winds. These were ScottishPower, NORWEB, Northern Electric, Scottish Hydro-Electric, Manweb and Midlands Electricity. Several companies commented that they were on alert before the full system emergency was called as they had received long range forecasts of severe weather. Supporting data shows that for some of these companies damage suffered was relatively limited. However, it can only be to the benefit of customers that companies react promptly to severe weather warnings. Several customers noted in their correspondence with OFFER that the severe weather was clearly forecast in time for companies to make any necessary preparations.

Date and time system emergency declared

PES area	System emergency declared
Scottish Hydro-Electric	26 December at 1000
Manweb	26 December at 1010
ScottishPower	26 December at 1500
NORWEB	26 December at 2000
Midlands	26 December at 2100
Northern Electric	27 December at 0826

2.9 The storms caused widespread damage to distribution networks, particularly in three PES areas - ScottishPower, Northern Electric and NORWEB.

ScottishPower also suffered a substantial amount of damage to their transmission network. This report therefore focuses primarily on the performance of these three companies immediately following the storms.

- 2.10 High winds were also recorded on 3 January 1999, leading to some 60,000 customers losing supply in Scotland, most of whom were back on supply within 24 hours. The northernmost parts of England also saw high winds again. The Meteorological Office assessment was that this later period of high winds was not as severe as that experienced on Boxing Day, with wind speeds equating to the usual annual maximum. This assessment is borne out by the relatively limited scale of supply interruptions and the speed of restoration compared with the Boxing Day storms. This report therefore concentrates on events following the storms on Boxing Day.

Number of customers affected

- 2.11 The Boxing Day storms resulted in a very large number of customers losing their supply. Full details are given in Table 2. On Boxing Day supplies were lost to nearly 350,000 customers due to storm damage, the majority in Scotland and the north of England. Whilst supplies were restored quickly to many customers, the storms continued into the early hours of 27 December. This resulted in over 400,000 customers being off supply on 27 December, with over 90 per cent of these customers being located in the three worst affected PES areas.
- 2.12 There are different ways of counting the number of customers off supply. For example, ScottishPower reported that 164,381 customers suffered supply interruptions on 27 December. However, they estimated that no more than 125,000 customers were off at any one time, and that over 240,000 customers suffered supply interruptions over the duration of the storm and its aftermath. Many of their customers suffered more than one supply interruption, leading them to estimate the total number of supply interruptions at over 370,000. NORWEB stated that 107,460 customers lost supply on 27 December but that the maximum number of customers off at one time was

51,139. They did not feel that the data available was sufficient for them to estimate the total number of customers affected. However, data they have submitted suggests that the total number of supply interruptions exceeded 130,000. Similarly, Northern Electric reported a total of 160,920 supply interruptions but that a maximum of 70,000 to 90,000 customers were off at any one time.

2.13 A matter of some concern is companies' apparent lack of ability to identify how many customers were off supply. For example, Northern Electric initially informed OFFER on 26 December that 30,000 customers had lost supply and a further 40,000 were cut off on a planned interruption for two hours to remove a tree, with only 5,000 customers remaining off-supply that evening. Despite OFFER being in regular contact with the company, they did not provide any update to those figures. When challenged by OFFER to provide updated information they finally stated on 7 January that the true figure was approximately 120,000. They have since revised the number of customers they estimate were affected by the planned outage on Boxing Day from 40,000 to 16,000. They were unable to explain why they had not informed OFFER earlier of the full extent of their problems, beyond saying that the scale of the problem had not been immediately apparent. This does not create confidence in their information systems and hence in their ability to prioritize their work during a period of system emergency.

Table 1 - Forecast and actual maximum wind speeds (miles per hour)

Company	26-Dec		27-Dec		28-Dec		29-Dec		30-Dec		31-Dec	
	forecas t	actual	forecas t	actual	forecas t	actual	forecas t	actual	forecas t	actual	forecas t	actual
Eastern	70	59	70	52	31	39	24	37	31	38	19	30
East Midlands	66	np	77	np	n/a	np	n/a	np	n/a	np	n/a	np
Manweb ¹	90	np	50	np	n/a	np	65	np	65	np	60	np
Midlands	50-60	80	50-60	69	15-20	52	20-30	48	40-50	57	20-30	38
Northern	70	93	70	89	35	32	40	46	25	44	25	30
NORWEB	severe gales	114	n/a	75	20-25	38	25-60	58	n/a	59	10-20	39
SEEBOARD	60	np	40	np	n/a	np	n/a	np	n/a	np	40	np
Southern	75	66	65	48	35	49	45	40	55	39	35	37
SWALEC	60-70	np	40	np	30-35	np	65	np	55	np	40-50	np
South Western	70-85	np	n/a	np	60-75	np	n/a	np	n/a	np	np	np
Yorkshire	50	72	35	78	25	53	35	32	35	38	15	24
ScottishPower	70	105	severe gales	73	n/a	np	n/a	np	n/a	np	strong winds	np
Scottish Hydro ²	90-100	94	45-65	90	25-45	np	55-70	np	40-70	np	30-35	np

¹ Although Manweb receive weather forecasts, they do not routinely receive weather reports

² Scottish Hydro-Electric receive data for five separate areas. Not all were badly affected by the storms.
n/a - not applicable ie no severe weather forecast. ScottishPower state that they only receive severe weather warnings when wind speeds of 50mph or more are projected to last for more than an hour.
np - information not provided

Table 2 - Number of customers off supply

a. Due to storm damage

Company	26-Dec	27-Dec	28-Dec	29-Dec	30-Dec	31-Dec
Eastern	6,402	598	161	2,917	1,897	1,453
East Midlands	6,765	826	1,792	47	48	2
Manweb	9,054	3,762	467	1,683	321	1
Midlands	25,815	5,039	227	456	1,234	0
Northern	48,271	97,926	3,223	3,139	7,514	2,002
NORWEB	20,816	107,460	5,605	3,000	2,754	209
SEEBOARD	4,298	93	0	1	0	3
Southern	5,000	1	85	2,775	1,605	10
SWALEC	3,865	227	614	1,517	0	632
South Western	2,249	178	0	119	0	0
Yorkshire	13,225	10,970	1,887	0	12	20
ScottishPower	151,335	164,381	21,818	10,176	10,520	4,716
Scottish Hydro	51,344	13,562	2,944	1	0	0
TOTAL	348,439	405,023	38,823	25,831	25,905	9,048

b. Due to other causes

All companies	25,067	24,380	29,620	19,289	41,047	38,500
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c. Due to all causes (a + b)

All companies	373,506	429,403	68,443	45,120	66,952	47,548
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Note - Individual customers may be counted more than once where they have suffered more than one interruption

CHAPTER 3

NETWORK PERFORMANCE

Reasons for faults

- 3.1 We asked for information from the PESs' National Fault and Interruption Reporting Scheme (NaFIRS). According to the information submitted by the PESs the storms caused widespread damage to overhead lines, mostly the result of wind-blown debris and fallen trees. In coastal areas there were also problems caused by wind-blown sea spray leading to salt accretions on lines. NORWEB stated that they had a large number of customers affected by salt related faults. Scottish Hydro-Electric also reported some damage due to snow and lightning.
- 3.2 There is some doubt as to the exact proportion of faults caused by these different factors. Companies were asked to report the reason for damage under the standard NaFIRS headings: weather only, windborne debris, falling trees and other (see Table 3). In emergency situations field staff may not always differentiate accurately between these different causes. For example, ScottishPower reported that of the 1,819 faults requiring site attendance between 26 and 31 December only 35 were recorded as being due to falling trees. They explained that anecdotal evidence indicated that over 80 per cent of damage was caused directly by trees, which had themselves fallen as a result of the prevailing weather conditions. Similarly, Northern Electric reported that 72 out of 818 faults were due to falling trees, but commented that the vast majority of supply interruptions were due to substantial broken branches blowing onto their overhead lines, or by trees being uprooted and falling.
- 3.3 Although the first priority of staff must be to restore supplies this lack of accurate information as to the various causes of interruptions makes it much more difficult for companies to identify where they should concentrate their efforts to prevent a recurrence of such an emergency. Rather they must place a greater reliance on local information obtained directly from customers

when making planning decisions that have a financial impact on all their customers. An increased emphasis on the importance of gathering accurate information in the field would be a straightforward improvement for companies to implement.

