REVIEWS OF PUBLIC ELECTRICITY SUPPLIERS
1998-2000

DISTRIBUTION PRICE CONTROL REVIEW
DRAFT PROPOSALS

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FOREWORD

The existing distribution price controls are due for revision from 1 April 2000.

Ofgem has published four consultation papers as part of the distribution price control review. The February 1998 consultation paper explained that the present distribution price control review is part of a wider programme of reviews of Public Electricity Supplier (PES) activities. In July 1998, a further consultation paper was published that described the main considerations likely to be relevant for the distribution price control review. The December 1998 consultation paper set out information derived from PESs' responses to business plan questionnaires on distribution business operating costs, capital expenditure and quality of supply over the period until 2004/05. A fourth consultation paper was published on 20 May 1999 which described Ofgem's initial thinking on the main considerations relevant to the distribution price control review. A summary of the responses to this paper is provided in annex 1.

As part of the price control review Ofgem has taken advice from a range of consultants and advisers. A firm of management consultants, Pannell Kerr Forster (PKF), has assisted with the analysis of operating costs. PB Power has supported PKF during this process as well as assisting with the analysis of capital expenditure. A senior industrial adviser, Peter Warry, has also given advice in relation to these matters. KPMG, a firm of accountants, is auditing the financial model which has been used to calculate the range of price controls set out later in this paper. Ofgem's panel of economists and management board have considered the draft proposals. In addition, advice from three senior business advisers, Hugh Donaldson, John Sadler and Sir Keith Stuart, has been particularly valuable.

In the light of the consultation process and advice described above this paper sets out draft proposals for revised price controls. These are based on initial conclusions on the form of price control, projections of operating and capital costs, targets for quality of supply and initial conclusions on financial issues. All these issues are described in this paper.

A final view will be taken on these matters following consideration of responses to this paper. This will allow a further statement on the price controls in the first half of October and final proposals for price controls to be published around the end of November 1999.

If PESs do not accept the final proposals then it will be necessary to make a reference to the Competition Commission (previously the Monopolies and Mergers Commission), which will consider these matters and report in due course. If a reference is necessary, and it appears that the Competition Commission will not be in a position to make recommendations in time to allow licences to be modified

from 1 April 2000, then it will be important to consider whether transitional arrangements or licence modifications would be appropriate to protect the interests of customers.

It would be helpful to hear from all those with an interest in the issues raised in this paper, including customers, their representatives and other interested groups as well as the companies themselves. Views are invited by 17 September 1999. Responses should be sent to:

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Responses will be published by placing them in the Ofgem library.

Ofgem
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1 FORM OF CONTROL

Introduction

1.1 The distribution of electricity is an important business activity of the PESs and typically contributes the majority of their operating cash flow and profits. Distribution charges account for approximately 30 per cent of a typical domestic customer's bill and distribution has a significant influence on the overall quality of supply to customers.

1.2 Each PES distribution business at present constitutes an effective regional monopoly. In order to protect customers from the potential abuse of monopoly power each distribution business is subject to controls on the prices it can charge and the quality of supply it must provide. In setting the distribution price controls, the Director General of Electricity Supply (DGES) will be guided by his statutory duties, and will ensure that a proper balance is maintained within the regulatory framework.

1.3 Consistent with these aims the 20 May consultation paper explained that the primary objectives of this price control review are to strengthen the incentives on companies to increase efficiency and reduce costs, so that prices to customers can be lowered, while recognising that sufficient revenue must be raised to maintain an appropriate quality of supply, to finance required new investment and to allow an appropriate return to shareholders. These objectives are best achieved by aiming to encourage PESs to achieve an optimal balance between:

- quality of supply;
- efficient capital investment;
- efficient operating expenditure; and
- efficient financial management.

1.4 In general, respondents to the 20 May consultation paper supported this overall approach. A number of organisations representing customers indicated it would be important to ensure that the regulatory regime penalised poor performance and balanced the interests of shareholders and customers in an appropriate way, ensuring that customers benefit from efficiency gains. One PES noted that measures to encourage financial efficiency should not conflict with the DGES's duty to secure that licence holders are able to finance their licensed activities.

1.5 Companies which perform satisfactorily can expect to make an average rate of return. In the case of above average performance, companies can expect an above-average rate of return, although this should only result from efficiency and not involve higher prices to customers. Companies which under-perform can expect to make a lower rate of return. Customers should not be expected to pay for inadequate service; nor should they be expected to bear the costs of inefficiency or mismanagement by companies in their

licensed activities. Therefore, the distribution price control review will focus on considering the efficient costs and quality of supply of the distribution businesses. In addition, customers should not be affected by corporate factors outside the licensed activities. In particular they should not be expected to bear the costs of any requirements of other members of a PES's corporate group, if these arise outside the scope of the PES's licensed activities. By the same token, it could be argued that customers should not expect to benefit from factors arising outside the licensed activities, such as successful diversification. These principles are consistent with the financial ring-fencing licence modifications agreed by most PESs, which require, among other things, PESs to safeguard their financial well-being. In general the respondents to the 20 May consultation paper supported this approach.

Type of Price Control

1.6 At present each PES's distribution business is subject to an RPI-X price control, under which allowed revenue is related to a forecast of the number of customers supplied and to the volume of electricity distributed. This form of regulation has proven effective in providing clear targets for companies and has led to significant price reductions and quality improvements for customers to date. Respondents to the 20 May consultation paper supported the continuation of RPI-X type price controls.

1.7 The advantages and benefits of RPI-X regulation are demonstrated through the achievements of the PESs. Distribution operating costs have been reduced in real terms by about one quarter between 1994/95 and 1997/98. At the same time, customers have generally benefited from significant improvements in the quality of supply – for example, minutes lost per customer have reduced by about 10 per cent between 1994/95 and 1997/98. In the light of these considerations it appears sensible to continue with RPI-X type price controls.

1.8 However, a number of respondents identified weaknesses with the way RPI-X has been applied or features which could be improved, consistent with discussion set out in the 20 May consultation paper. In particular, ways need to be found to reduce the emphasis on periodic negotiation with the regulator, to increase the emphasis on outperforming peers, to address a potential imbalance between incentives to efficiency in respect of operating and capital costs, and to give clearer incentives in respect of quality of supply.

1.9 There appears to be an undue emphasis on the periodic review process. The importance for companies of the proposals and their ability to influence the outcome in favour of their shareholders may have led to a disproportionate amount of management time and effort being devoted to management of the regulatory relationship. This, and other aspects of the application of RPI-X regulation, has led to a form of regulatory game between the regulator and the regulated companies.

1.10 The periodicity of the price review process also creates distortions in incentives over the duration of a price control. These occur if the reward a company receives for making an efficiency improvement is perceived to vary depending on the timing of the efficiency improvement. Companies may delay efficiency improvements that could be made towards the end of a price control period or distort the profile of capital expenditure programmes.

1.11 The information required to set a medium-term price control is substantial and the regulator must rely on companies for much of this information. The unavoidable information asymmetry between regulator and regulated companies is a major issue especially since, under the present regime, regulated companies have an incentive to overstate required expenditures when discussing future price controls with the regulator.

1.12 There is a further asymmetry between the incentives to reduce operating and capital expenditure. Operating and capital costs have tended to be considered separately in setting price controls to date. At present, companies appear more certain of their incentive to improve operating efficiency than of their incentive to improve capital efficiency.

1.13 There appears to be insufficient continuous pressure in the existing arrangements and an undue focus on beating the projections on which the price control was based, rather than on meeting objective standards at minimum cost and having a continuing incentive to outperform peers in the cost and quality of outputs.

1.14 Some of the respondents to the 20 May consultation paper suggested that certain difficulties associated with the asymmetry of information might be dealt with by introducing an error correction type mechanism, particularly for capital expenditure. However, this might further blunt and distort incentives for efficiency and so does not appear to be an appropriate way forward.

Improving Incentives and Information

1.15 A number of measures have been adopted as part of this price control to deal with some of the difficulties set out above. In particular there is an emphasis on comparative analysis, a number of adjustments have been made to improve the quality of base data, the incentives to improve efficiency in capital expenditure have been clarified and improved and more rigorous quality of supply targets established. Nevertheless, there remain a number of areas where there is scope for further improvement, which include the following:

- defining and monitoring consistent quality of supply measures for all companies;

- establishing more robust comparative analysis of quality of supply measures and developing a yardstick mechanism to complement the existing quality of supply targets. In implementing any yardstick mechanism it would seem reasonable for customers of under-achieving PESs to pay lower prices than implied by the price control, particularly those customers who suffer unduly poor service. However, it is not intended that customers of better-performing PESs should pay higher prices than implied by the price control. To the extent that such companies merit higher returns, they would be funded by payments from worse-performing companies;

- defining the rewards and penalties associated with quality of supply regulation to ensure that there are balanced incentives in relation to cost reduction and quality of supply;

- ensuring that PESs provide information on distribution performance and costs on a regular and consistent basis to facilitate comparative analysis and the assessment of PES performance on an ongoing basis. This should lead to the harmonisation of certain aspects of the regulatory accounts, which should, in turn, make them more useful and relevant;

- reviewing the balance of incentives between reductions in operating and capital costs;

- continuing to refine the understanding of cost drivers for the distribution business as the industry changes and develops over time; and

- considering whether there is scope to introduce yardstick mechanisms to regulate operating and capital costs.

1.16 These matters will be dealt with as part of an on-going work programme, with the intention of introducing the additional mechanisms to regulate quality of supply at the beginning of 2002/03. While many PESs expressed broad support for enhancing quality of supply regulation through greater use of comparative analysis a number of companies expressed concern at the uncertainty that would be created by the prospect of further proposals affecting quality of supply and costs during the period of the main price controls.

1.17 In the long term the initiatives to provide more regular and consistent information on costs and quality will help reduce both uncertainty and information requirements of price control reviews. Nevertheless, it is worth considering whether there is any guidance which might be given as to the impact on costs of the additional quality of supply measures. This is consistent with ensuring that any revised arrangements are introduced on a gradual basis so that their impact on behaviour can be assessed in a measured way. If the new arrangements appear to have a beneficial influence then greater weight can be given to them at the next price control review.

1.18 In setting revised quality of supply measures it would be possible to do so in the expectation that their effect would be financially neutral. Therefore, if, in calibrating the yardstick mechanism, it appeared that a distribution business would incur extra costs, these would need to be balanced by the expectation of extra revenue. A disadvantage of this approach would be that it might limit the scope for creating worthwhile improvements to the regulation of quality of supply. A more flexible approach would be to limit the financial impact of the revised quality of supply measures during the next price control period. In doing so it will be necessary to have regard to the different size of each distribution business, suggesting a cap in terms of a percentage of price control revenue or an amount per customer.

1.19 The Office of Water Services (OFWAT) has suggested adjusting the price limits for water companies to reflect the performance of these companies in delivering services to customers. The adjustment proposed as part of their 1999 periodic reviews was limited to between +½ and -1 per cent of price control revenue, although the draft determinations published in July 1999 indicated that the maximum adjustment for any company would be ½ per of price control revenue. It is for consideration whether this range should form the basis of a limit on the expected materiality of further proposals relating to distribution businesses quality of supply. If this limit on expected materiality is adopted it would imply that, in establishing the revised arrangements for quality of supply, their expected effect would be no more than 1 per cent of price control revenue. In doing this a significant element of judgement would be required in relation to the level of costs associated with quality of supply improvements, the potential improvements available to each company and the relative performance of each PES. In these circumstances the outturn level of costs might vary significantly from the assumptions used in establishing the revised arrangements. Therefore, it may be more appropriate to establish a cap on the outturn costs. Given the need to protect incentives a rather higher threshold might be appropriate, perhaps 2 per cent of price control revenue.

Scope

1.20 The 20 May consultation paper explained that the present distribution price control covers all charges made by the PESs' distribution businesses except those for excluded services and the pass-through of certain National Grid Company (NGC) charges. It also noted that there would be advantages in continuing to exclude most of those services presently treated as excluded and the pass-through of NGC transmission connection point exit charges. However, with respect to extra high voltage (EHV) charges and prepayment meter surcharges the 20 May consultation paper explained that it would be for consideration whether any revised arrangements for the regulation of these charges might be appropriate in the future.

1.21 Large users have expressed concerns that EHV charges have not reduced at the same rate as price controlled charges. Analysis of average EHV revenue per unit distributed suggests that EHV customers in a number of PES areas experienced little or no real price reduction over the period 1994/95 to 1997/98, while regulated distribution charges fell significantly. In response to the 20 May consultation paper a number of PESs indicated that EHV charges are to a significant extent asset- specific and would not be expected to move in the same way as regulated distribution charges. PESs also tended to suggest that EHV charges should continue to be excluded from the price control. In contrast large users and their representatives have suggested that EHV charges should be included within the price control and that EHV customers should benefit from any reductions in regulated distribution charges.

1.22 Each PES will be asked to explain in more detail the existing basis of its EHV charges and the reasons for movements over the period of this price control. Further information will be published on these matters in due course. Nevertheless, it is clear that EHV customers need to be adequately protected by the regulatory regime. Simply including these charges within the scope of the price control would not guarantee charges to EHV customers would move in a particular way, as the price control regulates total revenue. There also appears to be some force in PES arguments that EHV charges are to some extent asset-specific and so cost reflective pricing might suggest a different path of prices compared to regulated charges. However, it will be important to ensure that EHV customers benefit from an appropriate approach to issues such as the cost of capital and asset valuation.

1.23 In the light of these factors PESs will be given the opportunity to provide updated forecasts of EHV revenue. If these appear to be based on reasonable assumptions with respect to the level of EHV charges then it will be appropriate to continue to exclude EHV charges from the price control. However, as an additional reassurance to customers the licence condition relating to the treatment of excluded revenue will be strengthened to give the DGES additional power to cap EHV charges if PESs act in a way which is inconsistent with the assumptions made in setting the price control.

1.24 The 20 May consultation paper noted that special considerations apply to arrangements for prepayment meter customers. The main implications for the distribution price control review relate to the excluded service revenue that is presently derived from distribution business prepayment meter surcharges. Analysis carried out by Ernst and Young suggests the maximum annual surcharge that should be made by the distribution business for each prepayment meter is significantly lower than the existing charges made by most PESs. Further analysis is required in this area as part of Ofgem's work on prepayment meter charges and the justification of any final price differential between prepayment and other payment categories. However, for present purposes, a distribution business charge capped at £15 per meter per year has been assumed in making projections of future distribution

business revenue. If this assessment changes, then this may impact on the ranges for draft price proposals set out in Chapter 6. Further details of the Ernst and Young study will be published in due course. Given the potential for the development of competition in the provision of metering services it will be appropriate to continue to exclude distribution business prepayment meter surcharges from the main price control.

Structure

1.25 The 20 May consultation paper noted that price controls can be designed so that the permitted level of total revenues varies with changes in volumes as well as being indexed to the RPI. Under the original distribution price control, allowed revenue increased in proportion to units distributed. The last distribution price control review concluded that the weight of units distributed in the revenue driver of the price control should be halved, from 100 per cent to 50 per cent. The remaining 50 per cent was fixed by relating it to a predetermined projection of customer numbers. This change was intended to avoid any artificial incentive on the PESs to promote increased sales of electricity. The retention of a weighting for units distributed, albeit at a reduced level, was intended to maintain the normal commercial incentives on companies to seek out and meet the needs of their customers. It would also avoid undue fluctuations in distribution charges per unit as the volume of output varied.

1.26 Of those that commented on this issue, the majority of respondents to the 20 May consultation paper indicated that it would be reasonable to continue with a 50 per cent fixed and 50 per cent unit elements in the revenue driver. One respondent suggested removing the unit element to give companies an incentive to reduce the amount of electricity distributed and indicated that this would be consistent with the DGES's statutory duties to promote efficiency and have regard to the environment. The DGES has a wide range of statutory duties, and as explained above, it is important to maintain balanced incentives on companies and encourage efficiency in total costs, rather than focusing on one element of costs. Therefore, it will be appropriate to retain a proportion of units in the revenue driver. Another respondent questioned the validity of the 50 per cent weighting for units and suggested it was not consistent with the underlying cost drivers for the distribution business. The original justification for the 50 per cent fixed and 50 per cent unit revenue driver was based on its broad effect on incentives rather than a mechanical link with cost drivers. Nevertheless, a 50 per cent weighting for units is broadly consistent with the range of cost drivers discussed in Chapters 2 and 3. A number of other respondents suggested there should be further analysis of this issue during the period of the next price control.

1.27 In the light of these considerations it will be appropriate to retain the 50 per cent fixed and 50 per cent unit revenue driver for the next price control period. Nevertheless, a further review of the issues will be undertaken in

conjunction with work on the structure of distribution charges, given the important inter-relationships between these issues and incentives, in time to inform the next price control review.

1.28 At present the 50 per cent unit component of the revenue driver is made up of a weighted average of low voltage (LV) and high voltage (HV) units distributed. The LV units are subdivided between three categories, representing the existing split in PES LV supply tariffs (unrestricted, restricted daytime units and restricted night time units). One respondent suggested replacing these three subdivisions with a unified LV basket. This would increase flexibility to deal with any changes in the structure of distribution charges and the development of competition in the supply market. It is for consideration whether the subdivision of the LV basket remains appropriate.

Duration

1.29 The majority of respondents to the 20 May consultation paper supported a five year duration RPI-X price control. In the light of this, the importance of maintaining incentives for efficiency and the scope for introducing additional measures to improve incentives and information during the period of the control, a five year duration price control will be appropriate.

Energy Efficiency

1.30 The 20 May consultation paper set out an approach to energy efficiency that involved maintaining the existing incentives on PESs to reduce electrical losses from their distribution networks. In addition, Ofgem's technical consultants have been asked to review and report on the likely effect of each company's capital expenditure programme on the level of electrical losses. Matters relating to energy efficiency Standards of Performance were dealt with in a consultation paper on energy efficiency issues published in July 1999.

1.31 A number of PESs have suggested that electrical losses are already at a relatively low level and that it would be important to maintain balanced incentives with respect to losses and other costs. Several PESs also expressed the view that certain quality of supply initiatives and changes arising out of revised arrangements for the separation of businesses might cause losses to increase. There was particular concern that the effectiveness of existing arrangements to detect and deter theft might be reduced.

1.32 A number of Electricity Consumer Committee's (ECCs) welcomed the review of losses by Ofgem's technical consultants. Other points raised included the importance of appropriate incentives with respect to losses and concern at the differences in losses between PESs. These issues were also raised by a number of other respondents to the 20 May consultation paper.

1.33 A summary of the technical consultants' views on losses will be published later in the price control review. Where separation of businesses is concerned it will be necessary to consider whether the arrangements between distribution businesses and meter reading companies provides appropriate incentives to detect and deter theft. In the light of the need to maintain balanced incentives between issues such as cost efficiency and loss reduction, overall incentives are considered in Chapter 6 and the relative performance of PESs analysed in more detail.

Metering and Separation

1.34 In order to promote competition in supply and metering, Ofgem's paper on separation of businesses, published on 19 May 1999, made a number of proposals for revised arrangements in relation to metering and the separation of the PESs' distribution and supply businesses. These included:

- the transfer of meter reading, data aggregation and data processing activities from distribution to supply from 2000/01 onwards;

- enhancing the separation of distribution and supply businesses, including restrictions on the extent of joint services between the businesses; and

- new obligations on the distribution business with respect to the provision of meter reading services of last resort from 2000/01.

1.35 The 19 May consultation paper on separation of businesses discussed the issues surrounding the continued provision of common services. It noted that these would only be permissible if they avoided distorting competition, did not involve any cross-subsidy between businesses and ensured that the service was obtained for distribution at the most effective price. Discussions with the PESs are continuing on their plans for compliance with the proposed new obligations.

1.36 The 20 May consultation paper described the implications of these proposals for the distribution price control review. These included the following main issues:

- the assessment of distribution business operating costs needs to take account of the transfer of metering activities from distribution to supply in 2000/1 and the proposals in the separation of businesses paper to minimise the opportunities for cross-subsidy between the distribution and supply businesses. Advertising, customer service and billing are of particular concern. The 20 May consultation paper included an initial analysis of these costs from 1997/98. Chapter 2 sets out revised analysis. Estimates of costs transferred from distribution to supply will be taken into account in the review of the maximum supply price restraints;

- the impact, if any, of the revised arrangements for separation on the day-to-day costs of running the distribution business are being assessed and further analysis of these matters will be published later in the price control review;

- three PESs have agreed to sell their supply businesses (Midlands to National Power, SWALEC to British Energy and South Western to London). As part of these arrangements each PES has agreed to an enhanced degree of separation between its distribution and former supply business. The 20 May consultation paper noted that these arrangements appeared to suggest there is scope for the increased separation of distribution and supply without the need for the recovery of any transitional costs from distribution business customers. In response to the 20 May consultation paper, a number of PESs said merger and acquisition activity did not imply there would be no transitional costs and it would be relevant to make an appropriate allowance. Another PES said that it was impractical for all PESs to sell their supply businesses. There may be some transitional costs associated with the proposals for separation of businesses. However, it is important to ensure that customers are treated consistently and a reasonable balance is maintained between the interests of shareholders and customers.

