A Report on the Boxing Day Storms 1998

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Introduction

On 28 December 1999 three and half million electricity customers were off supply after the country had been hit by storms with winds of nearly 200 kilometers per hour. The estimated cost of repairing the damage is ± 1.7 bn. It took three weeks to reconnect the last customer. This time the country affected was France.

Almost exactly a year earlier the British Isles were hit by storms which were also devastating in their impact.

Northern Ireland no more than France could take evasive action when threatened by a storm. The question is rather how well prepared were we, how well did we cope and have we learned useful lessons from our experience?

The Boxing Day storms in 1998 caused widespread loss of supply to electricity customers in Northern Ireland. At the height of the storm 162,000 customers were off supply and while the vast majority were reconnected within hours about 8,100 had to endure up to five days with no or at best intermittent supply.

The loss of supply was caused by unusually severe weather which affected not only Northern Ireland but neighbouring regions of Great Britain and the Irish Republic where similar disruptions to power supplies were experienced.

NIE published its report on the storms in February. The House of Commons Northern Ireland Affairs Committee published its report in July. In Great Britain, Offer published a report on Supply Interruptions in May.

The reports and the widespread public concern about the extent and duration of the damage caused by the storm prompted NIE to carry out a thorough re-appraisal of its plans and procedures. Over the period since the storm these have been discussed in detail with Ofreg and NIE have gone a long way towards implementing their plans.

Other reports have looked at causes and culpability. This report certainly considers what happened and why it appeared to be handled less effectively than the public expected. But it also seeks to consider the measures which NIE have proposed and whether they can be effective.

The purpose of this paper is threefold:

(a) to consider the Boxing Day storm of 1998 and the reasons why there was such widespread public dissatisfaction with the way in which NIE responded;

- (b) to comment on the plans which NIE has announced and begun implementing on how to manage a similar incident better in future; and
- (c) to look at some of the wider issues of the relationship between a regulated monopoly business and its captive customer market and the possible need for licence modifications to place that relationship on a more satisfactory footing.

This last topic raises a number of issues which are properly the subject of a review when the price controls on NIE are being considered. I have for that reason decided to have the publication of this report coincide with the first consultation paper of the price control process. Accordingly, I will be wrapping issues such as the relationship between quality of supply, capital expenditure and value for customers' money up in the much wider ranging public consultation document on the price controls. To try to treat these subjects as a separate exercise outside that process would, I believe, cause confusion.

Background

NIE is a private company and as with any private company, its Board of Directors' primary duty is towards its shareholders. However, its relationship with its customers is not the normal relationship between a buyer and seller. Anyone buying electricity in Northern Ireland has, in practice, no choice about the wires they use. The operation, management and ownership of the network of electricity high and low voltage wires is NIE's principal and most profitable business. This, contrary to misconception in some quarters, will not change with greater competition. As a monopoly it has to be regulated in the public interest. NIE, in return for its monopoly status as a network owner, has a number of obligations to its customers which are enshrined in legislation and its licence. Shortcomings in NIE's performance may reflect the inability of the regulatory system to provide appropriate incentives as much as failures of NIE to perform up to the standard required of it by its licence.

The Boxing Day Storms

The Boxing Day storms which were the worst in many years had wind speeds of 97mph and were the highest recorded in Northern Ireland since records began in the 1920s (See Table 1).

Table 1

Forecast and actual maximum windspeeds (mph):

Date	Actual Max Windspeed	Forecast Max Windspeed
	(Note 1)	

Saturday 26 December	97(87)	78-87
Sunday 27 December	52	44
Monday 28 December	18	n/a
Tuesday 29 December	47	n/a
Wednesday 30 December	58	n/a
Thursday 31 December	41	n/a

Source: NIE

Note 1:97 recorded at Castlederg, remainder recorded at Aldergrove

They were much more severe in their impact than the highly disruptive storms of the previous Christmas against a repetition of which NIE had planned. Of a total customer base of some 670,000 at its worst point 162,000 were off supply (See Table 2).