Overhead line design standards

- 3.4 Since 1988 the PESs have generally used a common standard for overhead high voltage (HV) line design, known as Technical Specification 43-40. Scottish Hydro-Electric adopted this standard in 1993, although they state that their pre-1993 lines have a performance similar to that expected from their current design. The standard defines different line specifications for a range of weather exposures in different geographical areas so that lines in more exposed areas should be constructed to more robust standards. This specification replaced a light duty HV overhead line specification (BS1320) which was introduced in the late 1940s and was used for the rural electrification programme which started at that time. Table 4 shows the proportion of overhead lines built to these different standards.
- 3.5 Overhead lines generally have a life span of about 40 years, after which they are upgraded or rebuilt. As part of their rolling programme of refurbishment PESs are gradually replacing lines built to the old BS1320, so with time you would expect to see a gradual improvement in the robustness of the network. This is borne out by the data companies publish annually in their Quality of Supply reports. OFFER also produces a report once a year, the Report on Distribution and Transmission System Performance, which summarizes the network performance in each company's area.
- 3.6 Again, because of the widespread nature of the damage, there were some problems with identifying the age profile of the affected lines. Broadly speaking more older lines were affected than newer lines - much as you would expect (see Table 5). A notable exception to this was Northern Electric who reported that 72 per cent of damaged lines in their area were less than 10 years old. They included lighter lines renovated to a new life cycle in this

figure. This may mean no more than that they have a relatively high proportion of newer overhead lines. However, in 1997 they reported that only 10 per cent of damaged lines were less than 10 years old, a figure more in keeping with the typical age range of lines across Great Britain which suggests that 6 to 9 per cent of lines are generally under 10 years old.

- 3.7 Some PESs suggested that the age of overhead lines was not in itself the most significant factor, rather that newer lines were less prone to tree damage as there was generally wider clearance around newer lines. ScottishPower commented that due to the widespread nature of the damage to their network they considered it likely that the age profile of damaged lines would be similar to the age profile of all lines, although recently constructed lines were less likely to have sustained tree damage.
- 3.8 Most faults occurred on low voltage (LV) lines - 77 per cent. A further 19 per cent were at HV and only 4 per cent were at extra high voltage (EHV) or transmission level. With one exception in SEEBOARD's area, all transmission faults occurred in Scotland. However, due to the very different nature of the terrain and network, in Scotland lines at 132kV are defined as transmission, whereas in England & Wales lines at this voltage form part of the distribution system. ScottishPower suffered a total of 186 transmission faults, 135 of these faults being at voltage levels over 132kV.
- 3.9 Companies are obliged under the terms of the Electricity Supply Regulations to ensure that overhead lines are placed so that they "shall not, as far as is reasonably practicable, come so close to any building, tree or structure as to cause danger". In order to maintain a reasonable clearance when lines run near to trees the PESs have to rely on gaining landowners' permission to prune or fell trees in the immediate vicinity. Some PESs reported increasing difficulties in obtaining landowners' consent to tree work that they considered necessary. Some customers suggested that PESs need to carry out more frequent patrols of overhead lines that go through wooded areas to minimise the likelihood of damage. Even where a tree does not fall, or branches snap off, overhanging branches can cause intermittent supply interruptions.

3.10 Consideration of quality of supply issues is being taken forward in the Distribution Price Control Review (DPCR) presently underway. Part of this consideration will be how well PESs have performed during storms in the light of their historic capital and operating expenditure. Any apparent inefficiencies in allocation of expenditure will be dealt with through the DPCR. To build a network robust enough to prevent supply interruptions implies investment on a major scale, and potentially a large increase in the price paid by customers. Companies are already committed to reducing the number of customer minutes lost per year in the five years to 2000 by amounts varying between 5 per cent and 43 per cent. All but one company has also set a target for a reduction in the total number of interruptions per 100 customers. These targets vary from 5 per cent to 30 per cent. Previous customer research suggests that customers are generally unwilling to meet the higher costs implied by increased levels of investment - the results of the survey conducted earlier in 1999 showed that only 28 per cent of customers were willing to pay anything extra. The results of this survey will help to inform decisions on the levels of capital expenditure allowed within the next control.

Quality of data

3.11 As noted above we asked PESs for NaFIRS data. However, the information coming out of a computer system is only as good as that which is fed in. Where there are widespread disruptions to the power supply the companies' first priority, quite rightly, is to restore supply as quickly as possible. This can lead to important information relating to the reason for interruptions and the number of faults not being fully recorded. In particular ScottishPower has stated that the number of LV faults recorded by NaFIRS categories greatly underestimated the scale of the problem. They have also provided data from their own management system - Troublecall - which generates fault reports from information received from customers. This revealed a significantly higher number of supply interruptions than their Prosper system where

NaFIRS data is recorded. Whilst we would certainly not wish to see companies doing anything to detract from the first priority of restoring supplies, the lack of accurate information as to the scale of the problem is regrettable.

3.12 PESs also continue to report a lack of information about the standards to which lines are constructed and the age of lines. Although more modern and robust overhead lines might be expected to withstand storm damage better, this may not always be the case. Although lines constructed to a lighter standard may snap more easily there is less likelihood of damage to poles. More heavily constructed lines may well stand up to severe weather conditions better, for example if loaded down with snow or ice, or if a tree falls on the line. However if a line does not break in these circumstances it can lead to a series of poles being brought down in a domino effect.

3.13 More accurate information both in terms of the existing age and standard of construction of lines, plus better detail on the reason and number of faults should allow for better future planning and management of the network. The doubts about the quality of the information companies hold on their networks means that the information included in the following three tables should be treated with caution.

Table 3 - Number and cause of faults requiring site attendance 26 - 31 December 1998

Company	Weather only	Windborne materials	Falling trees	Other	TOTAL
Eastern	17	8	8	169	202
East Midlands	47	3	17	275	342
Manweb	161	7	38	132	338
Midlands	77	1	19	2	99
Northern	347	332	72	67	818
NORWEB	300	30	41	110	481
SEEBOARD	5	6	21	145	177
Southern	8	4	13	244	269
SWALEC	77	28	2	139	246
South Western	12	0	1	26	39
Yorkshire ¹	19	0	7	180	206
ScottishPower ²	1,477	14	35	293	1,819
Scottish Hydro ³	112	12	59	31	214
TOTAL	2,659	445	333	1,813	5,250

¹ Includes underground and overhead incidents

² Includes all faults recorded in their Prosper system

³ Includes EHV and HV faults only

Table 4 - Design standard of damaged overhead lines

Company	% constructed to TS 43-40 or higher	% at lower standard than TS 43-40	% for which investment planned Jan 99-Apr 00	% for which investment planned Apr 00-05
Eastern	5	95	15	nk
East Midlands ¹	2	98	16	18
Manweb	35	65	10.5	2.6
Midlands	0	100	33	na
Northern	72	28	4	24
NORWEB ²	0	100	9	³ 11
SEEBOARD ⁴	>90	<10	<10	c30
Southern	na	na	nra	nra
SWALEC	14	86	3.5	nk
South Western	100	0	na	na
Yorkshire	40.9	59.1	4.5	⁵ 15.9
ScottishPower ^{4,5}	38	62	4	12
Scottish Hydro	48	52	10	40

TS 43-40 - technical specification 43-40

na - not available nra - not readily available

nk - not known. Both Eastern and SWALEC state that they have not planned in detail.

¹ Based on a small sample of 50 incidents

² Based on a sample of approximately half the total HV faults

³ Best estimate

⁴ Figures are all estimates

⁵ HV overhead lines only

**Table 5 - Age of damaged overhead line components
Percentage by age band**

Company	<10 years	10-20 years	20-30 years	30-40 years	40-50 years	>50yrs
Eastern ¹	nra	nra	nra	nra	nra	nra
East Midlands ²	6	8	30	46	2	8
Manweb	2	10	30	50	8	0
Midlands	0	26	22	43	9	0
Northern	72	5	5	7	5	6
NORWEB	2	0	6	20	61	11
SEEBOARD ³	na	na	na	na	na	na
Southern	13	0	0	13	7	0
SWALEC	16	3	9	54	18	
South Western	0	0	100	0	0	0
Yorkshire ⁴	27.3	2.3	15.9	11.4	38.6	4.5
ScottishPower ⁵	10	20	20	20	30	0
Scottish Hydro	3	7	15	60	14	1
Typical age range of overhead lines in GB	6-9	6-8	16-24	30-38	13-25	7-18

¹ nra - not readily available

² Based on a small sample of 50 incidents

³ SEEBOARD stated these figures were not recorded

⁴ HV lines only

⁵ ScottishPower's figures are estimates covering their HV lines only

CHAPTER 4

RESTORATION OF SUPPLIES

Resources

- 4.1 Companies regularly test their emergency planning procedures, all of them confirming that they had held an emergency exercise within the previous four months. One company completed their latest exercise on December 23, just as they started to receive long-term warnings of severe weather. These emergency plans are invoked when the severity and scale of problems become apparent.
- 4.2 When faced with a system emergency, PESs will first look to their own staff to carry out repairs. Where there is widespread damage across their area they may need to call upon contractors or other PESs for help. For example, ScottishPower was able to call on support from SWALEC, Midlands Electricity, East Midlands Electricity, Eastern, Scottish Hydro-Electric (when they had completed their own repairs), internally from their own contracting divisions and externally from contractors, including tree contractors.
- 4.3 There are two formal groups of PESs that pool resources in such circumstances. Both have similar agreements in place for supporting members, together with formal arrangements for national co-ordination across both consortia. This allows companies to make best use of their trained staff as it is extremely uncommon for all PESs to be hit with severe weather simultaneously. Where teams are called in from another PES area they may be kept together as although the standards used for line working will conform to a national minimum, different PESs may use different types of equipment. Sometimes local staff (including meter readers) may act as guides to the territory for visiting teams.
- 4.4 Although the companies operate standby systems for holiday periods they still appeared to have problems with getting staff in quickly enough over the holiday period. This suggests that companies need to put in place more

robust arrangements for calling in staff on standby. In particular, severe weather warnings were issued on 25/26 December, and the scale of problems was apparent on 26 December. Both NORWEB and Northern Electric had the highest number of staff on the ground on 27 December. ScottishPower achieved the highest number of staff on 30 December, by which time the number of customers off supply in their area had decreased from about 150,000 to about 10,000. Full details of available technical staff are given in Table 6.