  Where costs can be offset by the benefits of corporate restructuring it appears reasonable to assume that these costs should not be recovered from customers. Ofgem is assessing the cost implications of its proposals on separation. It should be noted however that the present calculations in Chapter 2 are conservative in a number of respects in the treatment of some shared service costs (for example by assuming that no efficiency gains can be made in respect of distribution customer service). Consequently it appears unlikely that the separation proposals will result in any costs arising which would have a material impact on the draft price proposals in Chapter 6; and

- the revised distribution price controls will need to take account of the new obligation on distribution businesses to provide a meter reading service of last resort. This will involve the distribution business conducting a tendering exercise designed to ensure that all suppliers will have access to a meter reading service. The costs of administering this process will be allowed in the main distribution price control, although these are not likely to be significant. The costs and revenues associated with the service will be difficult to predict. Therefore, it will be appropriate to treat any revenue as an excluded service and so it will fall outside the scope of the main price control. A separate consultation paper will be published on the arrangements and obligations associated with the tendering process. Some restrictions may be appropriate initially on the charges that a PES can make for the provision of this

service until competition for the tendered service becomes fully established. The assessments made elsewhere in this paper about the costs of meter reading will be relevant when considering limitation of the charges made by each PES, especially where a PES supply business provides the service to its own distribution business.

1.37 As noted in the 20 May consultation paper it will be important to consider whether the present form of the distribution price control is consistent with the development of competition in meter ownership and meter operation, which will continue to be distribution business activities. As competition develops further in these activities and distribution businesses lose market share this should not lead to an increase in distribution profits. Therefore, it will be necessary to consider the introduction of arrangements that, in these circumstances, would reduce distribution business revenue by an estimate of the savings in avoidable costs associated with reduced activity in these areas. A number of PESs have indicated that they support this approach, others have suggested that any savings in avoidable costs will be small and so an adjustment mechanism is unnecessary. Given that there is considerable uncertainty as to the possible extent of competition in metering activities it will be sensible to introduce an adjustment mechanism.

1.38 As noted in paragraph 1.24 distribution business prepayment meter surcharges are excluded from the main price control and so revenue will automatically adjust if prepayment meters are provided by other companies. Therefore, any further adjustment mechanism would need to focus on the provision of standard non half hour meters. Savings in distribution business avoidable costs would be greatest if the distribution business did not need to replace meters that had come to the end of their useful life, when customers changed tariffs or having to install meters for new customers.

1.39 If a PES wishes to sell its existing stock of meters to a third party this will present a broader set of issues and concerns. For instance, at present, meters are classified as network capital expenditure and included in the regulatory asset base. Therefore, if meters are sold it will be necessary to make an adjustment to the asset base and the overall level of the price control.

2. OPERATING COSTS

Introduction

2.1 Distribution business spending can be broken down into capital costs and operating costs. Capital costs cover spending on assets, such as transformers or switchgear, the benefits of which would be expected to last over several years Operating costs cover the day to day costs of running the network, such as repairs and maintenance, planning, control, overhead costs, NGC exit charges and distribution system business rates.

2.2 In the calculations underlying the price control PESs were given an allowance for operating costs. Typically this allowance made up about half of allowed revenue. This remains broadly true for the next price control period. Therefore, the assessment of operating costs has a significant impact on the overall level of price control revenue.

2.3 When setting a price control it is important to give PESs properly balanced incentives between capital and operating spending. If incentives are unbalanced, PESs may either reclassify one type of expenditure as another or, faced with alternative capital and operating spending choices, make decisions which have higher overall cost to customers in the long run.

2.4 Ofgem has appointed PKF as consultants to assist with the analysis of operating costs. PKF has examined distribution business operating costs in 1997/98 and PES forecasts of operating costs over the period from 1997/98 to 2004/05. In addition, a senior industrial adviser, Peter Warry, has given advice in relation to these matters.

Overall Approach

2.5 Around one third of operating costs is considered to be largely outside the control of the companies, including NGC exit charges and distribution system business rates. The 12 Regional Electricity Companies (RECs) pay transmission connection point exit charges to NGC, which are subject to separate regulation and are outside the scope of the existing price control (in Scotland transmission charges are paid by generators and suppliers, in contrast to the arrangements in England and Wales which also encompass distribution). Distribution system business rates are levied by the Government on all the PESs, and distribution business management can generally do little to influence these costs.

2.6 PESs have more direct control over the remaining two thirds of operating costs. These include:

- engineering costs – the costs of planning, monitoring and controlling the system, and repairing and maintaining distribution business assets;

- customer service costs – at present PESs tend to allocate customer service costs between distribution and supply, so the distribution business incurs a proportion of the cost of running call centres, maintaining customer records and billing; and

- corporate costs – certain costs cannot be directly attributed to any particular business but are incurred in running the PES as a whole. At present companies tend to allocate a significant proportion of corporate costs to the distribution business.

2.7 Capital expenditure on IT systems, vehicles and certain property is classified as non-operational capital expenditure. However, some PESs do not provide these services from within the distribution business, instead using third party contractors or affiliated service companies. For these PESs, the costs of providing these services may appear as a distribution business operating cost rather than as distribution business capital expenditure. To adjust for this, in the last distribution price control review, an amount was added to the operating costs of these PESs, and subtracted from their capital expenditures, to represent a level of non-operational capital expenditure and to standardise accounting treatments across PESs. It will be appropriate to consider non-operational capital expenditure together with operating costs as part of this price control review and ensure that any allowance for non-operational spending represents an efficient level of expenditure.

2.8 The 20 May consultation paper included an assessment of distribution business cost movements over the period 1994/95 to 1997/98, and reviewed PES forecasts over the period 1999/00 to 2004/05 as well as their previous forecasting records. It then analysed costs in detail in 1997/98, making adjustments for differences in accounting policies, cost allocations and attributions, regional factors and one-off costs. These further adjustments led to a base level of controllable costs for each distribution business. These were then assessed against the main factors driving distribution costs in each PES area, such as the number of customers, quantities of electricity distributed and the degree to which customers are scattered in rural areas or concentrated in urban areas. It also described the work on efficiency being carried out by PKF. Since the publication of the 20 May consultation paper further details of PKF's analysis has been provided to the PESs and discussed with them.

2.9 In response to the 20 May consultation paper and the PKF analysis, PESs have made a relatively large number of comments relating to the

assessment of operating costs. Nevertheless the majority of PES comments can be categorised as follows:

a the approach to cost allocations and attributions was alleged to have removed too high a proportion of costs from the distribution business. Particular areas of concern included:

- corporate overheads;
- customer and meter related costs; and
- advertising and marketing.

b certain cost factors were claimed to have been excluded from the analysis, or given insufficient weight, including:

- non-operational capital expenditure;
- data management service costs;
- the potential for real increases in certain costs (such as wayleave costs); and
- company specific factors.

c the approach to the regression analysis was variously commented upon. There was widespread support for the principle of such analysis but differing views on appropriate modifications to the analysis contained in the 20 May consultation paper. Comments included:

- whether the regression was sufficiently robust to inform the analysis of operating costs;
- views on the level of fixed costs and the constant term in the regression analysis;
- suggestions for the appropriate mixture of cost drivers; and
- views on whether the analysis should focus on operating costs or total costs.

2.10 A number of companies expressed the view that the overall level of reduction in distribution business operating costs suggested by PKF would not be achievable. Some companies suggested that the adjustments for capitalisation policy had not been made on a consistent basis across

companies. PESs also suggested that their own forecasts were robust and could be used to inform the price control.

2.11 Other respondents generally welcomed the detailed assessment of operating costs proposed in the 20 May consultation paper. A number of ECCs commented on the importance of obtaining consistent accounting data from PESs in order to facilitate comparative analysis. They also questioned the reliability of the PESs forecasts. A number of other respondents made similar comments. One other respondent also commented that the proposed transfers of costs from distribution to supply appeared too low.

2.12 It is clear that a detailed analysis of operating costs is required as part of the price control review. The various components of the analysis set out in the 20 May consultation paper have been reconsidered in the light of comments from respondents and modified where appropriate. Nevertheless, the overall approach remains broadly the same. Costs are considered net of NGC exit charges, network depreciation and network rates. They are adjusted for difference in accounting policies, cost allocations and attributions, regional factors and one-off costs. The resulting base level of costs forms a basis for further analysis and assessment, which includes work by PKF, regression analysis and assessment by Peter Warry.

Capitalisation Policy

2.13 In preparing its distribution business regulatory accounts each PES has exercised a degree of flexibility with respect to the classification of expenditure as between operating costs, non-operational capital expenditure and network capital expenditure.

2.14 A number of PESs have made changes to their capitalisation policies since the last distribution review. One example is in respect of the repair of underground cables, another in respect of meter re-certification costs. These changes have generally had the effect of reducing the amount of operating costs, and increasing the amount of capital expenditure. There also appears to have been a degree of difference in capitalisation policy between PESs before these recent changes were made.

2.15 Ofgem has asked its consultants to quantify the effects of different capitalisation policies. The 20 May consultation paper contained a preliminary assessment of these for the year 1997/98. Since then the consultants have carried out further work in order to standardise accounting policies. Table 2.1 sets out the consultants' updated estimates of the transfers to operating costs necessary to normalise costs for differences in capitalisation policy in 1997/98.

TABLE 2.1: ESTIMATES OF THE TRANSFERS TO OPERATING COSTS FROM CAPITAL EXPENDITURE TO NORMALISE FOR DIFFERENCES IN ACCOUNTING POLICY (1997/98 PRICES £MILLION)

PES	Repairs	Metering	Non Operational IT Depreciation	Project IT Depreciation	Other	Total
Eastern	-	-	-	-2.2	-	-2.2
East Midlands	-	-1.3	-	-	-	-1.3
London	-	-	-	11.9	-	11.9
Manweb	0.4	0.5	1.3	-	-	2.2
Midlands	-	5.0	3.0	1.1	-	9.1
Northern	-	0.4	-	-	-	0.4
NORWEB	3.6	0.6	-	-	1.0	5.2
SEEBOARD	9.5	2.1	1.3	-	-	12.9
Southern	5.3	2.5	-	-2.3	-	5.5
SWALEC	5.0	-0.6	-	3.7	-	8.1
South Western	-	0.7	0.4	-	-	1.1
Yorkshire	11.9	3.2	-	0.8	-	15.9
ScottishPower	0.7	1.7	2.0	-	-	4.4
Hydro-Electric	-	2.5	-	-	-	2.5
Total	36.4	17.3	8.0	13.0	1.0	75.7

2.16 With the exception of project IT depreciation, the transfers shown above are from network capital expenditure to operating costs. The project IT depreciation adjustment is from network capital expenditure to non- operational capital spending,

Allocations, Attributions and Recharges

2.17 As noted in the 20 May consultation paper there are significant differences between PESs in their corporate structures and cost allocation procedures and, consequently, in the proportions of costs allocated and rechargeable between supply and distribution businesses.

2.18 An accounting guideline, known as CSC 194, introduced before privatisation, sets out guidance on the placing of costs between supply and distribution. For example, under the guideline the cost of maintaining customer records is divided equally between distribution and supply. As noted in the 20 May consultation paper, the development of proposals for the greater separation of distribution and supply activities and the concurrent reviews of the distribution and supply price controls have provided an opportunity for costs to be reconsidered according to the activity driving the costs, in contrast to the existing arrangements which allow costs to be recharged or allocated on a relatively arbitrary basis.

2.19 Ofgem asked PKF to investigate the present cost allocations and replace them, wherever possible, with attributions made on a usage basis

consistent with the proposals for separation. To this end PKF made adjustments in the following cost areas:

- advertising and marketing: costs have been allocated entirely to supply, except where PESs have demonstrated that costs relate properly to distribution activities, for example, the publication of use of system tariff leaflets. Based on the evidence submitted by a number of PESs, PKF have allowed a maximum of £1 million for such activities to each PES with any excess moved to supply;

- customer records and service: the cost of monitoring customer records has been allocated to supply on the basis that the distribution business does not need to know the names of supply business customers. Customer service costs have been allocated between supply and distribution based on the number of contacts received by PESs from customers in relation to each activity. In the light of the proposal to move meter reading activities to the supply business, contacts made regarding meter readings have been treated as supply contacts;

- billing: the costs of billing supply business customers have been allocated to supply. The only billing costs attributable to distribution are those in respect of billing suppliers for DUOS charges, and one-off work carried out by the distribution business. Based on the information provided by a number of PESs, PKF have allowed a maximum of £½ million to each PES for such activities with any excess moved to supply;

- metering: the costs of meter reading, data aggregation and data processing have been attributed to supply in line with the proposals in the separation of businesses consultation paper;

- corporate: by their nature, it is difficult to attribute corporate overheads on a usage basis. To overcome this difficulty, CSC 194 took, as a measure of activity, salaries and net assets, measured on a current cost basis. By following CSC 194, RECs on average allocate around 90 per cent of such costs into distribution. Developments in supply businesses since 1990 raise the question whether the allocation of such a high proportion of costs into distribution is a reasonable reflection of the usage of corporate assets and staff. PKF has reallocated corporate overheads on the basis of the following four measures within each PES:

    - turnover;
    - historic cost operating profit;
    - employee numbers; and
    - historic cost net assets;

  giving equal weight to each.

2.20 For the RECs, this calculation leads to around two thirds of corporate costs remaining in distribution, the other third being allocated to supply. For the Scottish PESs about one third of corporate costs remain in distribution, reflecting their extensive generation and transmission activities.

2.21 Table 2.2 sets out the consultants' present estimates of the changes to distribution operating costs arising out of these revised allocations and attributions of costs. The figures have been updated since the 20 May consultation paper to take account of further work carried out by the consultants and comments made by the PESs.

TABLE 2.2: PRESENT ESTIMATES OF THE ADJUSTMENTS TO DISTRIBUTION OPERATING COSTS ARISING FROM REVISED ARRANGEMENTS FOR THE ALLOCATION AND ATTRIBUTION OF COSTS (1997/98 PRICES £MILLION)

PES	Advertising & Marketing	Customer Services	Billing	Metering	Corporate	Other	Total
Eastern	(0.8)	(19.0)	0.5	(10.4)	(5.5)	-	(35.2)
East Midlands	(3.6)	(2.8)	(3.9)	(9.8)	(6.1)	-	(26.2)
London	(1.5)	(24.4)	(0.8	(10.4)	(2.3)	(5.5)	(44.9)
Manweb	(4.6)	(6.1)	0.5	(6.4)	(3.5)	-	(20.1)
Midlands	-	(2.1)	(0.5)	(11.7)	(2.3)	(0.4)	(17.0)
Northern	(0.9)	(6.4)	(0.2)	(4.6)	(1.9)	-	(14.0)
NORWEB	(1.1)	(8.3)	(2.3	(8.3)	(3.8)	-	(23.8)
SEEBOARD	(5.0)	(17.1)	-	(6.9)	(1.8)	-	(30.8)
Southern	(1.0)	(5.9)	-	(4.2)	-	-	(11.1)
SWALEC	(1.7)	(1.9)	-	(3.9)	(3.1)	(0.5)	(11.1)
SouthWestern	-	(3.3)	(0.4)	(4.2)	(1.9)	-	(9.8)
Yorkshire	-	(9.9)	(0.2)	(10.8)	(2.1)	(0.1)	(23.1)
ScottishPower	(5.3)	(3.1)	(2.4)	(8.2)	(3.7)	-	(22.7)
Hydro-Electric	-	(1.8)	0.2	(3.2)	(3.1)	-	(7.9)
Total	(25.5)	(112.1)	(9.5)	(103.0)	(41.1)	(6.5)	(297.7)

2.22 In response to the 20 May consultation paper, a number of PESs commented that the range of metering costs between PESs was too large to be explained by differences in customer numbers, meter reading frequency or efficiency.

2.23 While recognising that meter reading frequency and efficiency do vary between PESs, there appears to be some strength to the suggestions that the range of costs was unduly large. A way of adjusting for this would be to constrain the amount of the transfer. Using information provided by the PESs, the average cost per meter read is 105 pence: by allowing a 25 pence variation the maximum amount of the transfer would be restricted to 130 pence per meter read, and the minimum amount 80 pence per meter read. The figures above reflect this adjustment, the effect of which

is to transfer more cost into supply for Southern and Eastern, and reduce the transfer to supply for London, Midlands and Yorkshire.

2.24 Certain PESs have structured themselves in such a way that services used by the distribution business are provided outside the distribution business but within the wider group of companies of which the distribution business is a part. Examples of this include the provision of transport fleets and non-operational property. Typically, the charge for the provision of the service includes an element of profit. Many of the businesses making recharges have little or no trade outside the group. This appears to result in an increase in distribution business costs and the transfer of profits from the regulated business to elsewhere in the group. Ofgem's consultants have removed the margins from recharges from other companies in the group, except where those companies carry out 50 per cent or more of their trade externally to the group. A similar approach has been adopted in respect of network capital spending.

2.25 Table 2.3 sets out the present findings of the consultants with respect to the appropriate adjustments to distribution operating costs arising out of the work on recharges.

TABLE 2.3: INITIAL ESTIMATES OF ADJUSTMENTS TO DISTRIBUTION BUSINESS OPERATING COSTS ARISING OUT OF THE ANALYSIS OF RECHARGES (1997/98 PRICES £MILLION)

PES	£M
Eastern	0.0
East Midlands	(0.2)
London	(1.1)
Manweb	0.0
Midlands	(1.5)
Northern	(11.3)
NORWEB	(3.3)
SEEBOARD	0.0
Southern	(2.0)
SWALEC	(2.8)
South Western	(1.6)
Yorkshire	(0.5)
ScottishPower	0.0
Hydro-Electric	0.0
Total	(24.3)

Standardising Operating Costs in 1997/98

2.26 Table 2.4 combines controllable costs (total operating costs excluding network depreciation, network rates, NGC exit charges and profit and losses on the sale of fixed assets) for 1997/98 with the accounting adjustments shown in Tables 2.1**,** 2.2 and 2.3**.** The resulting adjusted costs vary considerably from one company to another, whether in total or

expressed as averages per unit distributed or per customer connected to each network. For example, the costs per customer vary between about £30 and £85.

TABLE 2.4: ADJUSTED CONTROLLABLE COSTS (1997/98 PRICES £MILLION)

PES	Controllable Costs	Capitalisation	Allocations and Attributions	Recharges	Adjusted Costs
Eastern	151.0	(2.2)	(35.2)	0.0	113.6
East Midlands	146.4	(1.3)	(26.2)	(0.2)	118.7
London	131.8	11.9	(44.9)	(1.1)	97.7
Manweb	84.5	2.2	(20.1)	0.0	66.6
Midlands	127.2	9.1	(17.0)	(1.5)	117.8
Northern	99.1	0.4	(14.0)	(11.3)	74.2
NORWEB	129.9	5.2	(23.8)	(3.3)	108.0
SEEBOARD	81.8	12.9	(30.8)	0.0	63.9
Southern	88.4	5.5	(11.1)	(2.0)	80.8
SWALEC	75.4	8.1	(11.1)	(2.8)	69.6
South Western	73.9	1.1	(9.8)	(1.6)	63.6
Yorkshire	101.3	15.9	(23.1)	(0.5)	93.6
ScottishPower	101.3	4.4	(22.7)	0.0	83.0
Hydro-Electric	59.9	2.5	(7.9)	0.0	54.5
Total	1451.9	75.7	(297.7)	(24.3)	1205.6

2.27 In order to make costs more comparable, a number of further adjustments have been made to the adjusted costs in Table 2.4. These are set out in Table 2.5 and are summarised below:

- Data Management Services (DMS)/1998 – the one-off costs associated with the provision of data management services and the opening of the franchise supply market have been removed. DMS is associated with the development of data aggregation and processing arrangements designed to facilitate the introduction of competition for domestic customers. Costs removed include penalties for the late opening of the franchise supply market. An allowance has been made for ongoing costs associated with DMS;

- Non-trading rechargeables (NTRs) - costs associated with NTRs, which reflect work done for third parties, have been excluded as these are not covered by the price control;

- other one-off costs - adjustments have also been made to take account of other costs, for example, one-off restructuring charges;

- other services - costs associated with the commercial provision of services outside the distribution business have been removed;

- provision movement - adjustments have been made to remove the effect of movements in accounting provisions from the cost base; and

- other adjustments - adjustments have also been made to annualise the effect of efficiency measures introduced by PESs part way through the base year, and also to remove from the cost base unidentified amounts and unexplained increases in costs over the previous year.