Table 2

Number of customers off supply due to weather:

Date	No. off supply due to storm damage
Saturday 26 December	162,000
Sunday 27 December	24,500
Monday 28 December	3,900
Tuesday 29 December	16,400
Wednesday 30 December	12,800
Thursday 31 December	4,000

Source: NIE

The occurrence gives rise to four areas of concern:

- (a) Why had the network appeared to perform so badly and could a different capital expenditure programme have achieved a better result?
- (b) Why was NIE's ability to communicate with its customers so inadequate?
- (c) Was the reconnection of customers as rapid as it could have been or was the management of the re-connection less efficient than it might have been?
- (d) NIE sought to compensate customers for the inconvenience and losses which they suffered

- was this satisfactory?

Network Performance

NIE has demonstrated that the customers who were off supply were overwhelmingly rural and loss of supply affected all rural areas throughout Northern Ireland. Analysis by NIE of faults on their 11kV network showed that in terms of total customer interruptions of 218,028 there were 164,128 (75% of the total) in rural parts of the network. This number is higher than the maximum number off supply on any one day, as some customers were off more than once, while others only became disconnected in the second round of high winds on Tuesday 29 December. However, even in rural areas the result was not a blanket loss of supply across extensive areas. Near neighbours did in many cases have different experiences and anecdotal evidence suggests that lines which were either new or sheltered or not exposed to the direct full force of the wind stood up to the conditions better than other lines.

As it was the 11kV network which was the cause of 75% of faults this also explains why it took so long to restore the entire network as each fault repaired in the low voltage network only restored a small number of customers.

The question which therefore arises is whether NIE's capital expenditure could have been used to better effect and produced a network which would have stood up to the storms better. To answer this question it is necessary to consider the way in which capital expenditure is managed in a privatised utility.

Capital expenditure on the network is required to meet three objectives:

- (a) to enable the network to connect and handle the growth in demand which new customers represent;
- (b) to replace existing network infrastructure as it ages and becomes worn out; and
- (c) to improve the quality of service.

Generally speaking, the third objective is achieved as a by-product of the first two since new equipment to higher specifications should lead to an incremental improvement in the quality of service given that refurbishment will tend to be to a higher standard than necessary only to return the asset to its prior state.

Quality of service is a difficult objective to measure only in the sense that it can be measured by several indicators which do not necessarily overlap. It can be measured in the number of customer minutes lost per year, the number of interruptions, the distribution of interruptions and by the quality of supply (eg., low voltage problems). Single events such as the Boxing Day storms or the Castlereagh sub-station fire can have a major effect on the statistics but even construction plant hitting an important cable can cause a major disturbance in the statistics for any one year.

There are, moreover, subjective issues - are a few short interruptions more upsetting for customers than one long interruption? Are unplanned outages more disturbing than planned? Quality of supply issues have therefore to be handled sensitively and the trend of all the indicators over a number of years is probably the only way of seeing if the quality of supply is improving consistently overall for the entire customer base.

The most frequently used measure of quality of supply is customer minutes lost (CML). At privatisation NIE was not charged with meeting a specific CML target and the Monopolies & Mergers Commission (MMC) criticised the absence of a specific CML target in my price control proposals. The MMC identified a CML target of 120-140CMLs per year which NIE should be expected to meet given a capital expenditure allowance which would permit refurbishment of 1500 km of network per annum. The MMC asserted that this would enable NIE to improve its CML position relative to companies in GB, and the MMC specifically increased the Capex allowance proposed by Ofreg on the basis that it was needed to achieve what the MMC appeared to regard as a desirable but achievable CML target.