- 4.5 Despite their own strong feelings of anger and frustration at the length of their supply interruptions many customers praised company staff for their efforts, acknowledging that they too had had their holidays disrupted.

“I should like to pay tribute to the engineers and telephone operators who worked extremely hard throughout the disruption to help customers”.

- 4.6 There are indications that companies were not always able to make best use of the resources available to them. Some customers commented that two or three groups of linesmen were going out to faults that had already been repaired. Others said that despite their phone calls the company appeared unaware that they were still without a supply. This is a waste of resources and indicates problems with internal planning and communication. The more widespread the problems, the more difficult it becomes for companies to manage the volume of data successfully. Delays in information flows from customers and field staff to the central planning section can lead to teams of linesmen either making redundant visits to previously repaired fault sites or dealing with a group of faults in one geographical area but missing other faults in the same area.

- 4.7 Some HV and EHV faults can be restored by remote switching. Indeed, most of the transmission faults were restored that way, as few transmission lines had suffered any permanent damage (see table 7). Some faults are caused by clashing conductors, or windborne debris bridging across conductors. Many such faults are restored rapidly (in under a minute) by automatic

switches on the network. These incidents, although they result in a brief supply interruption, are not included in the data reported by companies. Both Northern Electric and Yorkshire provided additional details on faults restored by operating switches remotely from their control centres. However, remote switching cannot restore all supplies and a large number of faults can only be repaired on site, for example where a fuse needs to be replaced, a snapped cable repaired or fallen poles replaced.

4.8 Table 8 gives a breakdown of the time taken to restore supplies in each PES area. These figures indicate that the total number of supply interruptions suffered by customers was in the region of one million. Of these customers the majority (nearly 70 per cent) had their supply restored within 3 hours, although this figure reduces to 52 per cent in Scottish Hydro-Electric's area and 50 per cent in ScottishPower's area. Most customers (95 per cent) were back on supply within 24 hours, with some of the remaining 5 per cent being off for over a week.

4.9 Delays in restoring power can be due to a fault at low voltage only being revealed after a number of faults at higher voltage levels have been cleared. Sometimes there can be problems accessing faults in more remote areas. Sometimes a company simply does not realise that a customer is still off supply.

"The company phoned me and asked if I would feed the men working in the area! When told I would be delighted to do so if they gave me power - it was obvious that they did not know the electricity was off."

Setting priorities

4.10 The main priority for the PESs during major system emergencies is to restore power to as many customers as possible as quickly as possible. This is achieved by repairing faults at the highest voltage levels first, as these will restore supply to a large number of customers. This also helps to reveal

where LV faults are located. The further down a spur a customer is located the higher the chance that their supply has been affected by more than one fault. Unfortunately this means that where a company is unaware of an LV fault customers may be told that their supply will be restored sooner than proves to be the case, increasing customer frustration.

- 4.11 Where there is visible damage to a network information from customers can also be very helpful for companies trying to trace a fault. Such information was not always passed on speedily where customers had difficulty getting through to the company by telephone. Even where a customer did pass on such information companies sometimes had problems relaying that information to field staff.

“Despite the fact we reported a live cable that had snapped and was flapping about on the lawn with sparks coming from it, nobody bothered to turn up and make it safe for days.”

- 4.12 The issues surrounding successful communication are discussed further in the following chapter.

- 4.13 However, other factors may come into play when prioritising work. Some customers suggested that companies should consider what alternatives are available to customers when setting priorities for restoring supply. For example, many households do not have a gas supply.

“My village has no mains gas and therefore most houses were without light, heat or the ability to cook - did the company take that into account in their prioritisation of who to fix first?”

- 4.14 Several customers were concerned that their older neighbours were left without power for prolonged periods of time, which could be a risk to their health. Others were concerned about problems closer to home.

“I phoned the company 54 times and pleaded with them to restore my supply as my baby son was ill with tonsillitis. They failed to treat my request seriously and as a result threatened the life of my family.”

- 4.15 Where companies identify a particular problem with repairing a fault, or where customers have special needs, it may be possible to install a mobile generating set to restore supply temporarily. Northern Electric stated that they focused the use of mobile generation on vulnerable customers. NORWEB established a dedicated team on 29 December to arrange for small generators to be connected to vulnerable customers who had contacted their helpline. This was in addition to a team established the previous afternoon who contacted about 400 customers who had previously reported difficulties. ScottishPower stated that they made best efforts to target their use of mobile generation, although this is an element of their performance they intended to review. OFFER welcomes the commitment from these companies to target their use of mobile generation in this way.
- 4.16 Vulnerable customers can include domestic customers reliant on medical equipment, those with no alternative form of heating or cooking or those vulnerable for other reasons. Business customers can also have a pressing need for some form of backup, examples being dairy farmers who need to milk their herds, and pet shops who have livestock dependent on heating. Some large customers have their own standby generation which is generally intended to cover for short power cuts. Lengthier cuts such as those experienced after the Boxing Day storms can lead to their incurring increased fuel costs.
- 4.17 Under Condition 20 of their PES licence (Part V Condition 14 of the Scottish licences) all PESs are required to produce and promote a Code of Practice laying out the services they provide for people who are of pensionable age, disabled or chronically sick. This includes a requirement to maintain a register of customers with such special needs to allow the PES to give them advance notice of interruptions to the supply of electricity amongst other matters. PESs are usually willing to include any customer on this register

who identifies themselves as having a special need, even where they do not strictly fall within the given definition.

- 4.18 This special needs register should allow companies to identify those customers most vulnerable during supply interruptions and thus enable them to plan means of restoring supplies to these customers as a priority. Despite reviewing the effectiveness of this service following the storms in December 1997, experience during December 1998 suggests that suppliers need to revisit the operation of this service, and consider further ways to promote it. Although PESs appear reasonably proactive in the use of their registers the reaction of customers suggests that few of them are aware of the special services offered by the PESs.

Mobile generation

- 4.19 Quite apart from the concern that the needs of more vulnerable customers were not properly addressed, both PESs and customers have said that better use could be made of mobile generation. Some customers commented that they were offered a mobile generator that never arrived. Others said that they were told none were available only to see some arrive later. Other comments suggest a need for a more basic review to ensure that staff know how to use mobile generators.

“Friday 1st January - 10.30am two blokes turn up from the company with a generator. Unfortunately they don’t know how to start it... 6.00pm the company rings to offer us a generator apparently unaware that we’ve already got one. 7.45pm the mains supply is restored. I phone to tell them so and in an unprecedented burst of efficiency they turn up to repossess the generator less than two hours later.”

- 4.20 Such generators vary in capacity and can be used to restore supply either to a single customer or a group of customers. Northern Electric reported that 43 customers had their power temporarily restored by mobile generators.

NORWEB noted that in addition to their own generators they also obtained generators from other suppliers. In total they used 32 generators to temporarily supply 62 customers. This compares with the 16 generators they used in December 1997. ScottishPower reported a widespread use of mobile generation with over 200 generators being used. They estimated that over 900 customers had their supply temporarily restored this way.

- 4.21 PESs varied widely in their use of mobile generation, as can be seen from the following table.

Number of customers provided with temporary mobile generation

Company	No. of customers
Eastern	193
East Midlands	*60
Manweb	none
Midlands	none
Northern Electric	43
NORWEB	62
SEEBOARD	24
Southern	1,085
SWALEC	13
South Western	as required
Yorkshire	650
ScottishPower	>900
Scottish Hydro	465
TOTAL	minimum 3,495

*None were storm related

- 4.22 Installing a mobile generator is not necessarily the best option for customers as some faults may take very little time to repair. Rather, their use should be targeted where the nature of the network problem suggests that repairing the fault may be delayed, or a lengthy process. It also needs to be made clear to customers that they will experience a further short supply interruption when the mobile generator is disconnected and normal supply resumed.