TABLE 2.5: STANDARDISED CONTROLLABLE COSTS (1997/98 PRICES £MILLION)

PES	Adjusted Net Costs	DMS	NTRs	One-Offs	Other Services	Provision	Other	Standardised Costs
Eastern	113.6	-	(20.1)	(13.6)	-	(3.8)	(6.6)	69.5
East Midlands	118.7	(10.0)	(10.1)	(15.8)	(3.3)	(2.6)	(0.5)	76.4
London	97.7	(17.9)	(11.4)	6.3	-	(0.6)	-	74.1
Manweb	66.6	-	(5.0)	(2.4)	-	(1.3)	(1.4)	56.5
Midlands	117.8	(4.0)	(13.4)	(10.3)	-	(0.8)	(3.0)	86.3
Northern	74.2	(1.1)	(5.4)	(1.0)	-	(0.3)	(1.1)	65.3
NORWEB	108.0	(6.3)	(12.8)	(3.2)	-	4.0	(2.5)	87.2
SEEBOARD	63.9	(0.3)	(8.3)	3.2	-	-	(0.4)	58.1
Southern	80.8	(5.7)	(9.8)	(0.9)	-	-	(1.0)	63.4
SWALEC	69.6	(3.3)	(5.2)	(11.0)	-	1.0	(2.4)	48.7
South	63.6	(0.3)	(2.8)	(1.3)	-	0.6	(0.6)	59.2
Western	93.6	(3.8)	(5.6)	(10.1)	-	1.3	(0.1)	75.3
Yorkshire	83.0	(0.3)	(7.3)	0.7	(15.1)	1.2	(1.2)	61.0
ScottishPower	54.5	(1.1)	(2.0)	(4.0)	(0.8)	0.4	(0.8)	46.2
Hydro-Electric								
Total	1205.6	(54.1)	(119.2)	(63.4)	(19.2)	(0.9)	(21.6)	927.2

2.28 The largest changes in Table 2.5 tend to relate to NTR costs. The figures provided by the PESs show a wide variation in the apparent profitability of such work, with several companies reporting losses. This suggests that PESs may not be reporting NTR costs on a consistent basis. Consequently it seems appropriate to make the standardising assumption across PESs that NTR costs are equal to NTR revenue. And this is reflected in the figures in Table 2.5.

2.29 In order to take account of specific regional factors, further adjustments have been made to the ongoing level of standardised controllable costs shown in Table 2.5. These include, for example, adjustments for the higher labour costs faced by London and for the different arrangements in Scotland, where the 132 kV networks are part of the transmission business, in contrast to England and Wales where they are part of distribution. The 20 May consultation paper set out initial estimates of the necessary adjustments for regional variations. Table 2.6 shows an updated level of base costs based on revised adjustments for regional variations. The regional adjustments are explained in more detail in Annex 2. Some PESs argued that further adjustments needed to be made to make operating costs more comparable.

These included adjustments for the condition of the distribution network, such as for the relative age of network assets, or for relative levels of customer service. PB Power and PKF analysed the impact of network asset age on the level of operating costs, but the results did not support the argument that older assets necessarily resulted in higher levels of operating costs to the extent that an adjustment seemed appropriate. Further, there was no evidence to support certain PESs' arguments that their distribution network assets are significantly older than other PESs. Taken in combination, there seems no reason to adjust allowed operating costs for these factors.

TABLE 2.6: BASE COSTS (1997/98 PRICES £MILLION)

PES	Standardised Controllable Costs	Regional Adjustments	Base Costs
Eastern	69.5	-	69.5
East Midlands	76.4	-	76.4
London	74.1	(8.0)	66.1
Manweb	56.5	-	56.5
Midlands	86.3	-	86.3
Northern	65.3	-	65.3
NORWEB	87.2	-	87.2
SEEBOARD	58.1	-	58.1
Southern	63.4	-	63.4
SWALEC	48.7	-	48.7
South Western	59.2	-	59.2
Yorkshire	75.3	-	75.3
ScottishPower	61.0	6.1	67.1
Hydro-Electric	46.2	3.2	49.4
Total	927.2	1.3	928.5

2.30 The 20 May consultation paper identified a number of statistical techniques which could be used to evaluate the level of base costs. These included simple ratio analysis, regression analysis, data envelope analysis and stochastic frontier analysis. The analysis presented in the 20 May consultation paper used regression analysis. PESs generally supported this approach, although comments were made on specific elements of the analysis. These are discussed in more detail below. More generally, some PESs questioned whether the regressions were sufficiently robust to be used to inform the analysis of operating costs. It was argued that too much reliance should not be placed on a statistical analysis of operating costs. Regression analysis provides an insight to relative efficiency by taking into account, as far as practicable, differences in operating environments. The use of a composite size explanatory variable and adjustments for regional differences is an attempt to normalise for differences across PESs. Further, factors which may be outside of the direct control of management, such as network rates, are not included in the level of base operating costs. The use of this form of analysis is consistent with the principles for making greater use of yardstick comparisons as outlined in Chapter 1. Nevertheless, it is important that there is not an undue reliance on a statistical analysis of

operating costs. Therefore, the regression analysis forms only part of the overall assessment of operating costs, which is principally informed by the work of PKF and Peter Warry.

2.31 An important factor in determining distribution costs appears to be the pattern of peak demands at different points within each PES's system. These peaks are not easily measured and so cannot be used as a measure of the underlying factors driving costs. Any one of three observed measures - number of customers, units distributed or length of network - could represent underlying cost drivers. Although these measures are correlated they have different implications for some companies. To sum up these influences the 20 May consultation paper explained that a composite variable had been constructed. Most PESs commented on the specification of the composite variable. It was variously suggested that different weights should be applied to the three observed measures or that the chosen measures did not accurately reflect differences in operating environments, or cost drivers, across PESs. For example, some PESs argued that overhead line length should be used rather than total network length in order to capture the influence of customer sparsity on operating costs. However, analysis of the information provided by the PESs in their business plans suggests that the proportion of overhead line to total network length does not have a significant impact on the level of operating costs.

2.32 The composite variable used in the regressions presented in the 20 May consultation paper attached a weight of 0.7 (or 70 per cent) to the number of customers, and 0.15 to each of the number of units distributed and length of network. Further analysis of the appropriate weights to be attached to the various measures has been undertaken. Ofgem has looked at a range of weights for the composite variable, which all give broadly similar results. Additionally, not withstanding their lack of detailed consensus, the views of the PESs have been generally taken into account. As a result a weight of around 0.5 on customer numbers and around 0.25 on both units distributed and length of network is appropriate. This is explained in more detail in Annex 3.

2.33 The constant term of a regression, with base costs as its dependent variable, and a composite network size measure as the independent or explanatory variable, can be thought of as representing the fixed costs of a distribution business. The 20 May consultation paper explained that the initial analysis by Ofgem's consultants suggested that these fixed costs should be no more than £25 million per PES and that the constant term in the regression analysis was constrained to that level. A number of PESs argued that constraining the constant term of a regression invalidated the results by undermining the theoretical basis of regression analysis. Nonetheless, some PESs suggested that the fixed costs of a distribution business are in a range between £20 million and £25 million. The analysis of Ofgem's consultants support this conclusion.

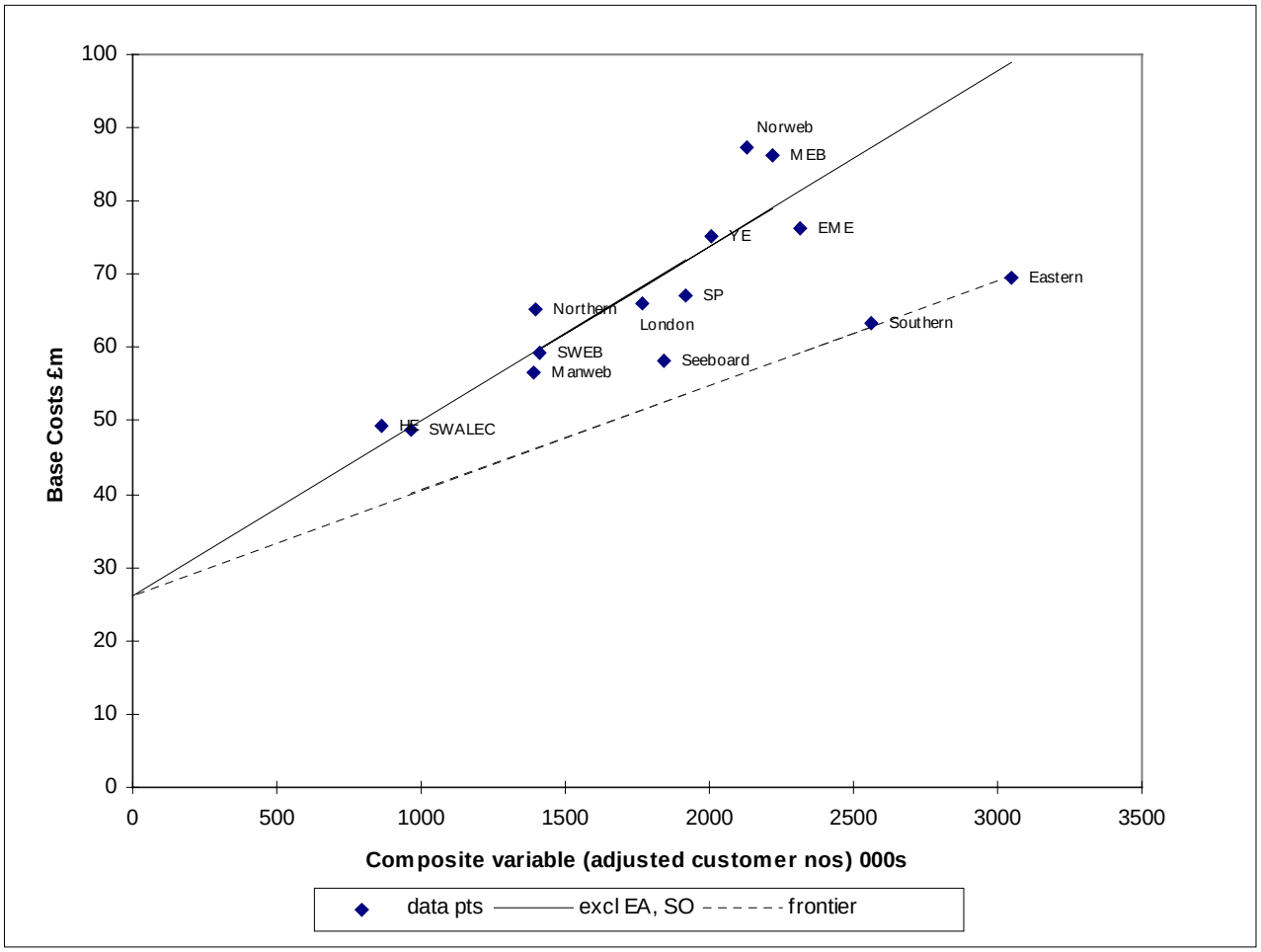
2.34 The work of PKF and Peter Warry has identified two distinct groups of PESs - those which are above average efficiency and those which are less efficient. It is possible to think of a smaller selection of those PESs who are more efficient as representing companies at the efficiency frontier, with other PESs above the frontier to differing extents, depending on their relative inefficiency.

2.35 The implication of this for the regression analysis is that it would not be appropriate to group all PESs together. The analysis suggests that Eastern and Southern are presently at the frontier with SEEBOARD slightly above the frontier.

2.36 Figure 2.1 shows how the base operating costs of the PESs vary with the composite variable. The position of each company is indicated by a diamond and the line represents the average relationship across the PESs (excluding Eastern and Southern). As discussed above no constraint is imposed on the constant term. Nonetheless, it is clear from the point at which the regression line crosses the y axis that the level of fixed costs is around £25 million. The regression explains a significant amount of the variation in costs across PESs. A separate line is shown for the efficiency frontier which is defined by the position of Eastern and Southern. It is possible to compare the position of PESs in the larger group to both the average of that group and to the efficiency frontier. Companies shown above the average regression line appear to have relatively high costs and those below the line appear to relatively lower costs. The 20 May consultation paper explained that there may be a number of factors underlying these results; including relative efficiency, the explanatory composite variable not properly capturing all the factors driving underlying costs and the adjustments to the base data requiring further refinement. Further analysis has been undertaken in all these areas and it is possible to conclude with more confidence that the position of a PES relative to the line is more representative of efficiency.

2.37 It is reasonable to expect that, over time, all PESs should reach the frontier (which will itself advance and even companies that are judged to be efficient will be able to reduce costs). Accordingly, the results from the regression analysis have been used to support the work of PKF to derive an assessment of the relative efficiency of companies and to support their analysis of the level of cost reductions expected from the PESs over the period to 2004/05. This is discussed in more detail below.

FIGURE 2.1: RELATIONSHIP BETWEEN BASE OPERATING COSTS AND THE COMPOSITE SIZE VARIABLE (1997/98 PRICES)



Consultants' Efficiency Study

2.38 Ofgem's consultants have made adjustments to the PESs' 1997/98 costs in respect of capitalisation policy, allocations and recharges as described above. In addition, they have been engaged to assess the level of operating costs potentially achievable by each PES by the application of efficient operating practices. In this respect they have been assisted by the technical consultants, PB Power.

2.39 At the time of the 20 May consultation paper, the consultants had assisted in the design of business plan questionnaires, analysed the completed questionnaires, visited each PES to clarify areas of uncertainty, gathered further information and asked further written questions. Since then they have completed draft reports which have been sent to the PESs for comment. PESs have responded and while their regular comments have been considered in the process of formulating the draft proposals, certain details are still being considered.

2.40 In considering efficiency in 1997/98, the base year for their analysis, PKF applied several complementary techniques. They considered the underlying level of cost reduction achieved since 1994/95, benchmarked the cost of performing the main distribution business activities, and also carried out supporting analysis of human resource and IT costs. PKF's benchmarking of main distribution activities is described below.

2.41 Following the movement of meter reading activities to supply in line with the proposals on separation, the main activities carried out by the distribution business can be summarised as follows:

- engineering - including network repairs and maintenance, system control and non-capitalised planning and construction;
- meter operation - including meter repair and maintenance, meter recertification and meter changes;
- corporate and administrative - including the distribution proportion of corporate and administrative functions; and
- customer service - including the use of proportion of customer interface activity related to the distribution , such as the use of call centres.

2.42 The consultants carried out a detailed study of the costs of these main activities. Engineering activities account for the majority of distribution business costs. In order to assess the potential savings available to each PES, a number of techniques were applied as follows:

- a cost per network kilometre benchmark of £575 per km was calculated, based on costs from four of the better PESs;
- PB Power calculated an engineering cost for each PES based on a profile of its network assets and using a best practice cost per asset;
- a comparison of historic savings achieved: four of the better PESs achieved savings in engineering costs of up to 40 per cent from 1994/95 to 1997/98: in addition, the extent of savings in costs from 1990/91 to 1994/95 was also considered;
- PB Power undertook a review of each PES's engineering organisational structures, field efficiency and operating practices; and
- PKF gathered information on the methods by which companies had reduced engineering costs over the period since 1994/95 and reviewed the methods by which companies planned to make efficiency savings in the future. Examples include the introduction of new terms and conditions of employment such as home to site working and annual

hours contracts. Other examples include the increased condition monitoring of assets, the multi-skilling of appropriate staff to improve productivity, moving to best practice in the ratio of team leaders to industrial staff and the redesigning of business processes to focus on delivering outputs at minimum cost.

2.43 The different components of this analysis produced a range of potential cost savings considered by PKF to be available to each PES. The consultants then used these analyses to determine an appropriate overall level of cost savings for each PES.

2.44 To assess the efficiency of metering costs, the main technique used was the benchmarking of costs per customer. By taking the average of the better performing PESs, PKF calculated a benchmark of £2.40 per customer.

2.45 Similarly by taking an average of the better four performing PESs, the consultants calculated a benchmark of £7 million for corporate costs.

2.46 When considering customer service, the application of usage based methods of cost allocation consistent with proposals on separation has led to the level of cost remaining in distribution being greatly reduced. Consequently the potential savings available in respect of customer service are relatively small.

2.47 The above summarises the functional analysis carried out by PKF. As supporting evidence, the consultants also carried out supporting analyses of human resource and IT costs. This included the benchmarking of overtime and sickness rates, an assessment of pay rates as compared to the New Earnings Survey, consideration of the efficiency of each PESs organisation shape and the benchmarking of IT costs. PKF's view of the overall cost reductions potentially achievable for each PES for the year 1997/98 are shown below in Table 2.7.

TABLE 2.7: PKF POTENTIAL REDUCTIONS IN STANDARDISED CONTROLLABLE OPERATING COSTS IN 1997/98 (PER CENT)

PES	REDUCTION
Eastern	12%
East Midlands	23%
London	24%
Manweb	30%
Midlands	34%
Northern	39%
NORWEB	35%
SEEBOARD	15%
Southern	9%
SWALEC	26%
South Western	26%
Yorkshire	34%
ScottishPower	25%
Hydro-Electric	23%
Average	25%

2.48 From an initial review of the PESs' comments on PKF's report it appears that PESs completed the Business Plan Questionnaire in different ways, and placed costs in respect of the same activity under different headings. Therefore, they argued, it was unreasonable to use as a benchmark the best performers under each activity.

2.49 Some adjustment to PKF's figures seems appropriate. One adjustment which has been made is to allow PESs credit where they have beaten the consultant's benchmarks. A number of PESs benefit from this approach, particularly Eastern and Southern. Additional adjustments have also been made to reflect the meter reading costs, as well as the equalisation of NTR costs and revenues. The revised view of the cost reductions potentially achievable for each PES for the year 1997/98 is set out in Table 2.8.

TABLE 2.8: REVISED REDUCTIONS IN ONGOING CONTROLLABLE OPERATING COSTS IN 1997/98 (PER CENT)

PES	REVISED REDUCTION
Eastern	0%
East Midlands	24%
London	28%
Manweb	27%
Midlands	33%
Northern	39%
NORWEB	40%
SEEBOARD	12%
Southern	2%
SWALEC	25%
South Western	27%
Yorkshire	34%
ScottishPower	21%
Hydro-Electric	22%
Average	24%

2.50 In assessing the efficiency frontier in 1997/98, two main techniques have been used, regression analysis and the consultant's efficiency study. It is appropriate to compare the results of both sets of work, this is set out in Table 2.9.

TABLE 2.9: COMPARISON OF THE RESULTS OF THE EFFICIENCY STUDY AND REGRESSION ANALYSIS FOR 1997/98 (PER CENT)

	REGRESSION	EFFICIENCY STUDY
PES	POTENTIAL SAVING	POTENTIAL SAVING
Eastern	(2%)	0%
East Midlands	22%	24%
London	31%	28%
Manweb	19%	27%
Midlands	32%	33%
Northern	30%	39%
NORWEB	46%	40%
SEEBOARD	9%	12%
Southern	0%	2%
SWALEC	19%	25%
South Western	22%	27%
Yorkshire	27%	34%
ScottishPower	12%	21%
Hydro-Electric	18%	22%
Average	20%	24%

2.51 Table 2.9 shows that the level of potential efficiency available to PESs is typically a little higher in the efficiency study than in the regression. The exceptions to this are London and NORWEB. While there is some variation between the figures both in the absolute level of potential efficiencies and in the relative position of PESs, the picture presented appears broadly similar.

Future Costs

2.52 In addition to their work on costs in the base year, PKF have also considered the factors influencing cost levels in the future and made a projection of the efficient level of operating costs between the base year 1997/98 and 2004/05.

2.53 PKF considered the PESs own forecasts. On average PESs forecast a reduction in controllable ongoing costs of around 2 per cent over the 7 years to 2004/5. However, there was a wide range in the numbers presented, as shown below in Table 2.10 below.