However, the relationship between CML and Capex is not constant. Indeed, we have evidence (ie., bad weather and the Castlereagh fire) that significant increases in CMLs can arise from unplanned events. The effectiveness of investment in reducing CMLs depends partly on the type of expenditure to which the Capex is allocated since some Capex projects contribute little or nothing to CML improvements and others a great deal. NIE's submissions to the MMC claimed that for every 100 Kms of line refurbished, CMLs would fall by 0.55 per annum. Since the MMC submission actual observation has shown that this projection is four times higher than actual improvements. NIE have commented that there are reasons for this under-achievement, including an under-estimate of the state of deterioration with improvement manifesting itself only when full refurbishment of a circuit is complete. This is not the place to pronounce definitively on this. I raise it here to illustrate the lack of clear expenditure/performance relationships and to make the point that as regulator, while I am aware of the importance of quantifiable network performance measures, I must treat projected improvements with caution. It is also apparent that certain types of expenditure are more effective at reducing CMLs than others, and that evidence available from experience in Great Britain shows a wide variation between the cost to benefit ratios for CML reduction programmes. Effective regulation requires that any plan put forward to improve network performance is based on sound economics and is not simply a reaction to public pressure to be seen to act. Imprudent capital expenditure would serve only to inflate the asset base of NIE and increase costs to customers without having the desired improvement on CMLs. Therefore a requirement for any investment should be a demonstrable improvement in network performance, which must be clearly measurable and be economically justified.

Once the amount of Capex which NIE is allowed to finance through receipts from customers has been fixed, then it is up to it to decide how that money should be spent. If it defers expenditure, customers in effect end up paying twice because they will have to pay again in a later price control period if that item of capital expenditure is inescapable. But if the company succeeds in achieving an objective at a lower cost - an "efficiency gain" - both customers and shareholders benefit - the former from the long term saving in financing and depreciation costs, the latter because they keep these savings in the current price control period. Unfortunately, there is no transparent way at present of distinguishing beforehand between deferments and efficiency gains. In the first seven years following privatisation, NIE underspent £118.48 million (96/97 prices) on its allowed capital expenditure ie., 25% of the total allowed Capex of £479 million was not spent. Some of this may have been efficiency gains - the MMC estimated that some £25m arose in this way - but in the absence of evidence to the contrary it must be presumed that most of it was deferment pushing up the total burden on customers over time as they have to find the money for the investment a second time. The MMC therefore disallowed the financing cost of this in the second control period and reduced NIE's revenue allowance accordingly.

NIE has provided me with statistical analysis of refurbished circuit performance in the storm conditions which shows better performance than unrefurbished lines. NIE has therefore proposed one way in which to reduce CMLs and to increase storm resistence is through the refurbishment of the 11kV network. This has a positive CML effect in that it reduces the number of CMLs in normal conditions and NIE has also produced evidence summarised in Table 3 below which indicates that the refurbished network is more robust in storm conditions and would therefore reduce CMLs also on those occasions. The question which arises therefore is whether NIE could have reduced the impact of the storm by accelerating the rural refurbishment programme earlier.

Category of refurbishment	Outages per 100km	Improvement relative to category a
a. None - current rogue circuits	6.43	1.0
b. None - remaining circuits	4.44	1.5
c. 100% refurb. (1997-8)	1.39	4.6

Table 3 (11kV fault outages by refurbishment status for the Boxing Day Storm)

Source: NIE

As NIE has now set about accelerating the rural refurbishment programme and believes that it can refurbish more kilometres of line each year than it had previously attempted, it is incontrovertible that it could have done more in the past. Moreover, it clearly had the money to do so, particularly in the first price control period since there was a substantial underspend. Even in the present price control period NIE has been able to reallocate Capex to facilitate the acceleration of rural refurbishment which raises issues which I will return to later.

It is clear from the MMC report and experience since that NIE had underspent its capex budget in the 7 years since privatisation. The average age of the rural network is consequently older than it need have been. However, the MMC specifically proposed both a CML target and an associated Capex amount to meet that target, which was higher than the Capex allowance in my price control proposals. I am satisfied therefore that NIE has sufficient resources under both its first and second price controls to address the investment programme in its LV network, and improve both CMLs and storm resistance.