Table 6 - Technical staff - normal cover and maximum available on the day

Company	26-Dec		27-Dec		28-Dec		29-Dec		30-Dec		31-Dec	
	Normal	Max	Normal	Max	Normal	Max	Normal	Max	Normal	Max	Normal	Max
Eastern	72	530	72	530	72	530	72	530	72	530	72	530
East Midlands	100	100	100	100	100	100	170	170	172	172	168	168
Manweb	91	177	91	177	91	159	91	149	91	149	91	149
Midlands	45	61	45	58	45	45	45	45	45	45	45	45
Northern	49	161	50	344	60	319	65	292	67	292	67	130
NORWEB	30	48	30	182	30	191	102	188	101	187	101	140
SEEBOARD	39	64	39	78	39	39	39	39	39	39	39	39
Southern	55	na	55	na	55	na	55	na	55	na	55	na
SWALEC	34	198	34	198	34	198	58	198	58	198	58	198
South Western	30	30	30	30	30	30	30	30	30	30	30	30
Yorkshire	50	52	50	83	50	67	133	133	134	134	131	131
ScottishPower	49	164	49	356	49	505	49	554	49	649	49	635
Scottish Hydro	57	97	57	218	57	198	507	551	507	516	507	507

na - not available

Table 7 - Number of faults and method of restoration 26 - 31 December 1998

Company	Number of faults					Method of restoration		
	No. LV and services	No. at HV (6.6-20kV)	No. at EHV (33-132kV)	Other networks	TOTAL	No. faults restored by remote switching	No. customers restored by remote switching	No. faults requiring site attendance ¹
Eastern	144	67	4	0	215	18	12,041	197
East Midlands ²	290	54	1	0	345	3	995	342
Manweb	230	103	6	0	339	1	383	338
Midlands	58	56	2	0	116	17	11,113	99
Northern	651	169	12	0	832	14	33,920	818
NORWEB	254	249	69	0	572	91	95,912	481
SEEBOARD	156	20	7	1	184	13	9,860	171
Southern	232	34	4	0	270	2	3,189	268
SWALEC	204	49	1	0	254	8	5,225	246
South Western	164	39	0	0	203	9	3,746	194
Yorkshire	136	65	6	0	207	1	1,435	206
ScottishPower	³ 4,659	712	⁴ 114	135	5,620	⁵ 200	145,100	5,420
Scottish Hydro	157	172	⁴ 57	0	386	15	⁶ 4,808	371
TOTAL	7,335	1,789	283	136	9,543	392	327,727	9,151

¹ Figures may not match totals in Table 3. Figures calculated as total faults less those restored by remote switching.

² East Midlands included all incidents, whether or not due to the storms

³ Estimate from ScottishPower's Troublecall system

⁴ In Scotland the 132kV lines form part of the transmission network. ScottishPower had 51 faults at 132kV and Scottish Hydro-Electric had 7 faults at 132kV

⁵ Figure estimated as including all transmission faults and a small percentage of distribution faults

⁶ Scottish Hydro-Electric state that as some customers will have been affected by both transmission and distribution faults this figure contains an element of double counting.

ScottishPower reported another 548 faults to clear on 1-3 January and Scottish Hydro-Electric had 29, almost all at LV and HV.

Table 8 - Speed of restoration

Company	Number of customers off supply for:										TOTAL	
	0-3 hours	3-6 hours	6-12 hours	12-18 hours	18-24 hours	24-36 hours	36-48 hours	48-60 hours	60-72 hours	Longer		
Eastern	32,797	2,628	689	¹ 48	¹ 44	0	0	0	0	0	0	36,406
East Midlands	23,592	3,502	759	213	4	15	0	0	0	0	0	28,085
Manweb	21,466	2,803	370	251	7	0	0	0	0	0	0	24,897
Midlands	29,330	3,155	284	0	0	0	0	0	0	0	0	32,769
Northern	118,830	19,492	10,212	4,535	2,317	3,769	644	796	261	64	160,920	
NORWEB	94,733	10,118	14,657	4,427	5,239	1,648	990	183	1,095	530	133,620	
SEEBOARD	15,018	808	232	78	3	1	0	0	0	0	16,140	
Southern	19,124	4,189	300	65	18	0	0	0	0	0	23,696	
SWALEC	30,566	1,200	306	0	0	0	0	0	0	0	32,072	
South Western	9,689	549	10	0	0	0	0	0	0	0	10,248	
Yorkshire	42,615	2,628	1,000	73	11	0	0	0	0	0	46,327	
ScottishPower	186,372	87,170	21,500	28,163	11,068	17,099	7,760	2,909	5,258	7,062	374,361	
Scottish Hydro	34,201	8,545	12,393	7,410	1,151	1,396	698	23	17	1	65,835	
TOTAL	658,333	146,787	62,712	45,263	19,862	23,928	10,092	3,911	6,631	7,657	985,176	

¹Eastern state these are approximate figures based on a manual examination of individual fault reports.

CHAPTER 5

COMMUNICATIONS

Telephone communications

5.1 All PESs are obliged under Condition 9A of their licence (Part V Condition 7A in Scotland) to operate an enquiry service to receive reports and offer information and guidance about any incident that could affect the security, availability and quality of service of their distribution system. This service should deal with all reports and enquiries promptly and be able to deal with enquiries at all times on every day of the year. It is clear that during severe weather that PESs are not meeting these requirements.

“I became convinced the company had set up a ring of frustration to avoid having to answer any questions.”

5.2 As in 1997 customers had major problems getting through to their local company, and obtaining useful information when they did get through.

“When I finally got through the hurdles they told me updates would be available on television!”

5.3 This created a vicious circle where customers rang back repeatedly in an attempt to get some useful information, increasing the volume of calls and thus increasing the likelihood of telephone systems being overwhelmed. Companies are very reliant on information from customers to help them trace faults. Where this information does not come in, they cannot provide useful information to their customers, who thus continue to call back. Companies need to manage this process better to ensure both that customers are given good information, and to reduce restoration times.

5.4 Companies may argue that it would be too costly and wasteful of resources to have in place systems and staff able to cope with an occasional peak of hundreds of thousands of telephone calls. However, even allowing for this

there were considerable discrepancies in the volume of calls handled by different companies (see Table 9). For example, over 26 and 27 December, when most customers were off supply, ScottishPower was able to handle 167,031 calls, NORWEB managed to handle 28,353 out of 343,568 attempted calls, and Northern Electric stated that they handled all attempted calls - 69,027. Such widely diverging figures show that there is clearly still scope for further improvement.

5.5 ScottishPower's performance in handling over 80,000 calls on each day looks particularly impressive. However, looking at these same two days, all three companies reported that most customers heard a recorded message rather than being able to speak to a member of staff. Over the two days only 25,000 customers calling ScottishPower spoke to a member of staff, compared with 16,000 Northern Electric customers and 14,000 NORWEB customers. Some customers may have been satisfied with the recorded message they heard, whereas others may have been unable to get through to an operator when they wanted. There is no clear information available to allow a differentiation between the reasons for customers not speaking to an operator. Table 10 shows the proportion of customers whose calls were answered by staff or by message.

5.6 Although ScottishPower uses the services of their telecommunications subsidiary Scottish Telecom, their systems still interconnect with British Telecom's. ScottishPower explained that, with their agreement, British Telecom introduced call gapping on Sunday 27 December. This was to ensure that 999 calls could still be handled, due to the exceptionally high volume of calls being attempted. Call gapping limits the number of calls that can be connected to a number at once and would mean that some customers would hear a BT recorded message or an engaged tone rather than being connected to ScottishPower's system. ScottishPower estimated that only 1 in 5 calls were connected during call gapping, which they said was likely to have had maximum impact between 9.00am to midday on Sunday 27 December. They further commented that the capacity of their own telephony infrastructure was also reached at 9.00am that day.

5.7 All three companies reported the highest number of customers off supply on 27 December. The following table therefore compares the number of customers off supply with the number of calls made by customers on that day.

Calls made on 27 December

Company	Customer s off supply	Calls attempted		Calls connected		Method (%)	
		No.	per customer off supply	No.	per customer off supply	messag e	staff
Northern Electric	97,926	59,058	0.6	59,05 8	0.6	77	23
NORWEB	107,460	318,36 0	3.0	24,57 8	0.2	82	28
ScottishPower	164,381	na	na	84,69 9	0.5	80	20

na - not available

5.8 Despite many customers reporting making repeated calls to their PES (some successful, some not) figures from all three companies showed that on average less than one call per disconnected customer was answered. Northern Electric's figures suggested that, at most, only 60 per cent of customers off supply that day attempted to call them. NORWEB's figures showed that on average each customer off supply attempted to ring them three times. There are no clear reasons for this apparently widely differing reaction from customers in the two areas. NORWEB further reported that the volume of calls attempted that day was about 30 times greater than normal, but that by the next day it had decreased to about twice the usual volume. ScottishPower reported that an estimated 700,000 calls may have been attempted in a four-hour period. They stated that industry experience shows that a redial factor of 10 to 1 was not unusual, suggesting that these 700,000 calls equated to about 70,000 callers.