TABLE 2.10: PES' OWN FORECAST OF CONTROLLABLE OPERATING COST REDUCTIONS IN REAL TERMS FROM 1997/98 TO 2004/05 (PER CENT)

PES	REDUCTION (INCREASE)
Eastern	(16)%
East Midlands	(5)%
London	7%
Manweb	3%
Midlands	12%
Northern	13%
NORWEB	14%
SEEBOARD	3%
Southern	11%
SWALEC	(7)%
South Western	(8)%
Yorkshire	(13)%
ScottishPower	1%
Hydro-Electric	15%
Average	2%

2.54 Typical arguments used by PESs to justify their own forecast of cost increases include growth in demand and improvements in the quality of supply, higher wayleave costs, increased DMS and other costs associated with the opening of the franchise market, year 2000 costs and the costs associated with European monetary union. A number of PESs also suggested that investments in IT systems would be required, in particular in respect of asset management systems, the principal benefits of which would be evidenced in reduced capital expenditure and improved quality of supply.

2.55 PESs have achieved significant cost reductions since 1994/95 while quality of supply has been maintained or improved. There is no evidence that further operating cost reductions would jeopardise quality of supply. PKF considered that IT investment should be largely self-financing, that year 2000 costs should not be incurred after April 2000 and that costs associated with the Euro were speculative. An allowance has been made for DMS and other 1998 costs.

2.56 PKF considered that, from the efficient level in 1997/98, before an allowance for one off costs, PESs should be able to achieve further reductions in controllable costs of around 2.5 per cent on an annual basis from 1998/99 to 2004/05, based on average productivity gains across the UK economy as a whole. The consultants suggested that companies should be allowed several years to reach the efficient level of costs. An allowance for one-off costs should also be made over the same period.

2.57 A number of PESs have argued that a figure of 2.5 per cent per annum for additional efficiencies is higher than is reasonable. They have pointed out that, while this may be a reasonable figure for UK economic growth,

it does not take into account increased output. If load growth of up to 1.25 per cent were assumed, PESs argued that the reduction in ongoing costs and consequently the movement in the efficiency frontier should be nearer to 1 per cent per annum.

2.58 The level of total projected efficiency savings shown in Table 2.9 above averages over 20 per cent, and is significantly higher than that for many PESs. Given the order of magnitude of the savings it would seem appropriate to allow PESs the period until 2004/05 to achieve them even though the evidence of the present price control period suggests that the more efficient companies have cut costs more quickly.

2.59 In assessing what is a reasonable allowance for one-off costs, it seems appropriate to consider the level of such costs for the year 1997/98, which has been subject to detailed analysis. The sum of one-off costs for that year, excluding DMS and 1998 costs, was shown in Table 2.5 to be £63.4 million. A figure has been attributed to each PES based on that PESs' relative composite size variable – 50 per cent customer numbers, 25 per cent load, and 25 per cent line length.

2.60 It is for consideration whether the one-off cost per cent allowance should include an additional amount in respect of asset management IT systems. There has been some support from Ofgem's technical consultants for the PES view that such systems reduce capital expenditure and assist in maintaining quality of supply. Therefore it may be appropriate to include an allowance of around £2 million in respect of such systems.

2.61 For purposes of calculating the draft price control proposals it is appropriate to establish a range of allowances for operating costs taking all relevant factors into consideration.

2.62 The higher allowance for operating costs has been derived from:

- the regression and the efficiency study, achieved by means of an equal annual percentage reduction over the 7 years to 2004/05;
- an allowance for one off costs that diminishes throughout the period to 2004/05 falls in line with base costs; and
- an annual £2 million allowance for asset management IT systems.

This higher allowance for operating costs gives an annual average fall for all companies is 2.8 per cent.

2.63 The lower end of the range for allowed operating costs has been derived from:

- the regression and the efficiency study, achieved by means of an equal annual percentage reduction over the 7 years to 2004/05;

- an allowance for one off costs that falls annually to zero in 2001/02;

- no allowance for asset management IT systems; and

- an additional 1 per cent annual tightening of the efficiency frontier from 1998/99 onwards.

This lower allowance gives an annual average fall for all companies of 6 per cent.

2.64 Table 2.11 shows the impact of these assumptions on the level of allowed operating costs for each company in 2004/05.

TABLE 2.11: THE RANGE FOR STANDARDISED CONTROLLABLE COSTS INCLUDING ALLOWANCE FOR ONE-OFF COSTS (£MILLION 1997/98 PRICES)

PESs	1997/98	2004/5 (Low)	2004/5 (High)
Eastern	77.0	64.7	80.4
East Midlands	82.1	54.2	66.1
London	78.4	47.8	58.3
Manweb	59.9	38.1	50.7
Midlands	91.7	53.6	64.0
Northern	68.7	36.7	50.4
NORWEB	92.4	43.5	57.9
SEEBOARD	62.6	47.4	58.8
Southern	69.7	58.0	71.7
SWALEC	51.1	33.8	43.4
South Western	62.7	40.4	50.8
Yorkshire	80.2	46.5	60.7
Scottish Power	65.7	44.8	60.0
Hydro-Electric	48.4	33.6	41.8
TOTAL	990.6	643.0	814.9

2.65 In addition, a separate allowance will be made for DMS work. This will be based on an appropriate proportion of the existing DMS allowances, adjusted for the revised arrangements for separation of businesses.

3 CAPITAL EXPENDITURE

Introduction

3.1 The 20 May consultation paper included a preliminary analysis of capital expenditure in the present price control period and also examined companies' forecasts for the forthcoming price control period. It identified that there has been a significant divergence of company behaviour with respect to capital expenditure in the present price control period and companies' forecasts show continuing divergence. It identified several issues for consideration:

- the extent to which past under-spends can be justified on the basis of efficiency savings or relate to mis-forecasts or changes in factors outside companies' control;
- the extent to which capital expenditure has been unnecessarily high or inappropriate in the present price control period;
- the extent to which companies have distorted the phasing of capital expenditure programmes and what should be done about this;
- determination of appropriate levels of load related expenditure (LRE) for the forthcoming price control period;
- determination of appropriate levels of non-load related expenditure (NLRE) for the forthcoming price control period; and
- in determining the above, the extent to which longer term considerations of asset replacement or possible deterioration in quality ought to be included in considerations of capital expenditure, or whether these are more properly addressed through revisions to quality of supply output standards and the penalties for failing to meet these.

3.2 In making projections for the level of capital expenditure for each company in the forthcoming period, several aims are important:

- achieving quality of supply standards and targets at least cost;
- incentivising improvements in quality of supply where these are cost-effective; and
- incentivising capital efficiency and hence reductions in overall cost levels.

Responses to the 20 May Consultation Paper

3.3 Of the 47 responses to the 20 May consultation paper, 33 made significant comments on the capital expenditure section. These were from all 14 of the PESs, 11 ECCs and 8 others.

3.4 The PESs provided detailed responses to the 20 May consultation paper. Most suggested that the regulatory framework should focus on distribution business outputs and not inputs, such as expenditure. One company said that in future it should be incentivised to deliver agreed levels of service at minimum cost. However, due to year on year variations, a dead band, or tolerance, should be set around these service levels. Some companies would like a capital expenditure contract. Some said that there should be no adjustment for past under-spend if companies met their quality of supply service standards and targets in the present period. One PES suggested that companies who under-spend in the present period should be penalised if they are forecasting a substantial increase in expenditure in the next period.

3.5 A number of PESs believe that there is an imbalance in the incentives between capital and operational expenditure which means that companies are inclined to increase the asset base while saving operational expenditure; one example of this is the changes in capitalisation policy, where companies are more inclined to capitalise than in the past. Most companies highlighted a need for greater consistency in reporting, generally in relation to output or service levels. Greater consistency would also be desirable in relation to the allocation of expenditure.

3.6 Eleven of the ECCs made comments on capital expenditure. Several said that companies should not get the benefits of under-spending if their quality of supply had suffered. There was a common wish to see more frequent monitoring of capital expenditure against forecasts and quality improvements against targets. Additionally ECCs did not wish to see today's practices storing up problems for the future. One ECC took the view that under-spend should be tested not just against overall quality but against whether any group of customers has an unacceptable supply quality. Another suggested that companies should be incentivised to encourage embedded generation and energy efficiency so as to avoid unnecessary capital expenditure.

3.7 Eight other respondents, including large customers and individuals, also commented on capital expenditure. Common concerns were similar to those of the ECCs.

Capitalisation and Other Adjustments

3.8 In considering past and future spend, adjustments to capital and operating expenditure were set out in the 20 May consultation paper to ensure that companies' figures can be compared on a consistent basis. Further work has been performed on these adjustments following dialogue with the companies and annex 4 shows revised values which have resulted.

Capital Expenditure during the Present Price Control Period

3.9 Terminology used in this paper to describe forecasts and projections of capital expenditure follows the approach used in the 20 May consultation paper. In late 1993, all companies submitted capital forecasts in respect of the years 1995 to 2000 ("the companies' 93 forecasts"). The RECs submitted revised forecasts in Spring 1995 ("the companies' 95 forecasts"). In 1994, OFFER made projections for capital expenditure in respect of the years 1995 to 2000 ("OFFER's 94 projections"). OFFER's 1994 projections were retained when the present price controls were re-set in 1995. As part of the present review, companies have submitted outturn figures for expenditure in the first three years of the present price control period and updated projections for the two remaining years ("the companies' 98 updated forecasts"). Companies have also provided forecasts for the period 2000/01 to 2004/05 ("companies' 2000 forecasts"). Ofgem's present projections of capital expenditure for the period 2000/01 to 2004/05 are referred to here as "Ofgem's '99 projections".

3.10 The 20 May consultation paper included an analysis of variances between companies' 93 forecasts, OFFER's 94 projections and companies' 98 updated forecasts for capital expenditure during the present price control period. Work is continuing to evaluate capital expenditure in the present period with respect to:

- reasons for over or under-spend; and
- whether these result from factors under the companies' control or factors outside the companies' control.

3.11 It is difficult to attribute variances in capital expenditure in a robust way. There have been significant underspends but efficiency gains have also been made. Other factors outside companies' control, especially customer numbers and demand growth, have also affected expenditure needs. In setting the forthcoming price control, concerns about the effects of such factors will be addressed by being particularly rigorous in analysing the companies' 2000 forecasts and identifying trends.

3.12 Many respondents to the 20 May consultation paper favoured a greater and more continuous degree of capital expenditure monitoring, a position which Ofgem supports and intends to implement.

3.13 In the light of the range of companies' behaviour during the present price control period, it is appropriate to consider which types of behaviour have been consistent with efficient practice; and whether other types of behaviour were justifiable by reference to incentives given as part of the last price control review. Where genuinely efficient practice can be identified this can be rewarded appropriately. Where there appears to have been inefficiency, it may be inappropriate to penalise it by reference to the newly established efficiency norm if the efficient behaviour was explicitly encouraged at the last price control review. It is however important not to let such a divergence of interpretation continue to exist during the next price control review period.

3.14 Some companies whose expenditure is closer to OFFER's 1994 projections have argued that, in effect, they had a regulatory contract to spend such sums. This is unjustifiable with respect to the documentary evidence at the time and generally unsupportable in the context of incentive regulation which seeks to encourage efficiency in total costs, which includes the costs associated with capital expenditure.

3.15 There is however some evidence to support the view that OFFER encouraged companies to maintain capital expenditure on a broadly consistent basis over time and hence expected capital expenditure to be broadly in line with its 1994 forecasts. In the absence of technological change, it is a reasonable expectation that expenditure should not vary significantly from year to year, thus permitting a measure of consistency both in deployment and engineering resource and the related financial budgeting. Unless it is the result of technological change or genuine efficiency, or redefining the frontier, it is unlikely that sizeable under-spends will be sustainable on a longer-term basis.

3.16 Ofgem's technical consultants PB Power have advised that the behaviour of those PESs who have considerably reduced their capital expenditure requirements during the period is credible and reflects, to some extent, technological change. Savings have arisen from the deployment of new IT systems to analyse better the condition of network assets and hence the need to refurbish or replace them. There is no significant evidence to suggest that quality of supply performance has been undermined in the short or medium term by the changed behaviour. However, Ofgem intends to monitor closely the performance of each company in respect of its quality of supply targets and Guaranteed Standards. In many cases, the financial benefits of the underspend will have to be offset against the higher operating costs arising from the investment in the related IT systems. Since the latter are treated as operating expenditure, a simple

comparison of capital expenditure forecasts and out-turns needs to be treated cautiously.

3.17 Subject to application of any penalties in respect of failure to meet quality of supply targets, Ofgem would expect such companies to retain the benefit of their under-spend. Given that, to a significant extent, the nature and timing of capital expenditure (particularly non-load related expenditure) is discretionary, measures need to be introduced to ensure that companies are only rewarded for genuine efficiency not timing benefits obtained through manipulation of the periodic regulatory process.

3.18 In this context, it is particularly important to ensure that companies do not have a perverse incentive to 'achieve' periodic delays in capital expenditure, such that they regularly under-spend Ofgem's forecasts, thereby gaining a financial benefit, and then claim a higher allowance for the subsequent period in respect of the capital expenditure which has not been undertaken.

3.19 In order to deter short-termism and gaming of this incentive, Ofgem is considering a number of measures to ensure that companies do not benefit unduly, particularly where quality of supply is deemed to be at risk in the short or medium term. These include tougher penalties for degradation in quality of supply, if companies fail to meet overall standards during the present price control period or fail to meet quality of supply targets. It is for consideration, whether penalties should become disproportionately tougher if companies miss targets by a distance. Further, where PESs underspend in one period and then forecast an increase in expenditure in the next, this will be carefully scrutinised.

Capital Expenditure in the Period from 2000/01 to 2004/05

3.20 The 20 May consultation paper indicated that the companies' 2000 forecasts would be critically examined against the criterion of obtaining maximum capital efficiency and therefore lowest prices for customers while ensuring the quality of supply is maintained or improved. The following factors were identified for particular consideration:

- whether the companies' 2000 forecasts can be expected to reflect underlying needs taking into account experience in the present price control period;

- what stance should be adopted for companies that project increased expenditure in future;

- whether companies which forecast continuing low spending in future are putting quality of supply at risk; and

- the extent to which good practice identified in the present price control period should be embodied into Ofgem's projections.

3.21 The differences between the companies' 98 updated forecasts and 2000 forecasts are shown in Figures 3.1 and 3.2. Significant differences are evident with Eastern, East Midlands and NORWEB forecasting major increases, while other companies are forecasting expenditure at levels similar to or slightly reduced from present levels. Ofgem's consultants, PB Power, have developed initial modelling of company requirements for load related and non-load related capital expenditure in the forthcoming price control period.

FIGURE 3.1: CHANGES IN TOTAL CAPITAL EXPENDITURE BETWEEN 2000-2005 AND 1995-2000

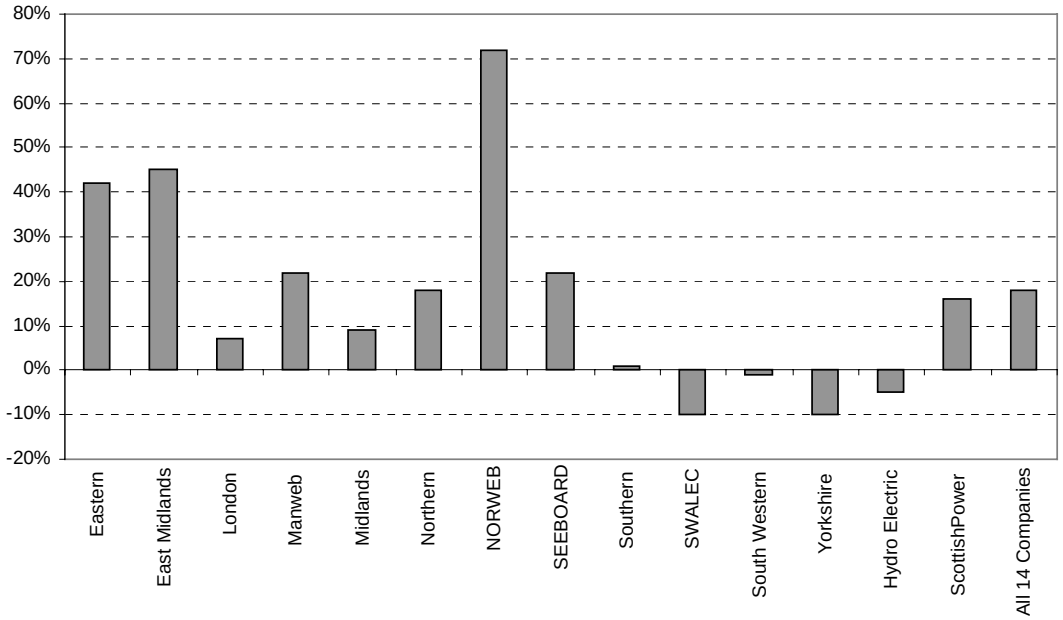
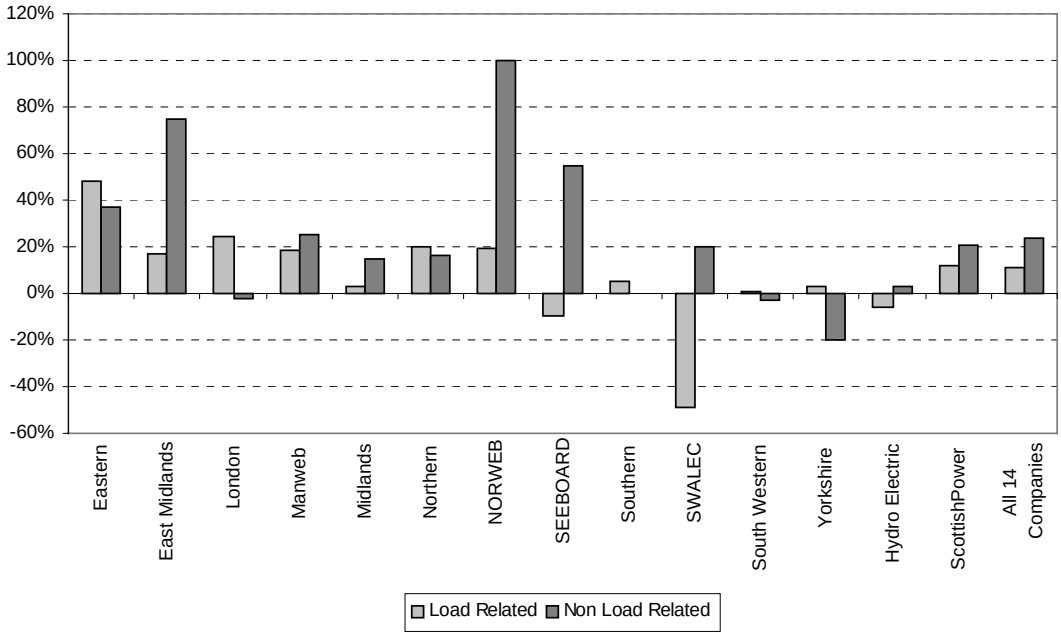


FIGURE 3.2: CHANGES IN LRE AND NLRE BETWEEN 2000-2005 AND 1995-2000

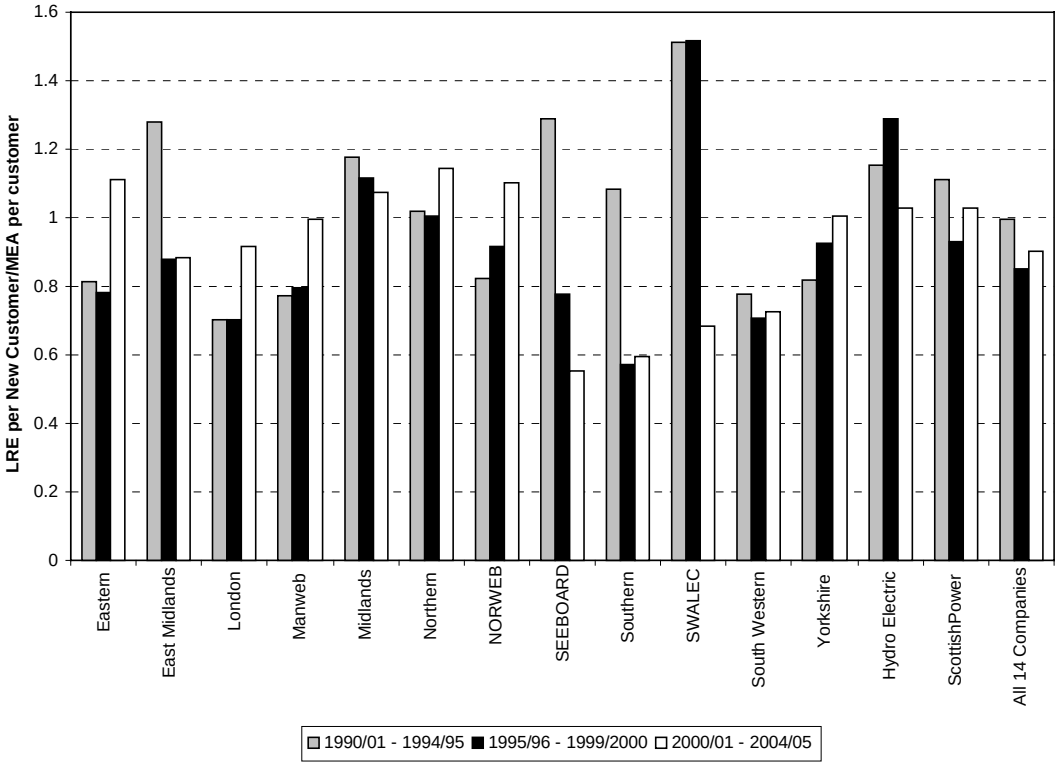


Load Related Expenditure (LRE) Modelling

3.22 As described in the 20 May consultation paper, analysis has focused on modelling load-related expenditure to arrive at an independent assessment of expenditure requirements which is applicable to all companies. Account has been taken of the underlying demand growth, numbers of new connections and demand movement. This analysis has taken account of the individual characteristics of companies networks, including factors such a geography and historical design practices.