NIE is and should remain responsible for deciding how to allocate Capex between competing priorities. The regulatory system set in place by Government at privatisation neither foresaw the problem nor provided NIE with any performance incentives and it would therefore be unreasonable to criticise NIE now for not having accelerated rural refurbishment earlier. It is important that in future NIE investment programme is carried out with regard to the achievement of identified output measures, and that capex is prioritised so that projects bring optimum customer benefit/cost ratios while improving network performance. This area must be addressed in the price control which is now being launched.

Communicating with customers

NIE was widely criticised for its failure to communicate adequately with its customers and it is clear that it was the breakdown in communications alongside the interruptions in supply which exasperated customers.

It is important to distinguish between the failure of the network and the failure of the communications system. There is not even a cause and effect relationship. A storm is a natural event which may be predicted statistically and for which there will be advance warnings from the meteorological service. However its scale, though not its impact, is entirely outside the control of NIE.

The company customer communication system is a man-made artefact, constructed by the company to perform to prescribed specifications in circumstances which could arise. As with the technology and organisational configurations of any delivery mechanism it may fail in particular circumstances because it is over-loaded or because the technology or the management is incapable of performing up to the specified standard.

A widespread storm is one type of event which will call into action the company customer communication system but it is by no means the only one. At a local level, planned outages require communication. More significantly the system has to cope with major supply losses caused by some failure or accident in the electricity supply industry. The Castlereagh fire in1998 and the gas supply failure at Ballylumford Power Station in1997 are the two most recent examples of widespread loss of supply from non-weather related causes. In recent years it would appear that a number of the major incidents which the communication system had to deal with were non-weather related but affected very large numbers of customers. The information content of the company's public communication in such situations is, however, usually simpler in that there is more likely to be a single point of loss of supply albeit one which has far reaching effects across the system.

The communication system has to be capable of operating despite the weather conditions. There has never been any suggestion that weather, per se, damaged the capability of the communication system to function. The most likely way in which weather conditions could impair NIE's communication capability would be if very extreme conditions prevented staff from getting to their posts. There has been no suggestion that this happened on this occasion.

It was not therefore the severity of the storm which over-stressed the communication system but the volume of calls the storm triggered (See Table 4). The question for the communication system is not whether it can handle a storm but whether it can handle large volumes of calls irrespective of the trigger event.

Table 4

Date	Calls attempted	Calls connected	% of calls connected
Saturday 26 December	304,909	52,001	17
Sunday 27 December	245,224	63,047	26
Monday 28 December	49,893	36,195	72
Tuesday 29 December	31,926	30,542	95
Wednesday 30 December	11,477	11,039	96
Thursday 31 December	5,294	5,223	98
Total	648,723	198,047	31

Number of successful and unsuccessful calls 26-31 December

Source: NIE

There was in fact a three stage effect which overwhelmed the communication system. The first stage is a direct result of the number of disconnections caused by the storm. If - as NIE now clearly believes - a better targeted Capex programme would have meant a more robust rural network - then there might have been fewer customers making calls.

The second stage is the flow of calls which came as a result of the whole of Northern Ireland being hit by a severe storm at much the same time. All of Northern Ireland - as it is a small area - is more likely to be affected at once than all of the area served by ESB or the Scottish utilities.

The third stage is the failure of the system to cope with the cumulative effect of the first two stages. Frustrated customers called repeatedly thereby compounding the failure of the system to communicate with its customers.

Although the company dealt with 63,047 callers on Sunday 27 December Table 4 shows that it dealt with only 36,195 out of a total 49,893 attempted the following day. Analysis has shown that the reduction in calls handled on Monday, 28 December resulted mainly from a 20% increase in call duration (from an average of 161.8 seconds 196.6 seconds. The company will need to determine whether this reflects a drop in efficiency, for example because call handling staff may start to experience fatigue, or whether increased time on line is required as customer concerns about their period off supply increases. In either case the company will need to consider means of maintaining efficiency at its optimum level.