5.9 In common with other companies, ScottishPower uses a system of Call Line Identification to allow customers to hear recorded messages specific to where they live. However, ScottishPower says that some telephone exchanges do not support this system. They are considering what improvements could be made. Some companies state that they were able to track back lost calls and ring those customers who were unable to get through to them in the first instance. While ScottishPower's systems do not currently have that capability, we welcome their statement that they would now follow up this possibility.

5.10 Customers were also very unhappy that even when they did finally manage to get through to their PES they were unable to speak to an operator immediately and were hearing out of date messages.

“Updated bulletins were promised at particular times. No such updates were given despite several phone calls up to 2 or 3 hours after bulletins were supposed to be issued.”

5.11 Those who did speak to an operator were being reassured that their power would be on later that day, only to be off supply for yet another night. We understand that it can be difficult to make accurate estimates of restoration times during a period of widespread system damage. However, customers made it clear that they wanted companies to tell them if there was no realistic hope of supply being restored as that would allow them to make alternative arrangements for the night.

“If you know it will be four days before you are able to cook or heat your house or take a bath you can make other arrangements. Instead, we all waited hopefully.”

5.12 Part of the problem here could have been when engineers expected to restore supply to all customers within an area by repairing a particular fault only to find that some customers were affected by an additional fault. It may be more helpful if staff giving out expected restoration times could invite

customers to ring them back if they remain off-supply after that time. NORWEB stated that they contacted a sample of customers they believed were associated with each HV fault to ensure that their supply had been restored. This enabled them to identify further LV faults that had been masked by the HV fault. This is another approach worth considering. Despite these efforts a number of NORWEB customers commented that the company appeared to have done little to improve their systems since the storms the previous year.

- 5.13 Even more concerning are the comments from customers who felt that they had been deliberately misled.

“I was told that someone was up the pole repairing the fault as we spoke. When I informed the lady this was a lie as I could see the pole from my window and there was nobody there the back tracking that was done was quite remarkable.”

- 5.14 On the other hand there was some feeling that the staff on the front line were doing the best they could in the circumstances, and that problems originated further up the line. It is clear from the tenor of the comments received that there was little consistency in communication standards even within one company.

“We sympathise with the staff who had to break their holidays to deal with the emergency and would not wish to be critical of their efforts - the problem lies with management”

- 5.15 Whilst most customers were very appreciative of the work done by linesmen to restore supplies, there was a feeling that senior managers needed to be more immediately involved, and give greater attention to customer concerns. Without this, PESs run the risk of being perceived to be out of touch with the needs of customers. OFFER wishes to see a more positive, public, commitment from senior managers to customers to dealing with such situations efficiently.

Call centre capacities

- 5.16 The comparative call handling figures submitted by the PESs suggest that they use technologies of greatly differing nature and capacity. Some do not appear to have any facility for general messaging, although such messages are of limited value to customers who are seeking information on likely restoration times in their own area.
- 5.17 Call centre line capacities also seem to have little relationship to the number of customers within any particular PES area. The information provided by PESs to OFFER is insufficient to draw any conclusions on what represents an adequate level of resources (see Table 11). Companies have submitted three separate sets of information on call centre capacities: in early 1998 following the Christmas storms in 1997, later in 1998 under the terms of the licence condition referred to at the beginning of this chapter, and following OFFER's request for information in early January 1999. This information is not always consistent or readily understandable. Some companies do appear to have increased their call centre capacity over the last year, others apparently have not. Some companies have restructured their telephony systems, making direct comparisons difficult. Increasing the number of available lines is only effective if there are staff and systems available to ensure that they are fully used. The figures in Table 12 suggest that the worst affected companies were generally able to redeploy staff relatively quickly. OFFER will wish to explore with all PESs what they have done in terms of reviewing the capacity of call centres, and what further improvements they are considering.
- 5.18 Eight companies provide a freephone service for customers, the remaining six providing local rate lines. Some customers felt very strongly that calls to emergency lines should always be free of charge. This is a very understandable view given that companies rely so heavily on the information from customers to identify faults and prioritise repairs. However, some companies have queried whether having a freephone service leads to customers being more likely to hold for longer, or repeatedly redial when they

get an engaged tone. This, the companies argued, is counter-productive, as lines are then engaged for longer, leading to even more delays in customers' calls being answered.

- 5.19 One suggestion for ensuring that customers can relay information on potentially dangerous situations quickly is to set up a dedicated line for that purpose. Northern Electric used their automatic messaging service to give out a separate freephone number for reporting such situations. This number by-passes the normal queuing system. They found that when customers were unable to get through on other numbers they rang this line. Despite this, the company reported that they still received a significant number of reports of grounded overhead lines and other damaged apparatus, enabling them to deal with such reports as a matter of urgency.

Other communications

- 5.20 The companies also issued press notices and contacted local media directly, including local radio stations. If the PESs relay helpful, up-to-date information by radio or other means this can reduce the number of customers ringing them direct, thus making the management of information easier. Companies reported some problems with this approach as local media are also more lightly staffed during holiday periods and outside normal working hours. This approach is of course predicated on customers having access to a battery powered radio, or leaving their home to stay somewhere with a power supply. However, it would merit further consideration.
- 5.21 OFFER also approached local authorities and police forces in the worst affected areas for their views on how well the PESs had handled the problems. Many were very appreciative of the efforts put in by companies.

“The general public echo our opinion that the company’s works teams and linesmen performed outstandingly, in extremely difficult conditions, in their efforts to return the power system to normal working.”

- 5.22 However there was also strong concern that the PESs' inability to deal with the volume of telephone calls received resulted in many members of the public ringing the police to report that they had no supply. One police force was particularly concerned about the contradictory information they received from different parts of the same company. Different forces reported varying degrees of success in contacting their local PES via their dedicated telephone number.
- 5.23 Local authorities and community councils similarly reported mixed experiences. One council stressed the scale of the damage suffered, noting that it would take them three months to repair all their houses and public buildings damaged by the storm. Another council spoke positively of the partnership approach they enjoyed with their local PES, with two members of the PES's emergency team working with the Council's switchboard. This, they felt, enabled staff to pass urgent messages between the Council's emergency centre and the PES and allowed them to address the needs of the most vulnerable members of the community. Another council suggested that such a service would have benefited them. OFFER would like to see all PESs consider the scope for offering such services during system emergencies. We are pleased to see the commitment from several companies to review and develop their arrangements for liaising with local authorities emergency planning units.
- 5.24 Councils also commented on the paucity of available information and the difficulties seen in keeping authorities and members of the public properly informed. There was a call for PESs to make more proactive use of local radio and other means of communication. As noted above, this can help PESs to manage the volume of telephone calls more successfully, allowing information on potentially dangerous situations to be dealt with promptly. One community council had been pleased that their local PES had contacted them with details of the compensation scheme, enabling them to deliver a circular letter throughout the district. However, they noted that the PES could have done the same themselves.

- 5.25 Second tier suppliers (that is, suppliers other than the local PES) also need information during system emergencies. Although it should be most effective for customers to contact the PES as the company who operates the distribution network, some may expect their supplier to provide them with information as well. Under the terms of Condition 9A of their licence (Part V Condition 7A of the Scottish licences) PESs are not allowed to discriminate between the way their distribution business provides information to their own supply business relating to the security, availability and quality of service and any other supplier.
- 5.26 British Gas, a major player in the liberalised electricity supply market, has informed OFFER that they wished to receive more information from PESs on supply interruptions. The company has since taken this issue up with several PESs. One PES has suggested that their information needs could be met by being included in the circulation list for press notices. Another has commented that the information they are required to supply to second tier suppliers is defined in their commercial agreements, including the Use of System Agreement (although this agreement only refers to planned outages). OFFER is concerned that such an approach may not be sufficient to meet the PESs' licence requirement, and would wish to see PESs meet all reasonable requests for information on supply interruptions. This issue merits further consideration as part of the ongoing work on separation of businesses.
- 5.27 This chapter highlights the complex series of communication flows that take place during a system emergency. Figure 1 illustrates the main communication flows that take place during such emergencies. A stronger control on information would benefit companies and customers alike.