3.23 Figure 3.3 shows how total load-related expenditure has varied in the period since Vesting. Results for each company have been normalised by calculating the equivalent expenditure per customer using assessments of the present day value of the networks. Although nine companies were able to reduce their LRE between the first two price control periods, ten are forecasting an increase in the forthcoming price control period.

FIGURE 3.3: NORMALISED LRE BY PRICE CONTROL PERIOD



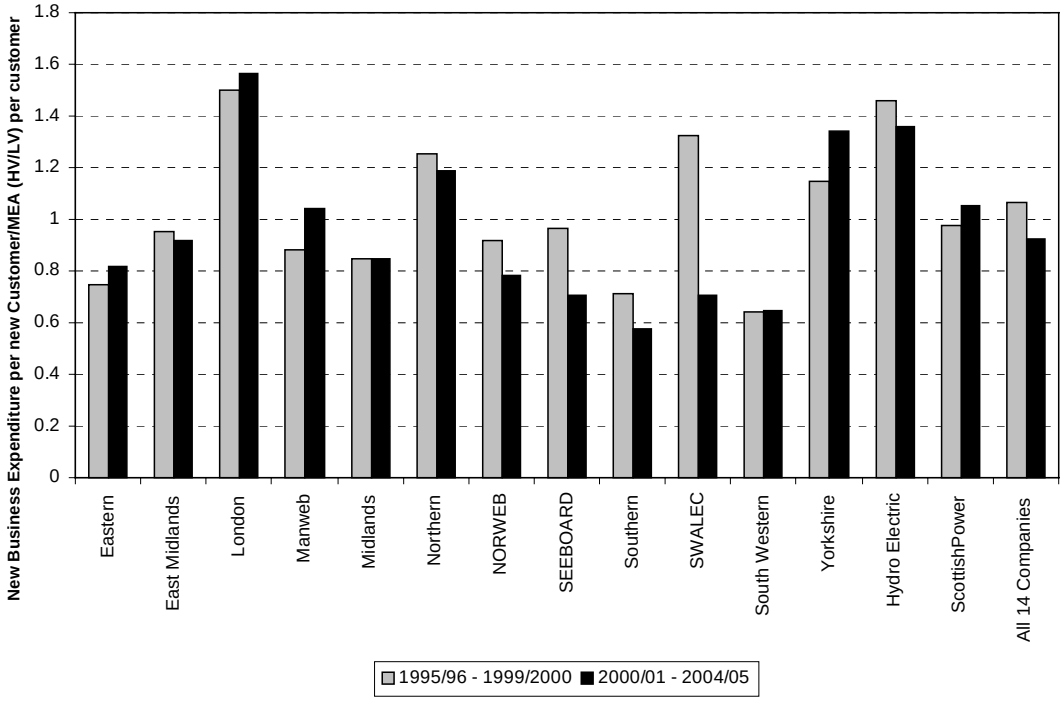
3.24 In considering LRE, it has been found useful to sub-divide the expenditure category into expenditure on new business, that is expenditure on the network to connect new customers, and expenditure on reinforcement, that is expenditure on general network development to meet overall increases in demand. Relationships have been sought between two principal drivers of these two categories of expenditure, customer needs and demand growth.

3.25 Forecasts relating to customer numbers are somewhat more stable than for distributed units, with growth continuing at a rate of about 0.8 per cent per annum in the forthcoming price control period. After application of corrections to account for changes in past methods of counting or measuring number of customers, consistent relationships have been identified between growth in customer numbers and historical new business expenditure. These relationships have been used to obtain projections of future new business expenditure requirements.

3.26 In order to compare expenditure on new business between companies, company forecasts and past expenditure have been normalised by calculating the equivalent expenditure per customer using assessments of the present day value of the relevant network equipment. This has been facilitated by the considerable amount of information now available about asset quantities and unit costs. This allows comparisons of the historical and company forecast new business expenditure levels. This has been

performed for the period from 1994/95 to 2004/05. The results are shown in Figure 3.4. There is a significant range of normalised company spend on new business, both historically and in forecasts. It also indicates that about half the companies are anticipating reductions in normalised new business expenditure in the forthcoming period, based on achieved and expected efficiency savings.

FIGURE 3.4: NORMALISED NEW BUSINESS EXPENDITURE BY PRICE CONTROL PERIOD



3.27 This approach to modelling normalised new business expenditure is based on reliable information and provides results which are consistent and more robust than the regression-based method of assessing LRE needs used in setting the present price control. A further advantage of the present method is that it characterises individual companies implicitly takes account of their underlying levels of "churn". There is no longer a need to estimate and include these separately in the modelling.

3.28 It is possible to compare historic and forecast reinforcement expenditure using a similar approach. Customer numbers have been used as the driver as a proxy for demand growth. The analysis was performed for the 15 year period from 1990/91 to 2004/05. This longer period enables account to be taken of large lumped investment costs which occur from time to time and which might otherwise mask underlying trends and bias forward projections.

3.29 By combining the results of the new business and reinforcement modelling, it has been possible to undertake a robust review of company load related expenditure projections. It has also been possible to

benchmark companies with respect to the two elements of LRE. Benchmarking of expenditure forecasts has been carried out against the industry median company and also mid-way between the median and better performing (upper quartile) companies to obtain projections for LRE.

3.30 A detailed description of the modelling process and benchmarking techniques adopted has been provided to each company. This will aid the dialogue between Ofgem and the companies and further refinement of the analysis. Further details of the modelling will be published in due course.

Non-Load Related Expenditure (NLRE) Modelling

3.31 OFFER's 94 projections for NLRE allowances were based on modelling of asset replacement requirements using historical information about replacement levels, unit costs and asset age profiles from those companies who had this information. Out-turn expenditure has been lower than OFFER's 94 projections for many companies. In presenting their justifications for NLRE forecasts in the forthcoming price control period, companies have submitted a wide range of approaches to establishing expenditure requirements. Some of these are based on methods similar to those used by OFFER in preparing its 94 projections. To a greater or lesser degree companies have modified these techniques to take account of better asset management practices which have, in general, resulted in the ability to extend asset lives and reduce asset replacement expenditure. Some companies have indicated a need to increase the anticipated level of future investment to avoid a "cliff face" of asset replacement investment or a rapid future deterioration in quality of supply. Others PESs say that no additional capital expenditure will be needed here.

3.32 Ofgem and its consultants, PB Power, have reviewed the companies' approaches and support the use of better asset management techniques. Initial findings also indicate that judicious use of these techniques will avoid any significant cliff face of investment by smoothing future investment needs without putting quality of supply at risk.

3.33 Asset replacement modelling builds upon the techniques used for the previous review and makes use of the detailed information provided by the companies in response to the business plan questionnaire, relating in particular to their asset age profiles, unit replacement costs and replacement practices; the data was supplemented by PB Power's own information on equipment unit costs. The range of major plant and equipment categories for which asset replacement modelling was performed, was extended to include other categories of non-load related expenditure including environmental and safety related expenditure and diversions. Expenditure on metering was however excluded from the model.

3.34 The companies were benchmarked against the model by reference to their individual forecasts. Benchmarking between companies was carried out with respect to numbers of assets to be replaced and also with respect to company unit costs. By this means it was possible to identify more efficient companies and to determine the levels of expenditure expected to result from the application of best practice across all companies.

3.35 Two different criteria were examined. The first was to benchmark companies against the median performing company. The second was to benchmark at a level mid way between the median and better performing (upper quartile) companies. This represents a cautious approach to assessing NLRE needs and the resulting levels of expenditure should protect system security and reliability.

3.36 A detailed description of the modelling process and benchmarking techniques adopted has been provided to each company. This will aid the dialogue between Ofgem and companies and facilitate any further refinements to the proposals. Further details of the modelling will be published in due course.

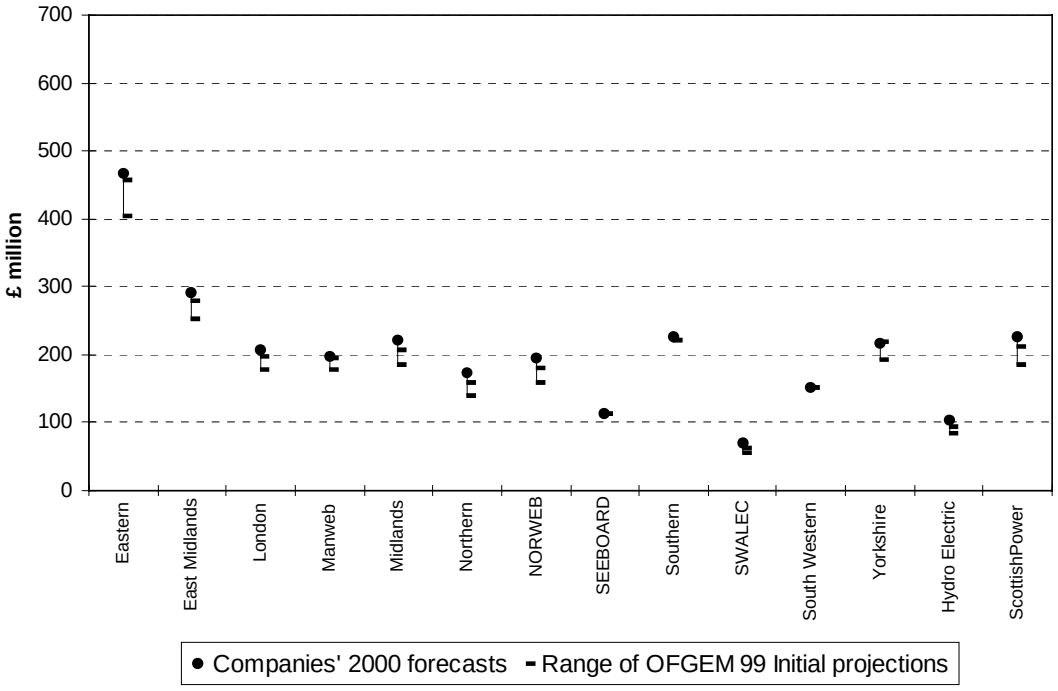
Results of Capital Expenditure Modelling

3.37 Results are presented below for the assessments of companies capital expenditure needs for the forthcoming price control period.

(i) Results of LRE Modelling

3.38 Using the modelling techniques and benchmarking described above, Ofgem's projections for LRE for each company for the forthcoming price control period have been calculated and are shown on Figure 3.5. The overall reduction in company forecasts indicated by the modelling is between 4 and 13 per cent overall. The companies with the largest indicated reductions are SWALEC, where reductions of between 10 and 20 per cent are indicated and Northern and Hydro-Electric where reductions between 9 and 20 per cent are indicated. For SWALEC the difference appears to be due to unjustified reinforcement costs. In the case of Northern the difference reflects the high level of new business and reinforcement forecast by the company. For Hydro-Electric, the difference appears to be due to unjustified levels of new business and metering expenditure..

FIGURE 3.5: OFGEM'S INITIAL PROJECTIONS FOR LRE FOR EACH COMPANY FOR THE FORTHCOMING PRICE CONTROL PERIOD

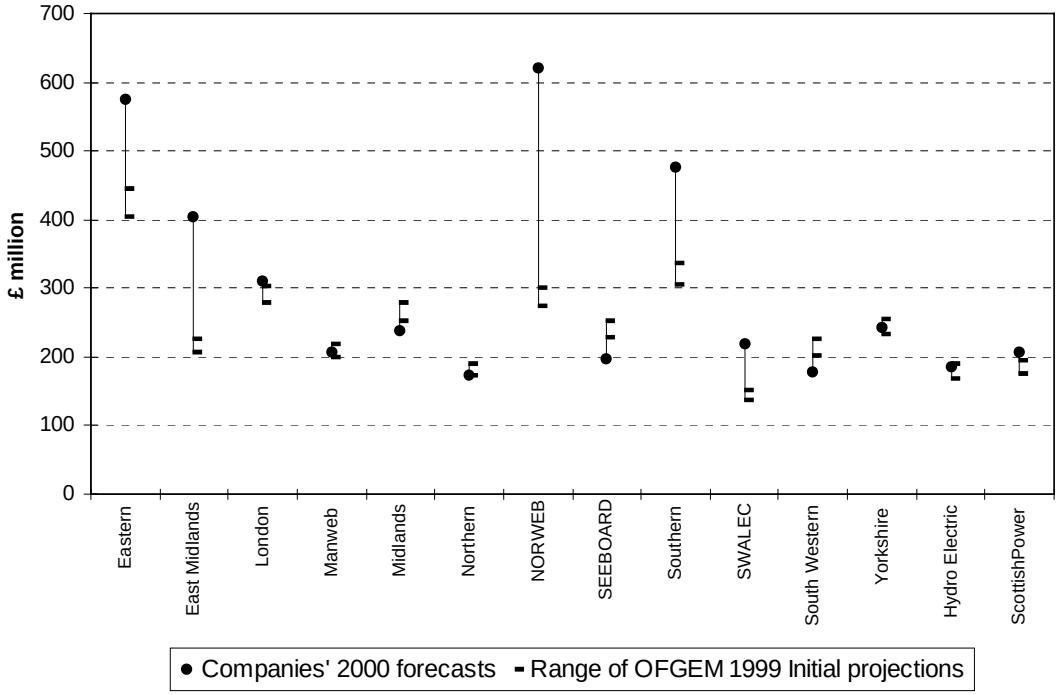


3.39 For Eastern, although the modelling suggests reductions between 2 and 13 per cent from the company's forecast, the allowance appears high in comparison to that for their companies. One explanation may be Eastern's high forecasts of new businesses in the forthcoming price control period. These forecasts will be considered further in the light of outturn evidence of actual new business for 1998/99.

(ii) Results of NLRE Modelling

3.40 Using the modelling and benchmarking techniques described above, Figure 3.6 shows the results for each company in comparison with the companies' 2000 forecasts. Overall Ofgem's 99 projections are between 16 and 25 per cent lower than companies' 2000 forecasts.

FIGURE 3.6: NON LOAD RELATED EXPENDITURE : COMPANIES' 2000 FORECASTS AND OFGEM 99 INITIAL PROJECTIONS



3.41 For many companies the modelling indicates relatively modest downward adjustments to company forecasts. For seven companies (when benchmarked against median performance) or four companies (when benchmarked mid way between median and upper quartile performance), the modelling indicates increases in expenditure. It will be important to encourage sustainable reductions in capital expenditure but to discourage undue deferment of capital expenditure from one price control period to the next. Accordingly, where companies' 2000 forecasts are higher than companies' 98 updated forecasts, these companies will only receive the companies' 2000 forecast rather than Ofgem's NLRE modelling figures. Ofgem's modelling assumes modest increases in asset lives (of the order of 3 to 5 years depending on the type of asset). These are consistent with those proposed by more efficient companies with good asset management strategies.

3.42 For five companies, the modelling indicates significant downward adjustments. These are:

- NORWEB: 52-56 per cent;
- East Midlands: 44-49 per cent;
- SWALEC: 30-37 per cent;
- Southern: 29-35 per cent; and
- Eastern: 22-29 per cent

3.43 There are a range of explanatory factors that contribute to these differences:

- **NORWEB**: the adjustments reflect the company's proposal for a markedly higher spend on asset replacement than most other companies across a wide-range of asset types. NORWEB claims its expenditure needs are driven by an older than average asset population which is suffering an increasing fault rate. Investigation of these claims has failed to demonstrate that NORWEB's situation in either respect is materially different from other companies with much lower NLRE forecasts.

- **East Midlands**: the adjustment reflects the companies' proposal to make significant changes to the design and construction of its network including an element for improving quality of supply. Although Ofgem would not wish to preclude East Midlands from following this strategy, there is no evidence to support the associated higher expenditure forecast from the perspective of a quality of supply or asset stewardship.

- **SWALEC**: the adjustment reflects a generally higher proposed spend on asset replacement than claimed by most other companies.

- **Southern**: the adjustment reflects the company's proposed continuation of its existing policy that has a higher than average expenditure on asset replacement and upgrading. In particular Southern is pursuing a policy of replacing large parts of its overhead network using a covered conductor system. It is not clear that the quality improvement that are claimed for this policy can be justified by customer expectations on quality or their willingness to pay for improved quality.

- **Eastern**: the adjustment reflects very high provisions that the company has included in its forecasts for meter replacement and diversions.

Overall Capital Expenditure Requirements

3.44 The combined results of the LRE and NLRE modelling are shown in Figure 3.7. The results overall indicate a reduction of between 11 and 19 per cent for all companies (company forecasts total £7,093 million and the modelling indicates expenditure requirements between £5,742 million and £6314 million).