Statistical elaboration

The communication system failed quantitatively in the small percentages of calls which got through. There was also a failure in the quality of the communication. Customers were, in many cases, not given useful or accurate information and the company did not seem to be able to extract useful information from customers that could have assisted it to restore supply quickly. In a widely dispersed rural network with relatively few customers per kilometre, rural customers are often well placed to act as the company's eyes and ears and provide precise locational information about visible damage to the network. To avoid further frustration however the company needs to explain to customers who are providing information that work elsewhere on the network may need to be undertaken before repairs to visible damage can be effective.

That the company-customer communication system failed is not in dispute, nor is it claimed that failure was an inevitable consequence of the scale of the problem. If NIE believed that it would not be possible to construct a communications system which could work in the circumstances of December 1998, they should not now be spending more customers' money in upgrading its system. Since it is accepted by the company that it is possible to communicate more effectively with customers in conditions similar to those of December 1998, the question must be asked - why was such a system not in place in time?

This question becomes more pertinent when the Christmas day storms of 1997 are taken into account. The damage done by those storms and the annoyance loss of supply caused to customers have paled into relative insignificance against the 1998 storm. The total number who lost supply then was about 60,000. Top wind speeds were 69mph compared to 97mph. Yet, as a consequence of the 1997 storm NIE - in part responding to representations from MPs, Councillors, the Northern Ireland Consumer Committee for Electricity (NICCE) and Ofreg - set about putting in place a much more effective system of communications than they had previously had. NIE personnel clearly believed the assurances they had given to customer representatives and indeed much of the work necessary was taken forward as speedily as the company's human

resources permitted. But the resources were limited, and when it became clear that the communication system which should have been in place by the Autumn of 1998 was running into difficulties, were insufficiently augmented. The occurrence of a major storm for a second successive year underlines the absolute necessity for a lack of complacency and the dedication of all necessary resources when putting in place customer service provisions which are weather sensitive. Whether the system which they had in place would have coped effectively with a repeat of the 1997 Christmas Day storms will never be known. It is indisputable that NIE was hit by a storm of much greater magnitude than it had anticipated. Though such an event at some time was statistically probable, its postponement by several years would have reduced its potential to cause supply losses because the network refurbishment would have been so much further advanced.

It would be unfair to criticise NIE for not having at the end of 1998 the sort of system for managing customer communications which it is currently developing. The technology for call centres is advancing rapidly but it also takes time to set up, test and commission a state of the art communication system. Where I believe NIE might be fairly criticised is for its excessive reliance on an untested "technology fix" for a problem of which the full potential extent had been under estimated. The consequence of this reliance was a degree of complacency and the absence of an effective fall back system which would deliver information to customers by traditional but sometimes far more effective methods such as radio, loudspeaker, post or newspapers.

Reconnecting Customers

NIE's report charts the progress made in re-connecting customers. The speed of reconnection can be - and indeed was - affected by the subsequent weather conditions. Either teams of engineers and linesmen can be hampered by bad weather or their work can be undone by further storms. While this appears to have been a factor it was not the major factor.

Table 5

Speed of restoration

Length of time off supply	No of customers off supply
0-3 hrs	97,600
3-6 hrs	32,400
6-12 hrs	25,050
12-18 hrs	11,600
18-24 hrs	15,000
24-36 hrs	16,900
36-48 hrs	9,000
48-60 hrs	5,300
60-72 hrs	3,200
longer	8,100

The speed of reconnecting customers off supply - apart from weather conditions -depends on three factors:

- (a) a systematic approach tackling those items such as high voltage faults which affect the greatest numbers of customers and whose repair is in any case a necessary condition of lower voltage repairs actually delivering supply to customers;
- (b) the resources available to the managers. This is primarily a question of the number of engineers and linesmen available. Electricity companies pool their resources to deal with emergencies and the ability to bring in reinforcements depends on the degree to which other regions of the British Isles are affected;
- (c) the information available to those in charge of the supply restoration of the sources and causes of loss of supply and their ability to deploy resources in a way which minimises time taken in travelling between jobs and locating faults.