Figure 1 - Communication flows during system emergencies

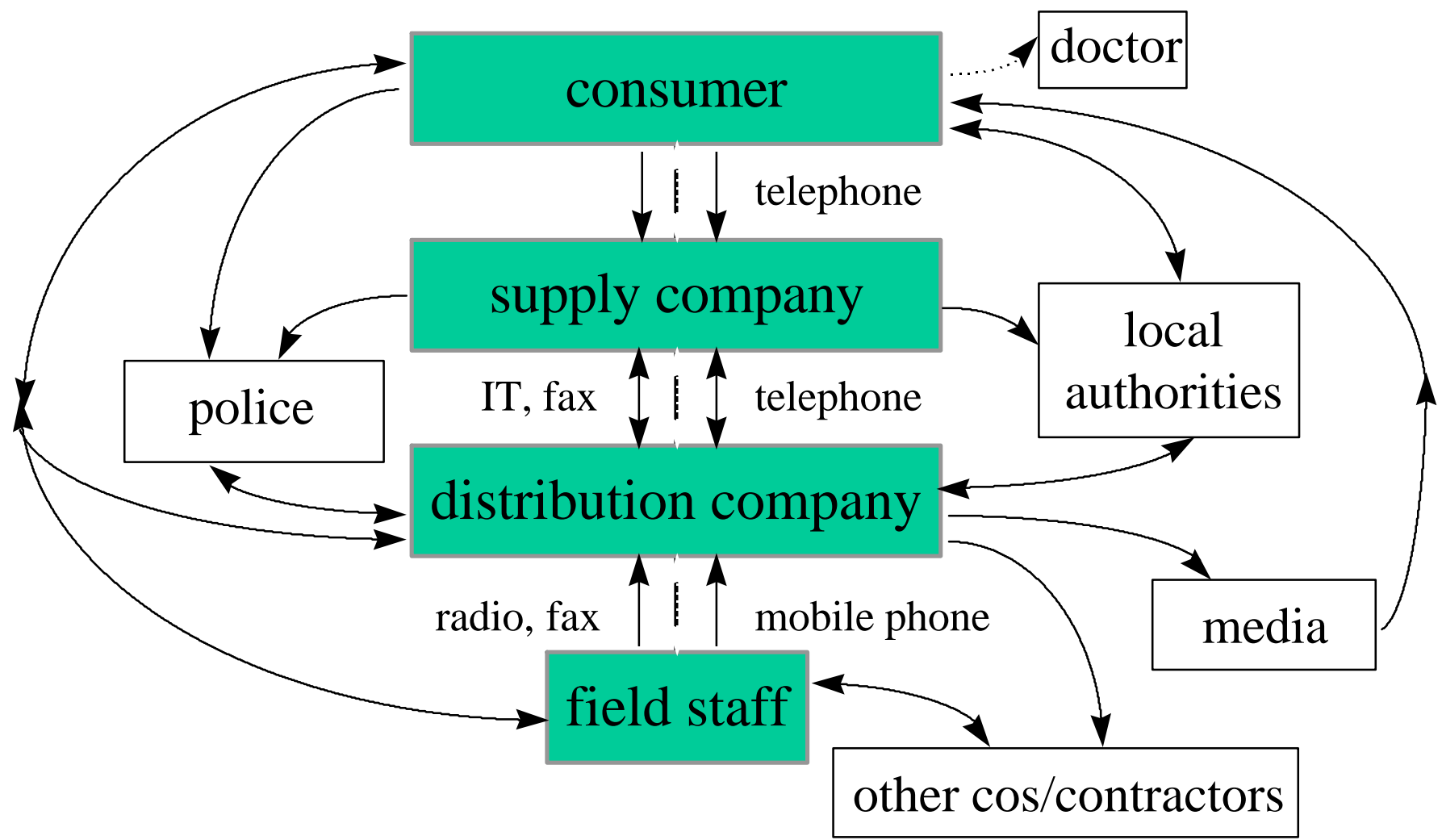


Table 9 - Number of successful and unsuccessful calls to companies - 26 to 31 December

Company	26 and 27 December			28 and 29 December			30 and 31 December		
	Calls attempted (1)	Calls connected (2)	(2) as % of (1)	Calls attempted (1)	Calls connected (2)	(2) as % of (1)	Calls attempted (1)	Calls connected (2)	(2) as % of (1)
Eastern	np	5,952	na	np	2,188	na	np	1,169	na
East Midlands	6,014	5,474	91	10,455	10,384	99	20,211	19,790	98
Manweb	6,582	6,547	99	8,395	7,928	94	10,995	10,195	93
Midlands	8,518	7,869	92	1,218	1,218	100	2,904	2,904	100
Northern	69,027	69,027	100	24,675	24,675	100	4,953	4,953	100
NORWEB	343,568	28,353	8	27,485	26,100	95	3,656	3,619	99
SEEBOARD	4,304	4,133	96	2,269	2,224	98	3,673	3,476	95
Southern	6,603	6,394	97	3,147	3,139	100	2,729	2,687	98
SWALEC	1,822	1,560	86	2,370	1,796	76	1,477	1,374	93
South Western	2,632	2,632	100	1,295	1,295	100	738	738	100
Yorkshire ¹	6,381	6,236	98	2,766	2,706	98	2,825	2,737	97
ScottishPower	na	167,031	na	54,870	47,242	86	17,901	17,400	97
Scottish Hydro	29,193	24,266	83	9,466	9,425	100	7,391	7,151	97

¹ Yorkshire report that 7% of calls were abandoned post connection

np - not provided

na - not available

Table 10 - Method of answering successful calls to companies - 26 to 31 December

Company	26 and 27 December			28 and 29 December			30 and 31 December		
	Calls connected	% answered by		Calls connected	% answered by		Calls connected	% answered by	
		staff	message		staff	message		staff	message
Eastern	5,952	49	51	2,188	58	42	1,169	55	45
East Midlands	5,474	73	27	10,384	99	1	19,790	96	4
Manweb	6,547	90	10	7,928	90	10	10,195	95	5
Midlands	7,869	48	52	1,218	91	9	2,904	56	44
Northern	69,027	23	77	24,675	37	63	4,953	37	63
NORWEB ¹	28,353	34	79	26,100	40	80	3,619	79	42
SEEBOARD	4,133	54	46	2,224	83	17	3,476	54	46
Southern	6,394	41	59	3,139	54	46	2,687	53	47
SWALEC	1,560	86	14	1,796	68	32	1,374	81	19
South Western	2,632	63	37	1,295	75	25	738	75	25
Yorkshire ²	6,236	36	64	2,706	51	49	2,737	44	56
ScottishPower	167,031	15	85	47,242	55	45	17,400	87	13
Scottish Hydro	24,266	41	59	9,425	72	28	7,151	85	15

¹ NORWEB report that some calls were answered by both message and staff

² Yorkshire report that 7% of calls were abandoned post connection

Table 11 - Physical communications resources - telephone lines available

Company	Lines for call handling by staff	Lines for localised messaging	External lines for general messaging	Total number of customers ('000s)
Eastern	389	120	0	3,258
East Midlands	270	1,280	1,280	2,300
Manweb	236	236	7,260	1,382
Midlands	150	110	360	2,250
Northern	270	119	3,300	1,442
NORWEB	up to 122	up to 122	0	2,202
SEEBOARD	40	80	0	2,108
Southern	up to 60	up to 60	0	2,647
SWALEC	55	30	70	980
South Western	np	np	np	1,323
Yorkshire	45	370	5,000	2,073
ScottishPower	up to 300	up to 300	30,000 calls/ hour	1,860
Scottish Hydro	up to 240	up to 120	up to 240	640

np - not provided

Table 12 - Communications resources - call centre staff - normal cover and maximum cover on the day

Company	26-Dec		27-Dec		28-Dec		29-Dec		30-Dec		31-Dec	
	Normal	Max	Normal	Max	Normal	Max	Normal	Max	Normal	Max	Normal	Max
Eastern	38	44	44	50	59	70	60	130	60	130	60	130
East Midlands	28	28	19	19	28	28	100	100	105	105	105	105
Manweb	12	95	12	115	12	86	12	128	12	134	12	118
Midlands	4	17	7	7	16	16	16	16	16	16	16	16
Northern	4	13	4	95	6	93	8	21	7	np	6	np
NORWEB	6	32	5	54	6	48	6	57	6	49	6	42
SEEBOARD	10	np	10	np	10	np	10	np	10	np	10	np
Southern	10	18	10	13	10	10	10	10	10	12	10	13
SWALEC	20	75	8	75	8	75	15	75	15	75	15	75
South Western	4	up to 280	4	up to 280	4	up to 280	49	up to 280	47	up to 280	45	up to 280
Yorkshire	4	12	5	8	8	8	8	8	8	8	8	8
ScottishPower	12	116	12	116	12	143	12	135	12	144	12	140
Scottish Hydro	19	25	25	44	49	49	47	47	48	48	39	39

np - not provided

Definitions:

Normal cover - Maximum number of staff at work and on standby to cover fault reporting

Maximum cover - Staff available to answer fault reporting calls including supply customer service staff where re-deployed

CHAPTER 6

PAYMENTS TO CUSTOMERS

Statutory requirements

- 6.1 Under the terms of sections 39 and 40 of the Electricity Act 1989 the Director General of Electricity Supply has the power to impose regulations on PESs setting two types of standards of performance, Guaranteed Standards and Overall Standards. Standards were first introduced in July 1991 and have been revised and tightened on several occasions since then. Under the Overall Standards of Performance there are two standards for restoration of supply, which vary according to PES area. Firstly, between 85 percent and 95 percent of supplies must be restored within three hours. In addition there is a target for 100 percent of supplies to be restored within 24 hours.
- 6.2 Under the Guaranteed Standards, where supplies are not restored within 24 hours PESs must pay domestic customers £50 for the first 24 hours they are without supply and £25 for each 12 hour period thereafter. The equivalent payments for non-domestic customers are £100 and £25. There are certain exemptions from the requirements under the Guaranteed Standards, one of which is where severe weather prevents a company from meeting the standard. Customers are required to submit claims under this Standard within one month of the supply interruption.
- 6.3 OFFER publishes details of each PES's performance against these targets annually in its Customer Service Report.
- 6.4 Where a customer has changed to another supplier they do not lose their entitlement to payments. Under Condition 21 of their licence (Part V Condition 15 in Scotland) PESs are obliged to make payments to second tier suppliers equivalent to payments under Guaranteed Standards. Second tier suppliers are similarly obliged to pass such payments on to their customers under the terms of Condition 49 of their licence (Condition 51 in Scotland).