FIGURE 3.7: THE COMBINED RESULTS OF THE LRE AND NLRE MODELLING

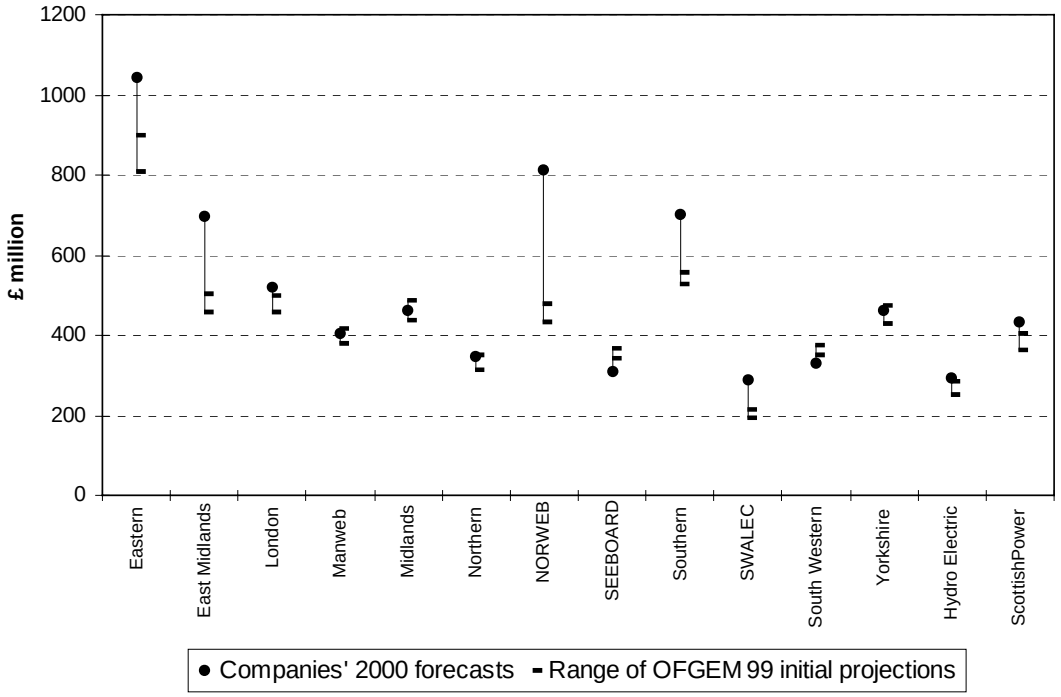
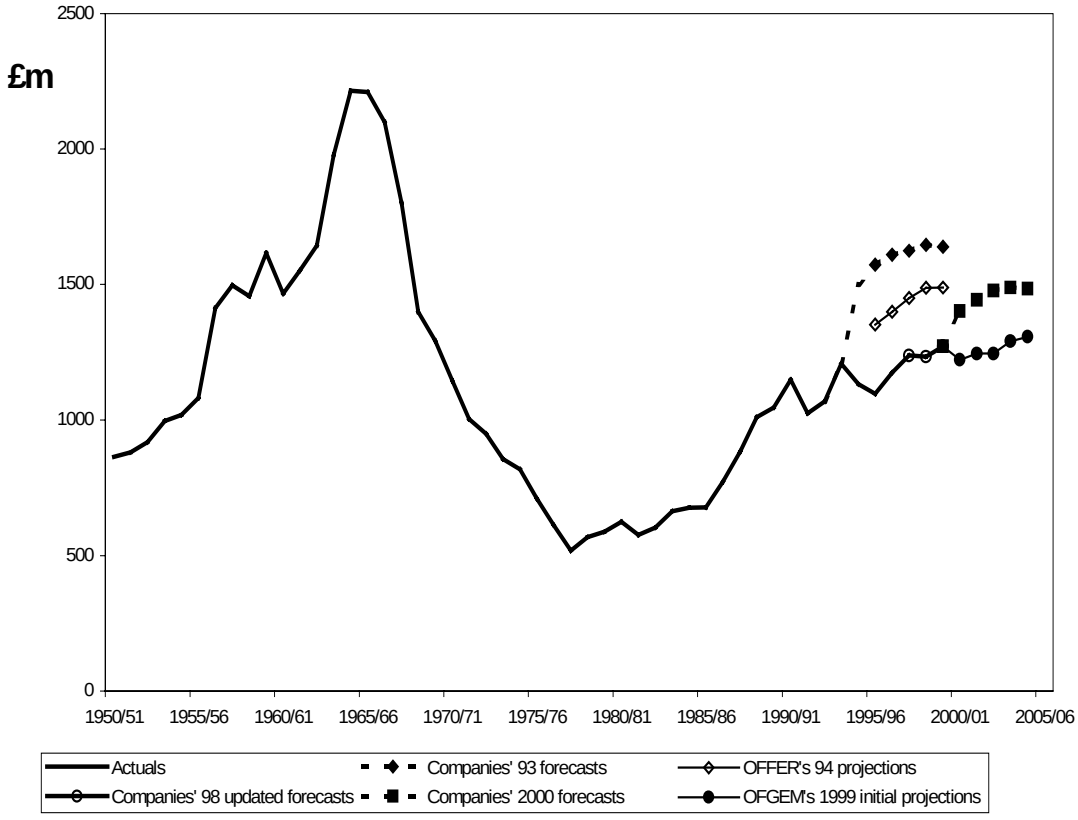


FIGURE 3.8: DISTRIBUTION BUSINESS CAPITAL EXPENDITURE



3.45 The overall pattern of adjustment by company is similar to that for non-load related expenditure. Four companies, Manweb, Midlands, Northern and Yorkshire would be subject to changes of less than about 10 per cent overall in their capital expenditure forecasts. The modelling produces allowances for SEEBOARD and South Western which are somewhat higher than the companies' own forecasts 10-18 per cent for SEEBOARD and 7-15 per cent for South Western.

3.46 The companies with the highest indicated downward adjustments are:

- NORWEB: 41-47 per cent;
- East Midlands: 28-34 per cent;
- SWALEC: 25-33 per cent;
- Southern: 20-25 per cent; and
- Eastern: 13-22 per cent.

3.47 The main contributory factors for these adjustments are those arising under the NLRE category as described above.

3.48 When considered in the context of longer-term capital expenditure requirements, Figure 3.8 shows how the companies' 2000 forecasts and Ofgem's 99 projections fit into the longer-term path of capital expenditure. Despite the reductions from companies' 2000 forecasts indicated as necessary for the forthcoming period, the Ofgem initial 99 projections show spending at a level similar to that which has proved necessary in the present price control period. If a further allowance is made for expenditure on quality of supply as indicated in Chapter 4, indicated expenditure in the forthcoming period would be at a level slightly higher than that in the recent past and shows a modest rise through the forthcoming price control period.

3.49 It is important that Ofgem's 99 projections are viewed as allowances in the calculation of the overall price control. They do not represent a fixed sum to be spent and can only be likened to a contract in the sense that the price control is effectively a fixed price contract for the delivery of outputs including for quality of supply that seeks to deliver output in term of quality for a fixed amount of revenue.

4 QUALITY OF SUPPLY

Introduction

4.1 The 20 May consultation paper considered companies' quality of supply performance in the present price control period, together with the levels of capital expenditure on quality which companies reported in their business plan questionnaires (BPQs). Companies' forecasts for the forthcoming price control period were examined in the same way. The paper also contained a summary of findings from a market research survey conducted by MORI on quality issues. Indications were that most customers are satisfied with their present quality of supply and would be reluctant to see degradations. There is a limited willingness to pay modest sums for quality improvements. Supplementary categories of quality and supply targets were indicated together with a general desire to institute new and significant penalties where quality of supply levels fall below acceptable standards.

4.2 The following quality of supply issues were identified for further consideration:

- whether companies are likely to meet their own targets for quality improvement in the present price control period;
- the use of a common basis for reporting quality improvements and expenditure;
- the robustness of measurement techniques available to companies for recording quality performance;
- the imposition of robust targets for quality improvement, covering both modest improvements in overall quality of supply and new measures for worst served customers;
- the time-scales over which such targets might be introduced;
- the inclusion of capital expenditure allowances which relate specifically to quality improvement;
- whether to make Guaranteed Standards payments automatic and whether the severe weather exemption remains appropriate;
- the reduction of the period of interruption after which a Guaranteed Standards payment is due from 24 to 12 hours (perhaps with a similar reduction in the level of payment); and

- the introduction of a new standard relating to telephone answering performance.

4.3 A further paper was published by OFFER in May 1999 concerning the storms experienced in parts of Great Britain during winter 1998/99. This included the following recommendations concerning quality of supply and capital expenditure which are relevant in the present price control review:

- companies should consider how best to monitor the numbers of customers suffering supply interruptions;

- companies should to gather more accurate information on the cause of supply failures (particularly during times of system emergencies) to inform their decisions on network investment;

- Ofgem should consider the quality of supply achieved during the storms in the light of companies' historical capital and operating expenditure;

- companies should ensure that they can meet the requirements of their licence relating to giving information to customers; and

- companies should review the accuracy of their call-logging systems.

4.4 Most of these recommendations do not relate specifically to this price control review. Nevertheless, storms are a fact of life; they influence quality of supply performance in the short and long term. Ofgem expects companies to provide appropriate distribution system performance under all expected weather conditions. Ofgem believes that the present allowances for operating and capital costs are efficient to allow the companies to maintain quality of supply across a range of weather conditions. Some companies have argued for a higher allowance for capital expenditure to improve their performance in periods severe weather. Ofgem is reinforced in this view with respect to those companies which have recently suffered weather-related disruption but have spent less than the capital expenditure allowances in the present price control period.

Development of Proposals for Quality Improvements

4.5 The 20 May consultation paper reported proposals from companies for quality improvements in the forthcoming price control period. These proposals addressed in particular a range of measures identified earlier by OFFER as possible options for quality improvement targets. Initial conclusions reported in the 20 May consultation paper were that expenditure of the same order as that allowed for in the present price control may continue to be appropriate, subject to imposition of

performance improvement targets and other appropriate changes to Guaranteed and Overall Standards. Supplementary targets for improvements in quality for worst served customers were indicated. Market research suggested that customers were not prepared to accept reductions in quality levels. Given that companies have significant incentives to reduce capital expenditure, including on quality of supply, this suggests that new and significant penalties should be applied where quality of supply falls below acceptable standards.

4.6 Many respondents to the 20 May consultation paper commented on the approach to quality of supply. Most respondents said that quality of supply was an important issue. There was also support for balancing incentives for efficiency with those in relation to quality of supply. Through the remainder of this chapter, relevant responses are discussed in relation to each of the quality of supply issues under consideration.

Updated System Performance since 1990

4.7 System performance, as measured by security and availability, together with the companies' own targets for 1999/00, were presented in the 20 May consultation paper. Since then companies have submitted performance figures for 1998/99. Tables 4.1 and 4.2 show each company's results since Vesting. Data in these tables includes interruptions from all sources including those resulting from periods of severe weather and planned interruptions resulting from companies' maintenance activities.

TABLE 4.1 SECURITY OF SUPPLY: INTERRUPTIONS PER 100 CUSTOMERS

	90/91	91/92	92/93	93/94	94/95	95/96	96/97	97/98	98/99	PES target 99/00
Eastern	76	68	96	59	65	85	89	74	60	70
East Midlands	169	82	75	92	96	97	95	93	76	87
London	41	47	38	36	40	33	39	39	37	30
Manweb	82	74	86	89	70	62	57	57	57	50-60
Midlands	170	110	129	125	121	139	148	132	120	109
Northern	108	90	87	80	89	90	89	90	93	85-90*
NORWEB	58	62	57	56	70	61	60	84	58	55
SEEBOARD	98	90	139	87	91	83	80	91	96	82
Southern	80	81	82	78	75	79	79	73	64	70
SWALEC	285	229	195	214	220	223	192	186	150	189
South Western	146	129	118	119	124	116	106	106	80	87
Yorkshire	158	69	72	71	85	86	93	80	72	55
ScottishPower	70	71	83	58	61	65	57	73	86	55-65**
Hydro-Electric	176	204	135	178	176	193	146	153	155	147*
Customer-Weighted Average	111	88	95	85	88	91	89	88	78	77

* Revised targets as stated in response to Business Plan Questionnaire, November 1998

** Revised target as stated in Quality of Supply Report 1997/98

TABLE 4.2 AVAILABILITY OF SUPPLY: MINUTES LOST PER CUSTOMER

	90/91	91/92	92/93	93/94	94/95	95/96	96/97	97/98	98/99	PES target 99/00
Eastern	76	65	91	63	94	85	77	70	53	66
East Midlands	1,004	87	87	97	105	95	79	82	70	73
London	51	67	53	52	58	54	56	50	45	40
Manweb	185	108	129	121	102	88	78	97	55	65-75
Midlands	398	118	122	144	128	151	126	116	99	86
Northern	246	97	102	102	95	86	82	87	98	93*
NORWEB	88	75	77	69	70	67	66	96	80	64
SEEBOARD	101	86	106	75	83	69	82	92	76	60
Southern	104	109	91	74	78	78	67	56	52	60
SWALEC	330	325	212	200	212	233	189	183	145	191
South Western	185	176	184	167	133	111	103	108	58	93
Yorkshire	175	60	59	61	69	62	60	59	54	56
ScottishPower	85	76	98	77	70	81	89	77	177	65-75**
Hydro-Electric	172	270	356	254	233	365	206	219	220	210
Customer-Weighted Av.	226	102	106	96	97	97	87	88	81	75

* Revised target as stated in response to Business Plan Questionnaire, November 1998

** Revised target as stated in Quality of Supply Report 1997/98

4.8 The figures for 1998/99 show improvements over recent years for most companies. Trend analysis has been used to predict the likely outcome of quality initiatives in the present price control period. In performing this analysis, performance in years with exceptional weather has been excluded by removing company results which are more than two standard deviations from their average performance. Overall, the trend analysis shows that quality has improved significantly since 1994/95. In 1990/00 security is likely to be about 5 per cent better and availability about 17 per cent better. Analysis of trends in individual companies' performance gives the results shown in the following table:

TABLE 4.3: SECURITY AND AVAILABILITY TARGETS 1994/95 TO 1999/2000

	Target likely to be met for:	
	Security	**Availability**
Eastern	Yes	Yes
East Midlands	Yes	Yes
London	No	No
Manweb	Yes	Yes
Midlands	No	No
Northern	No	Yes
NORWEB	No	No
SEEBOARD	Yes	No
Southern	Yes	Yes
SWALEC	Yes	Yes
South Western	Yes	Yes
Yorkshire	No	Yes
Hydro-Electric	Yes	No
Scottish Power	No	No

4.9 Companies' targets varied over a wide range. They can be grouped as follows for improvements in security and availability.

Security Improvement

South Western, Manweb, ScottishPower, London	25 per cent and over
Southern, Eastern, SWALEC	14 - 20 per cent
East Midlands, Midlands, NORWEB, SEEBOARD, Yorkshire	10 per cent
Hydro-Electric, Northern	Less than 10 per cent

Availability Improvement

Midlands, Eastern, London, Manweb, South Western	30 per cent and over
East Midlands, ScottishPower, Southern	20 per cent
SEEBOARD, Hydro-Electric, SWALEC	16-17 per cent
NORWEB, Yorkshire, Northern	5 - 10 per cent

4.10 The targets reflect each company's performance in 1994/95 and the company's own view of how that performance could be improved by 1999/00. The comparability of the companies' 1994/95 starting positions is questionable. But given that companies voluntarily proposed their own targets, it remains reasonable to use them to analyse companies' performance as follows.

4.11 In assessing companies' overall performance with respect to quality improvements in the present price control period, the above projections of success or failure to meet targets, set at in Table 4.3, can be combined with the relative severity of the individual targets as shown in the table 4.4. Where both of a company's targets are above, or below, average, the severity has been deemed to be "high" or "low" respectively. Companies with one target above average and the others below average have been put in the "medium severity" category.

TABLE 4.4: COMPARISON OF COMPANIES' QUALITY PERFORMANCE 1994/95 TO 1999/2000

Likely to meet	**Severity of Target**		
	High	**Medium**	**Low**
Both Targets	Eastern Manweb Southern South Western	East Midlands SWALEC	
One Target			Northern SEEBOARD Yorkshire Hydro-Electric
Neither Target	London ScottishPower	Midlands	NORWEB

4.12 The weighting between performance in meeting targets and the size of targets is for consideration. It may also be relevant to consider the relationship between performance improvement and under-or over-spend. For example, companies which have underspent whilst meeting targets might be judged relatively efficient. On the other hand, companies which have underspent and have failed to meet their own performance targets can be viewed as inefficient.

4.13 On the issue of data reporting on system performance, many respondents to the 20 May consultation paper are keen to see better and more reliable data published about companies' system performance. Several respondents commented that it would be difficult to set incentives and penalties without resolving the issue of consistent measurement.

4.14 Ofgem's present view is that companies will be required to improve their data collection systems to a level at least equal to that achieved by the best systems available to some of the companies. Performance reporting will be the subject of regular independent audits to check for accuracy and reliability of data. Where companies do not presently have adequate systems in place they will be required to publish proposals for achieving better data accuracy with a view to having such systems fully available by April 2002.

4.15 As indicated in the 20 May consultation paper, future targets for the overall quality measures of security and availability will be set by Ofgem. Specific targets will be developed for each company and present indications that these will be in the range of 5 to 10 per cent improvements on performance in 1999/00. This reflects the views of customers that overall quality improvement is not an overriding priority when compared with performance for worst-served customers, but that overall performance should not be degraded.

4.16 Penalties will be introduced for failing to meet targets. These need to be considered in the light of the overall financial benefits which might accrue to companies by failing to invest or operate in pursuance of the targets. Present indications are that the sum of these penalties might range for each PES between £1 million and £5 million per year. It is for consideration whether the penalty ought to be weighted for the extent of any under-spend. In view of the significance of these penalties, careful consideration will be given to the method of assessing success or failure to meet targets. This could include the use of deadbands around annual targets, the use of rolling average performance data or the exclusion of exceptional years by statistical analysis.

Companies' Annual Quality of Supply Reports

4.17 The 20 May consultation paper indicated that it was for consideration whether more stringent reporting requirements should be introduced, perhaps with a common format, to aid comparison and understanding of companies' approaches to quality improvement. There was wide support for this proposal. Some respondents said that they had been disappointed by the lack of comparable data provided in quality of supply reports to date. In the light of this, Ofgem proposes that the format and content of companies' reports will be explicitly defined with a view to improving inter- and intra-company benchmarking and comparison where appropriate. Ofgem expects that companies will continue to co-ordinate the production of their reports with the respective ECC to ensure that the reports also adequately meet the latter's requirements.

Companies' Performance Targets

4.18 The 20 May consultation paper raised concerns about the suitability of the targets that the companies set themselves in 1995 and the treatment of severe weather in performance reports. As it now appears appropriate to impose quality of supply targets on companies for the forthcoming price control period rather than allowing them to choose their own, Ofgem does not expect that there will be a future need for companies to publish their own quality of supply targets, except where this is judged, in conjunction with the local ECC, to be robust and worthwhile.

4.19 The following paragraphs consider each of the specific quality of supply improvement measures highlighted in the 20 May consultation paper with consultees' responses and Ofgem's initial conclusions on the way forward in each case. It should be noted that there is a statutory process for changing or introducing Standards of Performance, which will need to be observed before any of the standards described or proposed below can be set. It may be more appropriate to introduce new standards as part of the future work programme on information and incentives. Accordingly dates for the introduction of measures set out below have been made generally consistent with the desire to implement improved incentives from April 2002. For ease of reference, the main existing measures of continuity of supply and associated Overall and Guaranteed Standards of Performance are:

INDEX	DESCRIPTION	STANDARD
Security	Supply Interruptions per 100 connected customers	
Availability	Minutes lost per connected customer (CML)	
Restoration of supply	Percentage of supplies restored within 3 hours	OS1A
	Percentage of supplies restored within 24 hours	OS1b & GS2
Overall Reliability	Number of faults per 100 km of distribution system (mains only)	

12 Hour Restoration Target for GS2 and OS1b

4.20 Consideration was invited of the possibility of tightening the existing target of 24 hour maximum restoration time to 12 hours. Some companies said that the introduction of such a target would markedly increase costs to restore the last few remaining customers within the target time. Nevertheless, some said that an 18 hour target might be acceptable. There is support from a few companies and other respondents for tightening the target to 12 hours; a few other respondents were supportive of first moving to an 18 hour target. In the light of these responses and consistent pressure from customer groups on this issue, Ofgem's present proposal would be to tighten the GS2 target from 24 hours to 18 hours from the start of the forthcoming price control period and to give serious consideration to reducing the period further to 12 hours at the next price control review. The OSIb target would be brought into line with the revised GS2, recognising that a 100 per cent target figure (as at present) would be too severe, at least initially.

Automatic Guaranteed Standards Payments and Severe Weather Exemptions

4.21 At present payments for GS2 failures are made by companies only in response to a valid claim from a customer. Many respondents including a

significant majority of customers would prefer to see GS2 and other GS payments made automatically. Ofgem's present intention is to make GS payments automatic where practicable. In view of the claimed inability of some companies to determine exact numbers and locations of affected customers, it is proposed that this requirement will apply from April 2002 to allow suitable reporting systems to be introduced. Ofgem will separately consider whether numbers of or trends in GS payments should be one of the quality indicators in the future work programme on information and incentives.

4.22 There was some support for removing the severe weather exemptions in standards. But companies and some customers argued that severe weather should be treated as a special case and that normal standards should not apply. In view of this and the proposal to make GS payments automatic, it does not seem appropriate at this point to change the existing severe weather exemptions in the standards. It is clear however that companies have in the past used the exemption to cover weather of varying degrees of severity. Ofgem will be monitoring carefully companies' claims invoking the exemption, and asking them to justify their claims.

New Standard for Maximum Number of Interruptions for Worst-Served Customers

4.23 OFFER proposed consideration of a new standard requiring 99.5 per cent of customers to experience not more than 3 interruptions per annum. This follows previous initiatives to address the problems of worst-served customers and recognises that, while customers in general are content with quality of supply levels, some experience a much worse quality of supply than they should reasonably expect.