One comment which is made by some members of the public is that the reductions in staff numbers since privatisation mean that NIE now simply has not the number of staff it would have had in the past to restore supplies. NIE was at great pains to rebut this argument and demonstrated that both changes in technology and working practices, improving information and mutual support arrangements gave it as large a resource for this sort of emergency as it would have had in the past (See Table 6). While this is a point I would wish to keep under review, particularly approaching the next price control, I am satisfied with NIE's assurances on this point.

By way of comparison with a traditional state owned utility it is worth mentioning that Electricite de France mobilised 1830 linesmen over 3 days (3 times its normal complement) and mobilised

about 1000 from elsewhere. In other words France had 21 times as many customers off supply at peak but only about eight times the resource for restoring the system.

Table 6

	Normal	Maximum
Saturday 26 December	43	186
Sunday 27 December	43	365
Monday 28 December	43	376
Tuesday 29 December	43	381
Wednesday 30 December	43	389
Thursday 31 December	43	385

Technical staff - normal cover and maximum available on the day)

Source: NIE

NIE's reconnection progress compared adequately with both ESB's and that of the GB companies most affected. It certainly worked systematically from the top down as indeed is demonstrated from the speed with which most customers were reconnected. There is however reason to believe that lower level faults were not restored as efficiently as they could have been because of the weaknesses in NIE's system for collecting and processing information about faults.

NIE does have a Supervisory Control And Data Acquisition system (SCADA) which reports on faults but it does not cover the entire system, nor will it until the summer 2001. Low voltage faults have to be detected by visual inspection of the network either by people on the ground or from a helicopter.

It is at this point in the exercise that the failure of the customer communication system leads not only to customer annoyance but also to a real loss in the efficiency of the restoration of supply. If customers cannot communicate information to the company, the fault will only be rectified when the company's own inspection identifies it. There was significant anecdotal evidence of customers being aware of faults and NIE being unable to use this information to accelerate reconnection.

While in general therefore NIE appear to have restored supply as speedily as other companies and as speedily as could be expected, it seems self-evident that some customers - perhaps few in number but by this stage perhaps suffering substantial hardship and inconvenience - might have been restored more rapidly if better customer communications had been in place. It should

however also be acknowledged that delays in restoring customers imposed costs on NIE as they would have increased customer compensation payments. NIE had a financial incentive to get this part of the operation right.

Compensating customers

NIE compensated many customers for loss of supply. There is a Standard of Performance which obliges NIE to compensate customers who are off supply for more than 24 hours. This Guaranteed Standard required NIE to pay a domestic customer £40 and £20 for each twelve hours thereafter. Business customers were entitled to £100 and £20. These amounts were increased from 1 October 1999.

Normally very little is paid out by NIE under this standard. In 1998/99 only 9 payments totalling £460 were made.

Where the interruption to supply is caused by bad weather NIE is entitled to claim an exemption and to decline to make a payment. No payment is then made though a dissatisfied customer may ask me to determine whether NIE is in the circumstances entitled to claim an exemption. In recent years in Great Britain the Director General made a distinction between periods of stormy weather and the post-storm calmer weather during which supply remained unrestored. I have not been asked to make a determination on a refusal by NIE to pay under the standard.

In the 1997 Christmas storms, NIE did not make any payments under the standard although goodwill payments were made to customers who were without supply for more than 24 hours. In 1998 NIE also made goodwill payments which in many cases resulted in payments to customers in excess of those to which they would have been entitled under the Guaranteed Standards.

The company's behaviour in respect of compensation compares favourably with other companies. The Electricity Supply Board in the Republic of Ireland did not pay customers compensation though its substantial profits indicate that it could have done so without putting up prices for other customers. In Great Britain Scottish Power made goodwill payments, Scottish Hydro did not. Northern paid under the Guaranteed Standards. By comparison with other companies NIE's efforts to compensate customers appear to have been a serious attempt to say "sorry" and restore goodwill. While it is not possible to place a commercial value on a ruined family Christmas re-union with family or friends flown in from distant countries since this is totally subjective, a payment to 70,000 customers which is on average 43% of the annual average domestic bill and which will, NIE claim, cost the company £9m, is not insignificant.