Company approach to Standards

- 6.5 PESs were generally quite positive in their attitude to customers submitting claims, recognising the considerable inconvenience and discomfort they had suffered. However, different companies appear to have interpreted the regulations governing standards of performance in rather different ways. Although six companies reported that some of their customers were off supply for over 24 hours, only two made payments under the Guaranteed Standards scheme, NORWEB and Northern Electric. Both companies refused to meet some claims. NORWEB stated that where customers submitted claims after the allowed one month they would not make payments under the Guaranteed Standards scheme, but would still consider claims on a goodwill basis. Northern Electric said that they took on trust customers claims that they were off supply for over 24 hours. They also made some goodwill payments. ScottishPower and Scottish Hydro-Electric did not make Guaranteed Standard payments, claiming the severe weather exemption. Rather, those payments they made were non-statutory goodwill payments.
- 6.6 According to the information provided to OFFER, some PESs did not make payments to all customers off supply for over 24 hours. In some cases there are claims outstanding, but not sufficient to make up this difference. It may be that in some remote areas linesmen had difficulty accessing a fault to repair it and thus companies could legitimately invoke the severe weather exemption.
- 6.7 Under the existing regulations companies are only obliged to make Guaranteed Standards payments to customers off-supply for over 24 hours when they receive a claim. East Midlands Electricity did not receive any claims from the 15 customers they identified as being off-supply for over 24 hours and thus did not make any payments. On the other hand, SEEBOARD made 51 payments, although only one customer was off-supply for over 24 hours. That customer received a goodwill payment of £150, although it is not

clear why this was not a Guaranteed Standard payment. The remaining 50 customers receiving a payment were off supply for 12-24 hours. None of these customers lost supply as a result of the severe weather, but were affected by a cable fault. The only claims SEEBOARD refused were from customers who were off supply for less than 12 hours. ScottishPower noted problems with double counting of claims where customers claimed both by telephone and in writing. They also commented that they were still receiving claims in April. Details of the number of claims and payments made to date are included in Table 13.

6.8 The following summary compares the number of customers off supply for longer than 24 hours with the number of payments made. However, this information should be used with caution due to the potential problems with the base data.

Payments made to customers - settled claims

Company	No. of customers off supply > 24 hours	No. of payments (Guaranteed Standard ¹ and goodwill)		No. and % customers not receiving a payment	
		Claimed	Made	Claimed	Off supply >24 hours
East Midlands	15	0	0	none	15 (100%)
Northern Electric	5,534	6,575	6,277	298(5%)	none
NORWEB	4,446	12,863	11,698	1,165(9%)	none
SEEBOARD	1	54	51	3(6%)	none
ScottishPower ²	40,088	48,266	47,548	718(1%)	none
Scottish Hydro-Electric	2,135	³ 934	³ 583	351 (38%)	1,552 (73%)

¹ NORWEB customers may have received more than one GS payment each

² Figures exclude 1,263 outstanding claims - total number of claims received to date 49,529

³ Includes 82 payments made automatically

6.9 Determinations issued by OFFER in 1996 confirmed that the severe weather exemption applies when severe weather prevents a company from meeting this standard, not when severe weather causes the initial problem. OFFER is considering the scope for tightening the use of this exemption as part of the

Distribution Price Control Review (DPCR) presently underway. Equally, OFFER will wish to consider whether tougher penalties would strengthen the incentives on companies to improve their performance.

- 6.10 As noted above, under the existing Standards customers must submit a claim for payment within a month of the supply interruption. OFFER is also considering within the DPCR whether this remains appropriate, or whether such payments should be made automatically where the PES is aware that a customer has been off-supply for over 24 hours.
- 6.11 Companies who did not make Guaranteed Standard payments generally made goodwill payments of an equivalent amount. In addition, where customers were off supply for a prolonged period some companies offered to meet the cost of alternative accommodation. ScottishPower first made a public offer to pay for accommodation on 30 December. Scottish Hydro-Electric made automatic payments to customers who were still off-supply at midnight on Monday 28 December (82 payments totalling £4,100). They did not make payments to all customers off-supply for more than 24 hours, and did not make payments under the Guaranteed Standards. In addition to making Guaranteed Standards payments NORWEB contacted customers on 28 December who had previously indicated that they were having difficulties coping and offered to pay for accommodation and hot meals at their expense. Of the 400 customers contacted by NORWEB this way, eight took up their offer of accommodation and a similar number opted to go out for a hot meal.
- 6.12 British Gas Trading reported that 33 of their customers (all in ScottishPower's area) approached them seeking payments. They agreed that ScottishPower should make any payments to these customers direct. British Gas did not receive any payments from PESs under the terms of the Guaranteed Standards arrangements. At this stage in the opening of the fully competitive supply market a relatively small proportion of customers have changed supplier and only British Gas of all the second tier suppliers has contacted

OFFER to describe their experiences. This is an aspect of the Guaranteed Standards regime that we will continue to monitor closely.

- 6.13 OFFER cannot impose any particular scheme of goodwill payments upon a company, although if a customer has a claim for a Guaranteed Standard payment refused they can ask OFFER for a legally binding decision as to whether they are due such a payment. ScottishPower issued a press notice on 28 December stating a storm of this severity allowed them to claim exemption from the Guaranteed Standards. It further stated that they would reimburse customers in line with the Guaranteed Standards even though the company was not obliged to do so under the terms of their licence. Although a PES can state that they believe they are not obliged to make such payment, only the Director General of Electricity Supply can determine whether or not that is the case.
- 6.14 Northern Ireland Electricity similarly operated a goodwill payment scheme for the customers in their area affected by the Boxing Day storms. The company has stated they will make a standard £115 credit against their electricity bill to all domestic customers without an electricity supply for a continuous period of over 24 hours: non-domestic customers will receive £165. In addition, customers who were without a supply continuously to 7.00pm on 30 December were entitled to claim £12 for a hot meal for each member of the household from that night until power was restored. Those still without supply at 7.00pm on 31 December could claim a further £40 per night for each adult and £20 for each child for bed and breakfast accommodation.
- 6.15 They also issued advice relating to safety issues and how best to safeguard freezer contents. A more proactive attitude to keeping customers informed can only be helpful at such times. Companies suffering major supply disruptions within their area usually issue regular press notices: such additional advice could easily be included in these notices.

6.16 Although the flexible attitude towards goodwill payments seen in some areas was to be welcomed, companies need to ensure that they communicate effectively what they are prepared to offer. When customers contacted Northern Electric asking about compensation for lost freezer contents they were told to write in, thus leading customers to believe that such claims would be considered. Northern Electric later wrote to such customers telling them they would not meet these claims. Such an apparent change in attitude can only alienate customers.

“We were told we would get our freezers paid for. Then they changed their minds - I wish we could do the same when paying them.”

6.17 In the interest of clear communication, companies should show a greater degree of consistency in approach to all their customers.

6.18 Companies in the worst affected areas used the local media to advertise their payment schemes. ScottishPower set up a freephone help line which they advertised in the local press and on some billboards, NORWEB used local radio, issued press notices and put claims coupons in local press, and Northern Electric advertised a freepost address in local newspapers and in a recorded message when customers rang their call centre. All referred to their schemes in letters sent to customers. Several customers commented that they rang in the evening to ask what compensation would be available whilst their supply was still off. They did not find it helpful to be asked to write down an address in the dark. Although the PESs are required to send out details of the Guaranteed Standards to all customers once a year customers are not always clear about their entitlements or how to claim them. A positive use of the media during major supply interruptions can only be of benefit to customers and we welcome PESs' efforts in this area.