4.24 Some companies responded that the means of measuring such performance may not be in place and that there may not an economic justification for such a standard. Other companies are in favour of such a standard and are apparently able to provide the necessary data. A number of other respondents are keen to see such a standard established. Having considered all views in this issue, Ofgem is convinced that a standard is required in this area. In view of the potential measurement difficulties for some companies and the associated difficulty of establishing a baseline performance for this standard, companies should put in hand programmes of work on monitoring and reporting systems for completion by April 2002. The level of standard for each company will then be determined as information becomes available on presently achieved levels of performance. In view of the practical difficulties in setting targets in this area quickly, Ofgem proposes that a Guaranteed Standard should be introduced in April 2000 to ensure that customers receive immediate protection. It is for consideration what level of service and penalty should apply; Ofgem's initial proposal is that customers

suffering more than five interruptions in any 12 month period should be entitled to a penalty payment of £50. Because companies are not all able to measure numbers of interruptions experienced by each customer, payments would not be automatic (as proposed for other GSs) but would rely on customer claims at least until April 2002.

OS1A - Increased Percentage of Interruptions Restored within 3 Hours by 3 Percentage Points

4.25 Companies generally oppose such a tightening of this standard. They say that as overall network performance has improved by measures designed to reconnect large groups of customers affected by higher voltage system faults more rapidly, the percentage of customers remaining affected by faults on lower voltage systems with slower restoration times is increased. As a result, some companies say that the standard is already giving perverse incentives that tend to discourage cost-effective improvements at higher voltage levels. Other respondents were also aware of the potential difficulties in tightening this performance index. There is some support for tightening this standard but, in the light of the above considerations, it seems more appropriate to maintain present levels of this standard at the start of the next price control period but consider other ways of seeking improvements in this performance area as part of the future work programme on information of incentives.

Undergrounding 5 per cent of HV Overhead Lines

4.26 A requirement to underground 5 per cent of HV overhead lines by 2004/05 was included for consideration in the 20 May consultation paper. In general, those respondents who replied on this point were not in favour of setting a target for undergrounding, instead relying on the companies to underground lines on a selective basis where appropriate. Some respondents felt that undergrounding for environmental reasons should be funded from elsewhere and not borne by electricity customers. In the light of these considerations, Ofgem presently considers it inappropriate to set a standard in this area, while expecting that companies will continue to be responsive to selective undergrounding in environmentally sensitive circumstances.

Transient Interruptions

4.27 Transient interruptions are those interruptions that last less than one minute. They do not form part of companies' present reporting procedures for customer interruptions. The findings of the customer research survey reported in the 20 May consultation paper indicated that the majority of domestic customers do not find these interruptions particularly inconvenient. However, a few respondents to the consultation paper indicated that customers who operate continuous

production processes are very concerned about the impact of transient interruptions and other, even shorter, voltage dips on their businesses.

4.28 Many such customers are able to ameliorate the effect of transient interruptions by adjustment or improvement to the design or operation of their own equipment. It therefore appears inappropriate to introduce a general standard in this area that would be paid for by all customers, the majority of whom are relatively indifferent to such a standard. Nevertheless, it seems appropriate to require companies to complete installation of monitoring facilities for transient interruptions as indicated in OFFER's October 1995 consultation paper. Companies will be required to have such facilities in place by April 2001 and in the interim they will be required to provide details on their progress in establishing these systems in their annual quality of supply reports.

Telephone Response Standard

4.29 There was wide support for a new standard in this area. Some respondents pointed to difficulties in defining what constitutes a substantive response and whether time spent on "hold" should be included in the standard. These issues appear worthy of further consideration. In any case, it appears that a standard of answering 90 per cent of calls in normal circumstances within 15 seconds, and 80 per cent of calls in exceptional circumstances within 30 seconds, might be appropriate.

Capital Expenditure on Quality of Supply in the Next Price Control Period

4.30 Quality of supply in the present price control period was funded by an allowance of £2.30 per customer per year. On average, companies have spent about £4 per customer per year during the present price control period. In the 20 May consultation paper, one method of evaluating economic benefits of quality improvements was described. This used the concept of System Customer Outage Costs (SCOCs). These provide an estimation of the costs that customers might incur during an interruption in supply; they use customer survey data about the financial impact of interruptions on different customers along with the number of interruptions and their duration.

4.31 Respondents have commented on the use of SCOCs. Some benefits of this method of analysis are acknowledged but many respondents felt that reliance should not be heavily placed on the SCOC approach. Some respondents commented that SCOCs are sensitive to company performance in particular years and that the method may fail to recognise benefits to different groups of customers.

4.32 SCOCs have proved a useful tool in initial evaluation of the benefit of quality measures in the present and forthcoming price control periods.

However, in the light of comments received, Ofgem acknowledges that it may be appropriate to use the SCOC analysis only as a guide to inform judgements about capital expenditure levels or appropriate quality targets. But, overall, the picture on quality improvement remains as described in the 20 May consultation paper. Several factors, including the SCOC approach and the customer research survey, indicate that a capital expenditure allowance for quality improvement is appropriate and that it should be at a level similar to that in the present price control. Accordingly, capital expenditure allowances included in the price control modelling incorporate an expenditure allowance specifically related to quality improvement (as opposed to other LRE or NLRE) in the range £1 to £4 per customer per year.

5 FINANCIAL ISSUES

Introduction

5.1 The 20 May consultation paper set out a framework for the analysis and assessment of financial issues as part of the distribution price control review. This involves establishing an asset base and estimating a return equivalent to the cost of capital on this asset base. Other regulators and the MMC have adopted similar approaches in setting price controls. As a supporting check on these calculations it is necessary to consider the financial position of each distribution business and PES, and the path of distribution charges in the short and long term. In general, respondents to the 20 May consultation paper supported this framework, although a number of respondents suggested modifications to various components of the overall approach.

5.2 This chapter starts with an assessment of the cost of capital and then deals with issues relating to asset valuation. It then describes the supporting checks that have been carried out on the financial position of each PES and discusses issues relating to the path of distribution charges over time.

Cost of Capital

5.3 The level of return that is required by the financial markets is called the cost of capital. The cost of capital is usually calculated as a weighted average of the cost of debt and equity finance. As well as providing a return on debt and equity companies must also finance corporation tax payments. The cost of capital can be adjusted to provide an allowance for corporation tax. In responding to the 20 May consultation paper, PESs and other utility companies tended to suggest a relatively high cost of capital. Some of the other respondents indicated that the low risks associated with distribution implied a relatively low cost of capital.

(i) Gearing and the Weighted Average Cost of Capital

5.4 Companies can be financed by both debt and equity. The proportion of debt to debt plus equity is referred to as gearing. In calculating an average cost of capital it is necessary to make an assumption about gearing. Gearing also influences the cost of both debt and equity finance. The 20 May consultation paper explained that it would be appropriate to assume that companies have reasonably efficient levels of gearing to encourage financial efficiency and protect the interests of customers.

5.5 Specialist credit rating agencies assign rating grades to individual debt issues by assessing the degree of credit risk. These ratings are reviewed on a regular basis. Those rating categories that represent the lowest risk are classified as investment grade, indicating suitability for a wide range of investors. Ratings representing higher risk are classified as speculative, indicating suitability only for limited types of investor. In consequence,

there is a marked difference in the ease of access to, and cost, of debt finance for speculative grade issuers. Having regard to his statutory duties, the DGES has modified the licences of certain PESs, and is now in the process of modifying others, so as to require each PES to maintain an investment grade credit rating on its debt. This condition is calculated to secure that each PES manages its affairs so as to maintain access to a wide range of sources of finance, readily and at reasonable cost. It will be reasonable to take this requirement into account in assessing the appropriate level of gearing. The two main credit rating agencies are Moody's and Standard & Poor's, their minimum investment grade categories being Baa3 and BBB- respectively.

5.6 The majority of PESs suggested that it would be more appropriate to assume that the minimum investment grade rating consistent with an efficient capital structure would be single A rather than BBB credit rating. This would allow companies to conserve sufficient unused borrowing capacity so that during times of adversity they can use this capacity to meet investment obligations and avoid rights issues that may involve high costs. PESs also suggested that during periods of turbulence in financial markets, such as that seen in the second half of 1998, access to debt markets can be restricted for companies with weak investment grade credit ratings.

5.7 These arguments appear to be based on the view that a PES should always have the flexibility to fund investment through new debt, as opposed to providing additional equity, either through a rights issue or by retaining a higher proportion of earnings. Relatively few, if any, companies in the private sector are in this position and there seem to be no compelling reasons why it should apply to the PESs. In any case, given the stability of distribution business cash flows and the ability of companies to access short term bank credit, the probability of this occurring appear relatively low, assuming that a PES has managed its finances with reasonable efficiency.

5.8 In the light of these considerations it appears reasonable to maintain an assumption that the minimum credit rating for PES debt should be BBB-. However, these assumptions are not intended to prescribe any particular capital structure for the PESs. Therefore if a company wishes to organise its finances in a way to target a single A credit rating it is free to do so.

5.9 The 20 May consultation paper suggested that a level of gearing of 50 per cent would be consistent with a PES maintaining a solid investment grade credit rating for debt. Some PESs indicated that it is unrealistic to assume a 50 per cent level of gearing for all companies over the whole period 2000 to 2005. It was also suggested that companies presently with low levels of gearing should receive some allowance to reflect the appropriate time path to reach an optimal capital structure.

5.10 The approach set out in the 20 May consultation paper was designed to encourage financial efficiency. The assumption on gearing was intended to

represent a conservative estimate of the average level for a reasonably efficient PES. Therefore, it is not necessarily of concern if a PES deviates from this level in a particular year. The overall approach to resetting the price control is designed to encourage financial efficiency, so it would not be appropriate to make a special allowance for companies with less efficient capital structures. In general PESs have not suggested that a 50 per cent level of gearing is unsustainable. One PES has indicated that a 50 per cent level of gearing would be consistent with it maintaining a single A credit rating for its debt. Although this makes the gearing level appear relatively generous it is important that the assumptions underlying the revised price controls allow PESs the flexibility to fund investment programmes. Given these considerations it appears reasonable to continue to assume a 50 per cent level of gearing in calculating the cost of capital.

(ii) The cost of debt finance

5.11 The cost of debt finance can be thought of as having two components, a risk free component and a company specific risk premium.

5.12 Although the risk free rate is not directly observable, it is possible to derive an estimate from the return available on UK Government index linked and conventional gilts. Respondents to the 20 May consultation paper supported this approach.

5.13 In its December 1998 report on Cellnet and Vodafone, the MMC estimated a range for the real risk free rate of between 3.5 and 3.8 per cent, taking account of longer-term historic evidence. In general the PESs suggested similar estimates for the risk free rate, consistent with longer term averages of returns on index linked gilts, although a NERA report commissioned by the RECs also set out calculations using present market rates.

5.14 As noted in the 20 May consultation paper the longer present relatively low yields on index linked and conventional gilts persist the more persuasive becomes the argument that these lower yields are not simply a feature of short term market conditions. The 20 May consultation paper also indicated that present market rates tend to provide the best informed view of future trends, in that the market already discounts views about past and future trends. Nevertheless, it is appropriate to consider whether there are short term market conditions that may be causing undue volatility in estimates based on present market rates.

5.15 Over the five year period 1995/96 to 1998/99 the yield on index linked gilts averaged about 3½ per cent. However, since 1997/98 yields on both index linked and conventional gilts have fallen significantly. At present yields on index linked gilts are about 2 per cent. There has been some discussion as to whether a number of UK specific institutional factors could account for the relatively low yields on gilts. For instance,

the May 1999 Bank of England Inflation Report suggested that the minimum funding requirement for pension funds and substantial demand from insurance companies for gilts (perhaps as a hedge against liabilities arising from guarantees of minimum returns on annuities) have combined to create a strong institutional demand for gilts. More detailed analysis by the Debt Management Office published in July 1999 suggests that this strong institutional demand and stable Government finances should continue in the medium term, indicating that present rates are not unduly influenced by short term factors.

5.16 Until recently estimates of the real yields on conventional gilts were around 2 to 2¼ per cent. However, between March and June of this year there was a significant change in the shape of the yield curve for conventional gilts. In June, assuming inflation of 2½ per cent, the yields on conventional 5 and 20 year gilts were about 2¾ and 2 per cent respectively.

5.17 Taking all this information into account suggests a range for the real risk free rate of between 2¼ and 2¾ per cent. This is slightly above the 2 to 2½ per cent range used in the 20 May consultation paper, reflecting the importance of considering information on both index linked and conventional gilts.

5.18 The debt risk premium reflects the additional return required by the providers of debt finance to hold corporate rather than Government debt and can be estimated as a premium over the real risk free rate. It will depend on a number of company specific factors including the company's level of gearing and its overall financial position, the size and liquidity of the debt issue and its maturity, and wider economic factors. These matters are assessed by credit rating agencies. As explained in the previous section it will be appropriate to assume that PES debt maintains its investment grade status.

5.19 A report commissioned by the RECs sets out the spreads for UK electricity company debt over the relevant marker gilts. Taking debt that is rated either BBB or Baa, consistent with the approach set out in the section on gearing and the weighted average cost of capital, Table 5.1 sets out spreads in May 1999. These spreads have an average of 130 basis points, or 1.3 percentage points. The NERA report suggests that these spreads may be depressed because of the mix of maturities and the influence of the status of certain parent groups. While these factors should persist in the future, it may be that EDF's acquisition of London is significantly depressing the spreads associated with London's debt, which unduly reduces the average. Therefore, it seems reasonable to assume a debt risk premium of 1.4 per cent, the average of PES BBB rated debt excluding London. This level of premium is relatively high by historic standards, reflecting factors such as the relatively low level of yields on gilts. It is

also broadly consistent with the average premium for a range of BBB debt shown in the May 1999 Bank of England Quarterly Bulletin.

TABLE 5.1: DEBT ISSUES BY UK ELECTRICITY COMPANIES, MAY 1999

Rating	Company	Coupon	Maturity	Yield	Spread
	Eastern Electricity	8.750%	2012	5.994%	140
	Hyder plc	8.750%	2006	6.056%	134
		9.500%	2016	6.368%	183
		7.000%	2020	6.453%	194
BBB or Baa	Midlands Electricity plc	7.375%	2007	5.595%	87
	London Electricity plc	8.000%	2003	5.427%	84
		8.625%	2005	5.512%	89
	Yorkshire Power Finance	7.250%	2028	6.149%	168
	Yorkshire Electricity	8.625%	2005	5.590%	96
	Group	9.250%	2020	5.743%	118
	Average				130

Source: NERA and Barclays Capital

5.20 While present market rates are likely to give the best indication of future rates it is important to bear in mind that a reasonably efficient capital structure would have required PESs to have significantly increased debt since the last price control review. Because of the fall in bond yields and lower expectations of inflation, estimates for the cost of debt based on present market rates may not allow companies to meet the cost of fixed rate debt taken out between 1995/96 and 1997/98.

5.21 Assuming PESs took out half their debt during this period, that $^2/_3$ of this was fixed rate and that $^2/_3$ of it had a maturity of greater than 5 years suggests an adjustment is required in relation to about ¼ of total debt. The yield on index linked gilts averaged about 3½ per cent at this time, which is between 75 and 125 basis points higher than the assumptions for the risk free rate set out above. In addition expectations of inflation were about 100 basis points higher, but debt risk premiums were about 50 basis points lower, suggesting total net additional costs ranging between 125 (75 + 100-50) and 175 (125 + 100-50) basis points. Therefore, assuming a risk free rate of 2¼ and 2¾ per cent suggests an adjustment for long-term debt that would increase the overall cost of debt finance by about 45 basis points (175*0.25) and 30 basis points (125*0.25) respectively.

5.22 A number of PESs suggested that the adjustments for long term debt should be made on a company specific basis to reflect the actual costs of financing each distribution business. However, this would not be consistent with the overall approach to the distribution price control review, which seeks to benchmark performance, including financial

efficiency, and reward companies with low costs and good quality of supply.

5.23 Bringing these estimates together suggests a range for the cost of debt finance of between 4.1 and 4.45 per cent. The calculation of this range is set out in Table 5.2.

(iii) The cost of equity finance

5.24 The 20 May consultation paper set out estimates for the cost of equity finance based on the capital asset pricing model (CAPM) and the dividend growth model (DGM). In general respondents supported this approach.

5.25 CAPM derives an estimate for the cost of equity finance by adding an estimate of the real risk free rate to an estimate of the appropriate equity risk premium (ERP). Estimating the real risk free rate is discussed in the section on the cost of debt finance. In estimating the appropriate ERP two factors are taken into consideration, the ERP for the market as a whole and the riskiness of the company relative to the market. The appropriate method of estimating the ERP for the market as a whole has been the subject of considerable debate. This has mainly focused on whether the ERP should be based on observing historic returns, surveying investors' expectations or combining estimates of dividend yields and of real dividend growth.

5.26 In its report on Cellnet and Vodafone, the MMC concluded that the most reliable estimate of the expected future ERP would be based on averages of historic returns. Taking this into account the MMC concluded that a range of between 3.5 and 5 per cent would be appropriate for the ERP, consistent with the range used in previous MMC reports.

5.27 The NERA report commissioned by the RECs suggested that it is important for regulatory decisions to be consistent in order to reduce uncertainty, and indicated that a range for the ERP of 3.5 to 5 per cent is in line with recent survey evidence of investors expectations. NERA also indicated that evidence based on averages of historic returns suggests that this range may be conservative, citing evidence in a May 1999 paper The Cost of Capital for the UK Water Sector by Cooper and Currie. Other utility companies that responded to the 20 May consultation paper also suggested similar sorts of considerations should be taken into account in estimating the ERP.

5.28 CAPM provides a framework to estimate the return required by financial markets for investing in a particular company given its risk. As investment decisions are made on the basis of expectations of the future it seems appropriate to focus attention on present market evidence rather than averages of historic returns. This approach also avoids the practical

difficulties associated with judging the period and method for calculating historic averages of returns.

5.29 As noted in the 20 May consultation paper the survey of institutional investors published by CLSE in October 1998 suggested that, after adjusting for inflation, the ERP is in the range 2.7 to 4.5 per cent. In its September 1998 report on electricity companies, Merrill Lynch noted that some fund managers have started to use estimates of the ERP as low as 2 to 3 per cent. In an October 1997 report on the cost of capital, SBC Warburgs used 3½ per cent as an estimate of the ERP.

5.30 There is further evidence to support the range for the ERP published in the 20 May consultation paper. For instance, a survey of equity analysts published by NERA in January 1999 suggests that the ERP is in the range 3 to 4 per cent. A PriceWaterhouse survey published in 1998 found a range of 2.7 to 4.5 per cent.

5.31 This evidence suggests a range for the ERP of between 2 and 5 per cent with an average value of 3½ per cent. The calculations set out in Table 5.2 focus on a narrow band round this average value, giving a range of 3¼ to 3¾ per cent.

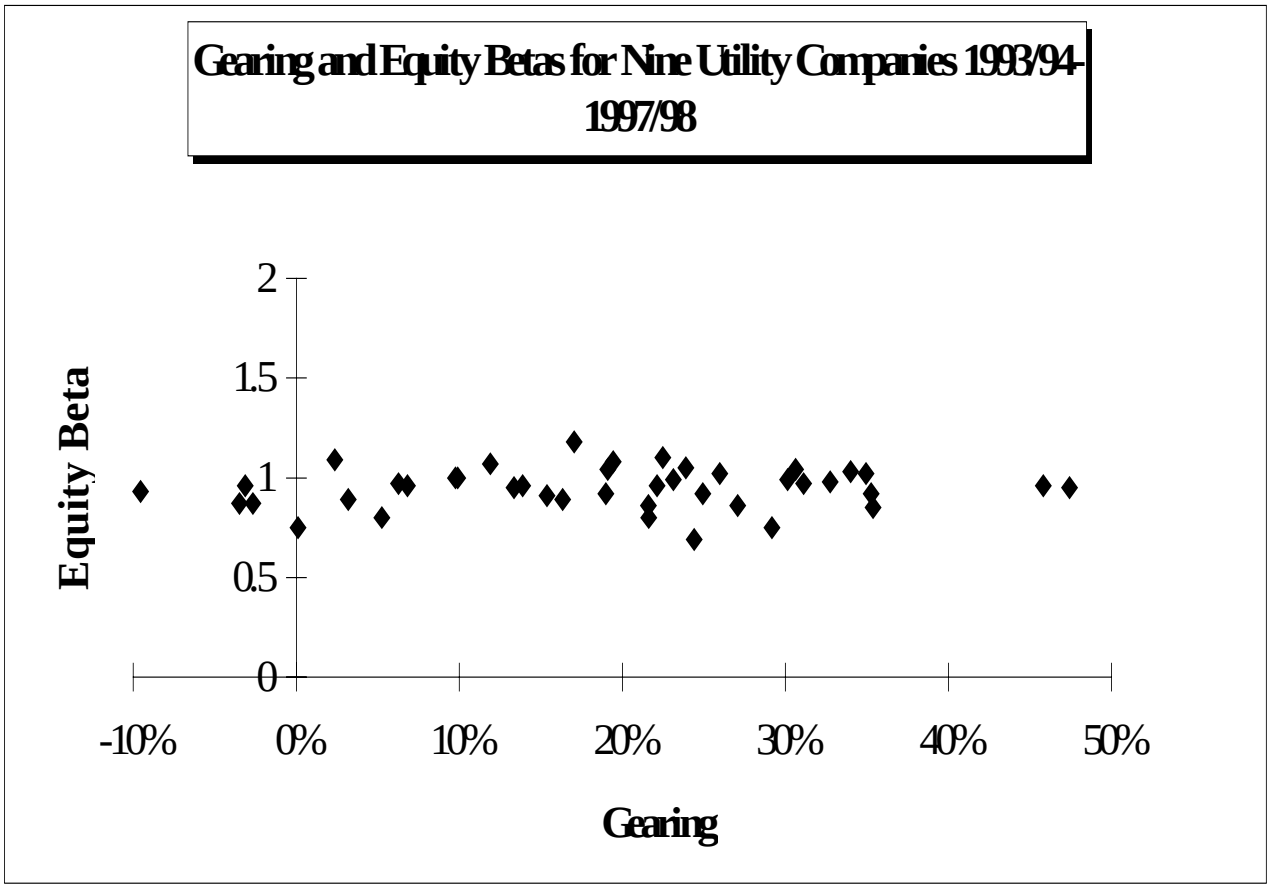
5.32 An indication of the specific riskiness of a company relative to the market is given by the beta coefficient. This aims to predict the extent to which a company's share price would tend to change in response to changes in the level of the overall market, and seeks to measure a company's non-diversifiable risk relative to equities generally. Beta estimates are usually based on historic data. For example, the London Business School (LBS) publishes beta values estimated on monthly observations over a five year period. It is debatable whether such estimates accurately reflect the market's forward looking expectations of risk.