Most of the compensation payment takes the form of an automatic deduction of £115 from the electricity bill. The entitlement to the remainder has to be claimed. It is based on a calculation of meals eaten out and overnight accommodation on the basis of £12 per person for a hot meal and £40 for bed and breakfast for an adult or £20 for a child. While claimants do not need to have

incurred this expense there may be some customers who do not feel inclined to claim this money because they did not incur the specified expense. If I were to make any criticism of the way in which NIE handled the compensation issue it would be in relation to the presentation of customer goodwill payments over and beyond the automatic £115. NIE were perfectly entitled to demonstrate how they had arrived at the figure for these payments - and their method of calculation probably better compensated the hardship of applicants than the flat rate payments under the Guaranteed Standards. But while the method which NIE used probably better compensated hardship, it required action by the claimant and it is possible that some customers will under-claim and others will over-claim. As a general principle payments should be automatic and - except where specific and verifiable loss has been caused - should not require action by the customer other than notification to the company of the claim.

I will be interested in due course in inspecting the payments actually made by NIE and from hearing from customers if they felt inhibited from claiming their goodwill payment because of the way in which it was made up.

Subject to these relatively minor caveats I would not wish to criticise NIE's approach to handling compensation for loss of supply. Moreover I consider that NIE's approach imposes a significant self-discipline on the company since it has clearly established within the company an approach to a crisis of this sort which punishes failure to perform well with a financial penalty. That the company - in effect - fines itself is I believe the more commendable and should provide a strong financial incentive to perform better in future.

Conclusion

Storms are unavoidable. Forecasts associated with climate change predict that our weather system is more likely to be turbulent in the future than in the past.

The two key questions which both customers and NIE must ask are:

- S can we have an electricity network that is more robust in the face of probably worsening climatic conditions? and
- S can we cope better with the aftermath of storms and the damage they do to the electricity network?

On the evidence to date I do not believe that it is possible - at an affordable cost - to significantly improve the reliability of the network in the face of extreme weather conditions. Nevertheless, it is clearly the case that lines that have been properly maintained, and/or upgraded to modern best practice, will stand a better chance of withstanding exceptional weather than lines which have - for whatever reason - been allowed to deteriorate. The evidence is however not conclusive and as we approach a new NIE price control in 2002 the relationship between capital expenditure and

network performance will be a key issue.

The views of both the company and customers should be important. Will the company guarantee to deliver a certain level of performance for a specified level of expenditure? Will customers willingly increase the price differential with GB in exchange for a better service than they enjoy at present? Should a long term policy of more undergrounding be initiated? Ultimately this is a matter where the customer's view should prevail. These matters and the incentive systems of the price control will be the subject of consultation during the T&D price control.

However, when it comes to coping with the aftermath of a storm the outlook is much more positive. While it is customers' money that is paying for the new and improved communications system, NIE has invested enormous effort and management credibility in producing a greatly enhanced ability to communicate with customers and to respond to a storm. This should be acknowledged and applauded though I hope it will not be too frequently or severely tested by the weather over the next few years.

Recommendations

- 1. NIE needs to relate its investment proposals clearly to quality of supply in order to improve the effectiveness of its investments and provide its customers with better value for money. This must include full post-investment appraisal so that the effectiveness of the investment can be monitored.
- 2. It needs to ensure that its communication network can take full advantage of customer calls to identify the location of network failures.
- 3. It needs to integrate the communications function more explicitly with its network operation.

4. It needs to lay down clear guidelines approved at Board level to assist prioritisation of network repair and customer re-connection.

Finally, the focus should now switch to the work on NIE's price controls for the period 2002 onwards. This should encompass an in depth investigation of customers' preferences, attitudes and values and lead to conclusions about customer's priorities in securing balance between system security, quality of supply and price. It should also lead to conclusions about the need for modifications to NIE's licence in order to set standards of communication with customers with financial penalties attached to failure to meet those standards.