Table 13 - Payments made by suppliers to customers

Company	Claims received	Claims outstanding	No. of customers receiving GS payments	No. of goodwill payments made	GS payments amount paid	Goodwill payments amount paid	Total no. of payments made	Total amount paid	Average amount paid	Claims refused
Eastern*	0	0	0	0	£0	£0	0	£0	£0	0
East Midlands	0	0	0	0	£0	£0	0	£0	£0	0
Manweb*	0	0	0	0	£0	£0	0	£0	£0	0
Midlands*	0	0	0	0	£0	£0	0	£0	£0	0
Northern Electric	6,575	0	6,230	47	£510,255	£1,410	6,277	£511,665	£82	² 298
NORWEB	12,863	0	¹ 11,368	330	£900,452	£23,530	11,698	£923,982	£79	² 1,165
SEEBOARD	³ 54	0	0	51	£0	£2,650	51	£2,650	£52	3
Southern*	5	0	0	0	£0	£0	0	£0	£0	5
SWALEC*	0	0	0	0	£0	£0	0	£0	£0	0
South Western*	0	0	0	0	£0	£0	0	£0	£0	0
Yorkshire*	5	0	0	5	£0	£164	5	£164	£33	0
ScottishPower ⁴	⁵ 49,529	⁶ 1,263	0	47,548	£0	£4,342,000	47,548	£4,342,000	£91	718
Scottish Hydro ⁷	934	0	0	583	£0	£46,750	583	£46,750	£80	351
TOTAL	69,965	1,263	17,598	48,564	£1,410,707	£4,416,504	66,162	£5,827,211	£88	2,540

*Denotes companies where no customer was off supply for over 24 hours

¹ Some customers may have received more than one GS payment

² Northern refused 163 claims for GS payments and 135 goodwill payments, NORWEB refused 710 GS payments and 455 goodwill payments

³ SEEBOARD state that all the claims received related to a cable fault not caused by the severe weather

⁴ ScottishPower report that they were still receiving claims in April

⁵ May include some duplicate claims and some claims from Scottish Hydro-Electric customers sent to ScottishPower in error

⁶ Includes 1,041 claims where ScottishPower need further information from customers

⁷ Scottish Hydro-Electric's figures include 82 payments made automatically

CHAPTER 7

CONCLUSIONS

- 7.1 With the increasing use of electronic equipment both in the workplace and at home people are becoming more reliant on having a continuous electricity supply. As a result customers are no longer as willing to accept regular interruptions to their supply as a result of severe weather. Companies need to ensure that they are equipped to meet the reasonable expectations of their customers.
- 7.2 December 1998 saw large numbers of customers suffered prolonged supply interruptions during a period of bad weather, as was the case in December 1997. The frustration felt by customers undoubtedly increases where storms occur during the festive season.

“It was particularly galling to be without heat or light and see a Christmas tree on the opposite side of the road illuminated with fairy lights.”

- 7.3 Many customers also commented on the additional problems caused by having a supply interruption during the holiday season, in particular having a large number of people staying in one house, and the difficulty in finding alternative accommodation.
- 7.4 The scale of problems suffered was such that the worst affected companies found that some systems were overloaded. This threw into sharp relief the areas of relative weakness. Companies’ reactions to the problems suffered during the severe weather were successful to varying degrees. They have generally been very open with OFFER in explaining the difficulties they encountered. The worst affected companies have conducted full internal reviews of their performance which we will wish to consider. There would appear to be considerable scope for companies to learn from each others experience. When considering the standard of service delivered by monopoly providers a direct sharing of lessons learned would seem quite

appropriate. Chapter 8 summarises the areas where further action or investigation is indicated.

- 7.5 The evidence suggests that there is considerable scope for improving the data systems designed to enable faster tracing of faults. Equally, communications between field staff and call centres needs to be improved to allow companies to provide better quality information to customers. We will be asking the PESs to carry out an examination of their internal systems, in particular their ability to track and monitor faults, their prioritization of fault repair and means of communicating relevant, helpful, information to customers quickly.
- 7.6 We also wish to see some assessment of the scale of supply interruptions that companies can deal with successfully. Taking ScottishPower as an example, they were more generally able to cope with 30,000 customers off supply on 3 January, but had great problems when 120,000 were off supply at the same time. It would be helpful to have an assessment of the point at which this “cliff edge” exists and how this relates to the likelihood of weather severe enough to cause similar difficulties in future years.
- 7.7 It is not clear that all the PESs report fault information on the same basis. We have now seen two consecutive Decembers where severe weather has caused widespread disruptions to supply. We will wish to ensure that all the PESs can report to OFFER quickly and accurately. In part this should be facilitated by improvements they make in providing feedback to customers. It does not instill confidence in companies’ ability to handle emergencies when there is even doubt as to how many customers have lost their supply as well as doubt over the exact effects of the weather in relation to the design and age of the affected equipment. We will wish to examine in detail the information supplied by the companies and the basis on which it is prepared.
- 7.8 We have considerable concern that companies had so many problems in communicating both internally and with customers. To an extent we accept that such problems are not wholly preventable during times of major system

emergencies, but there is no doubt that improvements could be made. This covers the whole range of communication issues, from the technologies employed, number of staff available, quality of information and liaison arrangements. Feedback from the various organisations in the worst affected areas suggests that there is some scope for improved liaison with local emergency services. We are pleased to see that PESs are already working on this area.

7.9 The varying approach of companies to Guaranteed Standards payments is concerning, and the use of goodwill payments rather than official payments under the Standards makes comparison of company performance more difficult. OFFER is concerned to ensure that companies operate efficiently even under conditions of duress, and that consumers do not suffer unduly poor service or bear undue costs as a result of companies being inefficient in such circumstances. These issues will also be considered further in the DPCR.

7.10 Equally, OFFER does not wish to define the fine details of how companies deal with such circumstances. Rather, this is a matter for their own commercial judgement. However, the scale of problems and the strength of public feeling is such that we wish to explore further with the PESs where they could improve their performance. The PESs worst affected by the Boxing Day storms have indicated various areas of their operations where they are considering possible improvements. OFFER will wish to consider whether tougher penalties would strengthen their incentive to improve. The positive attitude to learning from past problems is very much to be commended. OFFER wishes to ensure that, as a minimum, poorer performing companies improve to the standards of the best, and that all companies strive to exceed the current best.

CHAPTER 8

SUMMARY OF RECOMMENDATIONS

The following issues have been identified as needing further examination or action:

Chapter 2 - Background

- PESs to assess the different approaches to Meteorological Office data, including the receipt of daily dedicated forecasts and access to MIST.
- PESs to consider how best to monitor the number of customers suffering supply interruptions.

Chapter 3 - Network performance

- PESs to gather more accurate information on the cause of supply failures and the number of faults, particularly during times of system emergency to inform their decisions on network investment.
- PESs to build up more detailed information on the age profile and construction standards of overhead lines.
- PESs to review their policies on tree felling and pruning to ensure that, as far as possible, reasonable clearances are maintained around overhead lines.
- OFFER is to consider the quality of supply achieved during storms in the light of PESs' historic capital and operating expenditure. If OFFER deems companies to have been inefficient in their allocation of expenditure they will be dealt with through the distribution price control review (DPCR).

Chapter 4 - Restoration of supplies

- PESs to review their standby procedures for calling in staff over holiday periods to minimise delays when systems emergencies occur.
- PESs to consider ways to improve information flows between field staff and communications centres to allow more effective use of resources.
- A review of policies on prioritisation of work to restore supplies is also indicated.
- PESs to review the promotion and use of their registers for customers with special needs and their internal methods of prioritising work for these customers.
- PESs to review best use of mobile generation.

Chapter 5 - Communications

- PESs to ensure they can meet the requirements of Condition 9A of their licence (Part V Condition 7A in Scotland) including:
 - a review of their call centre capacities
 - a review of the training needs of staff in their call centres
 - ensuring that sufficient information is available to call centre staff to answer customers' queries
 - ensuring that recorded messages on outages are updated at stated times and are accurate
 - considering means of best estimating restoration times to enable customers to make decisions on how to cope with prolonged supply interruptions
 - considering means of ensuring essential information is passed on quickly, both between their own staff and to customers
 - ScottishPower to review with British Telecom the use of call gapping and its impact on customers. Other PESs should learn from their experiences
 - considering Northern Electric's model of operating a separate number for reporting potentially dangerous situations

- improving the flow of information to second tier suppliers to ensure they comply with the requirements of their licence, and do not show undue preference to their own supply businesses
- OFFER wishes to see a clear, positive commitment from PES senior managers to their customers during system emergencies.
- PESs to consider the rival merits of operating freephone telephone lines and local call rate lines.
- All PESs need to review the accuracy of their call logging systems.
- Liaison with local authorities, the media and police needs to be improved. PESs should ensure that their dedicated links with emergency services are maintained and improved.

Chapter 6 - Payments to customers

- OFFER is to review within the DPCR the use of the severe weather exemption in Guaranteed Standards and to consider the scope for companies to make payments automatically to customers who lose their supply for more than 24 hours. OFFER is also to review the size of payments under the Standards.
- Whilst OFFER recognises that goodwill payments are a matter for individual companies PESs need to be more open and consistent in their approach.