5.33 The 20 May consultation paper noted that the LBS estimates for utility company equity betas were in the range 0.6 to 1.0. In estimating the appropriate equity beta for the PESs distribution businesses, it is important to consider the risks the distribution business is exposed to rather than the risks that might be associated with activities in the wider group. Distribution is a monopoly business with little scope for the development of competition in the operation of the network. The demand for electricity is also relatively stable. Supply and metering businesses are increasingly subject to competitive pressures and could be expected to be more risky than distribution alone. Therefore, proposals to separate out these activities from the distribution business may reduce the level of beta for a standalone distribution business. It is also necessary to consider the effect of gearing on beta estimates. In general higher gearing may be expected to put upward pressure on equity beta values. Taking account of the higher level of gearing used in estimating the cost of capital the 20

May consultation paper suggested an equity beta for the distribution business in the range 0.9 to 1.1.

5.34 The NERA report commissioned by the RECs used significantly higher estimates for equity betas with a range of 1.2 to 1.5. This would suggest that investors view utility companies with reasonable levels of gearing as having higher risk than the large majority of quoted companies in the UK. There is no evidence to substantiate this. A significant reason for the relatively high level of the NERA estimates relates to the adjustments for gearing. Finance theory suggests that higher levels of gearing will put upward pressure on the cost of equity finance as the remaining proportion of equity finance will be considered higher risk. While this is undoubtedly true there appears to be little empirical evidence to support a mechanical relationship between the level of debt and equity betas at moderate levels of gearing. Figure 5.1 shows the relationship between gearing for 9 utility companies over the 5 year period 1994 to 1999. As can be seen from inspection of the chart there appears to be no clear correlation between higher levels of gearing and higher values for equity betas.

FIGURE 5.1: GEARING AND EQUITY BETA VALUES



5.35 In the light of this it appears sensible to take a conservative view of the appropriate adjustments to make because of higher gearing. This would be consistent with the approach set out in the 20 May consultation paper, which used an average equity beta of 1.0 for the PESs distribution activities.

5.36 Bringing these estimates together suggests a range for the cost of equity finance of 5.5 to 6.5 per cent. The calculation of this range is set out in Table 5.2. It is consistent with the calculation of the cost of equity based on the DGM and set out in the 20 May consultation paper.

(iv) Adjusting for taxation

5.37 As well as paying dividends and interest, companies must also finance corporation tax payments. Given that interest payments are allowable against corporation tax, the cost of debt finance does not need to be adjusted upwards to take account of corporation tax.

5.38 In its report on Cellnet and Vodafone the MMC adjusted the cost of equity finance upwards by a tax wedge to take account of corporation tax payments. In calculating the tax wedge the MMC assumed that companies would pay the mainstream rate of corporation tax, giving a multiplier of 1/(1-0.3) or 1.429. This was the approach used in the 20 May consultation paper and of those respondents who mentioned this issue the majority supported using the 1.429 multiplier. In the light of this it seems sensible to continue with this approach and so the estimates for the cost of capital set out in Table 5.2 are based on a tax wedge of 1.429. It is for consideration whether this approach produces an appropriate amount cash to meet the corporation tax liabilities associated with the distribution business. It should be noted that many PESs (or their relevant groups) report effective tax rates lower than 30 per cent.

(v) The weighted average pre-tax cost of capital

5.39 The 20 May consultation paper estimated the pre-tax WACC in the range 5 to 7.1 per cent. The consultation paper was sent to a wide range of City institutions. Equity analysts, debt analysts and representatives of investors were invited to a presentation on these matters and over 70 attended. None has responded formally to the consultation paper, although there has been some correspondence on matters raised in the chapter on financial issues. None of this correspondence suggests that the range for the pre-tax WACC set out in the 20 May consultation paper is inappropriate.

5.40 Table 5.2 sets out the calculation of a range of 6.0 to 6.9 per cent for the pre-tax WACC. Although there is evidence to support a cost of capital at the lower end of this range, in the light of the uncertainty relating to the level of the risk free rate and the cost of debt finance it is prudent to

assume a 6½ per cent cost of capital in calculating revised price controls for the distribution business. This is broadly consistent with the range for the cost of capital set out by the Office of Water Services in its July 1999 draft determinations of price controls for the water industry.

TABLE 5.2: WEIGHTED AVERAGE PRE-TAX COST OF CAPITAL

Component	Low Case	High Case
Cost of debt		
Risk free rate	2.25%	2.75%
Debt risk premium	1.4%	1.4%
Adjustment for long term debt	0.45%	0.3%
Cost of debt	4.1%	4.45%
Cost of equity		
Risk free rate	2.25%	2.75%
Equity risk premium	3.25%	3.75%
Equity beta	1.0	1.0
Post-tax cost of equity	5.5%	6.5%
Taxation adjustment	1.429	1.429
Pre-tax cost of equity	7.9%	9.3%
WACC		
Gearing	50%	50%
Pre-tax WACC	6.0%	6.9%

Valuation of Assets

5.41 In order to secure continuing access to funds on acceptable terms, an enterprise needs to provide a return on the capital invested in its business. In the last distribution price control review the capital invested in each PES's distribution business was considered in two parts, the initial capital at flotation and investment made since then.

(i) Assets acquired at flotation

5.42 The 20 May consultation paper explained that the capital at flotation of the RECs was valued on the basis of their market value at privatisation. Certain adjustments were necessary in order to translate the value of each company as a whole into a value for each distribution business. The value of the other parts of each company other than the distribution business, that is its other businesses and shareholdings in NGC, was deducted. OFFER also took account of other considerations, particularly investors' original expectations of dividend growth, their perceptions of risk and the fact that other regulators and the MMC had tended to apply some uprating to flotation asset values. In light of these factors, the July 1995 proposals were based on the adjusted flotation values uprated by 15 per cent. The 20 May consultation paper set out the value of the capital

at flotation based on an average of two different methods used for valuing the shareholdings in NGC.

5.43 Somewhat different considerations have applied to the Scottish companies. In its May 1995 report on Hydro-Electric the MMC translated the flotation value for the company as a whole into a value for the distribution and transmission businesses by subtracting a value for the generation business of Hydro-Electric. These generation assets were valued on the basis of the same relationship to their current cost book value as was implicit in the market valuation of the assets of National Power and PowerGen. The value for the distribution business that emerged from this was close to the value used by the Scottish Office in setting Hydro-Electric's original distribution price control, and it was this original price control value that the MMC used as a basis for its 1995 price control proposals.

5.44 The 20 May consultation paper concluded that it would appear reasonable to adopt an approach to valuing flotation assets consistent with that used in the last distribution price control review. PESs and a number of other respondents supported this conclusion and indicated that a change to the approach to for valuing flotation assets would increase investors' perceptions of uncertainty and so increase the cost of capital. The two Scottish PESs suggested that the approach used by the MMC to valuing Hydro-Electric's distribution business should be applied in valuing ScottishPower's distribution business.

5.45 Although the PESs supported the principle of an approach to asset valuation consistent with that adopted at the last price control, two companies suggested that the calculations of the asset values set out in the 20 May consultation paper should be modified to reflect more closely their interpretation of the 1994 and 1995 price control proposals. A small number of other respondents suggested that the uprate to flotation assets should be removed, or at least reduced to 7½ per cent as applied by the MMC in its 1997 report on NIE.

5.46 Despite these concerns the approach to asset valuation set out in the 20 May consultation remains valid. Changing the approach to valuing assets acquired at flotation would increase uncertainty, introduce unnecessary instability and would not appear to be consistent with the approach adopted by the MMC in its May 1997 report on British Gas. Moreover the increase in regulatory uncertainty might also affect other sectors, such as electricity and gas transmission.

5.47 Paragraph 5.43 describes the MMC's approach to valuing Hydro-Electric's distribution business. In terms of maintaining consistency with the MMC it appears appropriate to adopt a similar approach to valuing the distribution business of Scottish Power. Using the MMC approach gives a 1990/91 value of £1,460 million in 1997/98 prices for the value of

Scottish Power's distribution business. This is consistent with the value used by the Scottish Office in setting Scottish Power's original distribution price control.

(ii) Investment Since Flotation

5.48 The present price control was set to finance network capital expenditure over the period 1990/91 to 1994/95 and the projected spending for the period 1995/96 to 1999/2000. The July 1998 consultation paper proposed that in the present price control review only the actual network capital expenditure for the period 1995/96 to 1999/00 would be financed rather than the projected level of spending, provided that the actual expenditure represented a prudent level of spending.

5.49 As discussed in Chapters 2 and 3, a number of PESs have made changes to their accounting policies since the last price control review. Some PESs are capitalising expenditures that were previously treated as operating costs while others have classified expenditure previously designated non-operational expenditure as network capital expenditure. It is not appropriate for a PES to gain at a price control review because of a change in accounting policy. Therefore, capital expenditures have been adjusted for changes in capitalisation policy made between 1994/95 and 1999/00.

5.50 It has become apparent that the existing distinction between network capital expenditure and operating costs may provide PESs with incentives to distort spending. For instance some PESs have treated meter re-certification costs as operating expenditure and purchases of new meters as network capital expenditure. This has tended to encourage PESs to purchase new meters, since network capital expenditure is thereby added to the asset base. In future it will be appropriate to calculate the asset base assuming that all PESs capitalise re-certification costs. It is for consideration whether any further changes should be made to capitalisation policy.

5.51 The 20 May consultation paper explained that it would be necessary to give consideration to the reasons for any shortfall in actual capital expenditure compared to the projections on which the present price control was based, taking into account quality of supply. Analysis suggests that it is not appropriate to make adjustments for past underspend. These matters are discussed further in chapters 3 and 4.

(iii) Asset Lives

5.52 The 20 May consultation paper explained that in setting the last distribution price control, OFFER assumed that the flotation values associated with each REC's distribution business would be written off on a uniform annual basis, typically over 10 to 15 years, depending on the

average age of each REC's assets at Vesting. OFFER also assumed that investment made since flotation would be written off on a uniform annual basis, over a period of 33 years, reflecting the RECs' accounting treatment of these assets, which involved depreciation at 3 per cent per year.

5.53 Different considerations applied in the case of the Scottish companies. In its report on Hydro-Electric the MMC assumed a 20 year life for Vesting assets and a 38 year life for post-Vesting assets.

5.54 In deciding on the approach to asset lives for the period after 2000/01, it is important to bear in mind the impact of any assumptions on the financial position of the distribution business and on the path of prices to customers over the period of the proposed price control and beyond. The 20 May consultation paper explained that, if the existing assumptions with respect to depreciation are used in setting the revised price controls on the RECs' distribution businesses, there would be a sharp fall in depreciation after 2000, followed by increasing allowances in the longer term. This could impact adversely on the financial position of the RECs' distribution businesses in the short-term and put upwards pressure on prices in the long term.

5.55 Respondents to the 20 May consultation paper generally supported the suggestion that it may be appropriate to make an adjustment to the approach to depreciation after 2000/01. However, small number of respondents argued that that they would not be in favour of any adjustment. One respondent suggested that there is an expectation that distribution businesses would underspend against the forecasts of future capital expenditure and that as such the risk to future cashflows would not be significant. Of those respondents that supported an adjustment to the approach to depreciation the majority favoured tilting the depreciation on post-Vesting assets, although one PES argued that a greater proportion of capital expenditure should be funded within the price control period as this would treat operational capital expenditure in a similar way to operating costs. This solution would significantly increase the incentives on PESs to underspend on capital expenditure programmes. The proposals for the treatment of investment over the period of the next price control discussed in paragraph 5.61 already strengthen incentives towards efficiencies in capital expenditure. It would not be appropriate to provide additional incentives to reduce capital expenditure, particularly in light of the need to enhance arrangements for monitoring capital expenditure and quality of supply identified in Chapters 1, 3 and 4.

5.56 In the light of these factors it seems appropriate to tilt the depreciation on post-Vesting assets in order to take account of the concerns outlined above. The 20 May consultation paper explained that this could be achieved by moving to a 20 to 25 year asset life as the depreciation allowances associated with Vesting assets come to an end. A one-off

adjustment would be needed to price control revenue to ensure that in present value terms PESs would be neutral to this change. The calculations in chapter 6 are made on the basis of tilted depreciation assuming a 20 year asset life with the one-off adjustment smoothed over 15 years. These changes are made only after the Vesting depreciation allowances come to an end and so in the 2000/01 to 2004/05 price control period they affect only NORWEB, SWALEC and SEEBOARD. The tilting of depreciation is not intended to reward or penalise individual companies, or offset Ofgem's projections of operating costs and capital expenditure. Rather, it is a means of increasing certainty with respect to the financial position of the distribution business and the path of prices in the longer term. The benefits of this will be felt by both customers and companies.

5.57 The issues relating to the two Scottish PESs are somewhat different from those in England and Wales. In its report on Hydro-Electric the MMC assumed a 20 year life for Vesting assets. It will be appropriate to adopt this assumption in setting the revised price controls on the distribution businesses of Scottish Power and Hydro-Electric. Having considered the supporting checks on the overall financial position of the Scottish PESs and the longer term path of prices it does not seem appropriate to tilt depreciation for these companies. In its response to the 20 May consultation paper ScottishPower supported this conclusion.

(iv) Investment Over the Period of the Next Price Control

5.58 The expectation that at a price control review asset values will be rolled forward to the start of the review period using actual capital expenditure, rather than the projections of capital expenditure on which the existing control was based, will tend to reduce incentives on PESs to operate efficiently. This will take two forms: a general reduction in the incentives on PESs to make efficiencies in capital expenditure; and an incentive to defer spending to the end of the price control period.

5.59 The 20 May consultation paper explained that these perverse incentives could be reduced by making a commitment in this price control review to adjusting asset values in the next price control review by actual, rather than projected, spending on a rolling basis after the lapse of a fixed number of years. Respondents to the 20 May consultation paper generally supported this suggestion provided that PESs continue to meet the appropriate targets with respect to quality of supply targets and that it does not lead to unduly onerous monitoring of capital expenditure programmes. Several PESs supported a fixed retention period of 5 years, although one suggested that a longer period would be appropriate. Two PESs indicated that there should be rolling adjustment to both capital expenditure and operating costs. The national group representing ECCs suggested that the retention period should be 2½ years to ensure that the effect on the incentives towards PESs is broadly neutral.

5.60 The intention of the proposal to allow a fixed retention period for capital expenditure savings is to increase the incentives towards efficiency. It is clear that PESs have managed to achieve significant efficiency savings with respect to operating costs under the present arrangements. Allowing a fixed retention period for operating cost efficiencies would distort the balance of interests between customers and shareholders. On this basis it does not appear appropriate to adjust the existing incentive structure with respect to operating costs.

5.61 Adjusting asset values on a rolling basis is similar to the approach proposed by the OFWAT in its 1998 paper on the framework for setting prices in the water industry. It is proposed to adopt a similar approach for the treatment of capital expenditure over the period of the next price control, updating the regulatory asset base for actual rather than projected spending after a period of 5 years has elapsed. This commitment is conditional on PESs meeting their obligations with respect to the security and quality of supply.

Financial Modelling

5.62 Ofgem proposes to use financial modelling to inform judgements about the effect on the financial position and viability of each PES of revisions to the distribution price control. In view of the financial ring-fencing provisions of PES licences, it appears reasonable that these judgements should focus on the ability of the PES to maintain an investment grade credit rating, on the footing of Ofgem's projections of the efficient level of costs.

5.63 Credit rating agencies use a variety of methods and techniques to assess credit ratings. In particular, they assess the business profile of the issuer and carry out financial analysis of historical and forward looking data, examining the issuer's earnings, cash flow and capital structure in relation to its debt service obligations, working capital needs and capital expenditure requirements. Particular emphasis is placed on parameters such as the coverage of fixed financial charges by cash flow and the ratio of free cash flow to total debt.

5.64 In general, transmission and distribution businesses have strong business profiles, reflecting limited business risk. They are therefore able to sustain lower interest coverage and higher gearing, compared to businesses that operate in a more competitive environment with greater cash flow volatility. Based on statistics published by Standard & Poor's, giving median values for certain key financial ratios[1] of power utilities rated BBB,

[1] The median ratios reported in September 1998 by Standard & Poor's for Transmission and Distribution businesses rated BBB were: Funds from Operations Interest Coverage – 2x; Funds from Operations to Total Debt – 10%; Total Debt to Total Capital – 65%. Funds from Operations comprise operating cash flow less fixed financial charges and taxes currently payable.

it appears reasonable to assume that PESs whose projected financial positions under a revised price control are broadly consistent with these ratios would be able to sustain investment grade credit ratings. In addition, it would be appropriate to have regard to the EBITDA coverage ratio[2]. It appears that, in current market conditions, sustained EBITDA coverage significantly below 2x would restrict access to medium and long-term sources of credit.

5.65 There was general support for this approach. A number of PESs argued that more conservative financial ratios should be used, consistent with a credit rating above the minimum investment grade level, to allow headroom for increases in gearing to finance additional capital expenditure and to absorb downgrading due to general economic or regulatory factors. Some others argued that weak investment grade ratings (below A-/A3) are not consistent with an efficient financing structure, as such issuers can find access to debt markets restricted when turbulent conditions prevail. It was also argued that EBIT (historic cost accounted profit) interest coverage is a significant ratio, in addition to cash flow measures.

5.66 A number of respondents argued that it was inappropriate to apply the median statistics published by Standard & Poor's. First, it was pointed out that distribution businesses, which are typically regional in scope, face relatively greater risks than transmission businesses, which are typically national in scope and of greater strategic importance. A stronger financial profile may therefore be required for a distribution business to attain a given rating than would be required of a transmission business. Secondly, PESs typically carry on supply businesses, in addition to distribution, weakening their overall business profile in comparison to a 'pure' distribution business. Thirdly, and in any event, the Standard & Poor's data was derived from a small sample and is no longer recent. There appears to be some force to these arguments.

5.67 On 27 July 1999, OFWAT published its Draft Determinations for the Periodic Review of Water and Sewerage Prices 2000-2005. Appendix B set out the financial indicators which, in OFWAT's view and based on the results of its consultation process, are required to meet market criteria for solid investment grade ratings in the water sector. For the water and sewerage companies, which are broadly comparable in size to PESs, OFWAT gave the following ranges for these indicators:

[2] The ratio of earnings before interest, tax, depreciation and amortisation to interest expense.

TABLE 5.3 OFWAT'S FINANCIAL INDICATORS

Indicator	Range
Historic cost interest cover	Min 2x
Average gearing 2000-2005 (D/D + E)	45-55%
Cash interest cover (EBITDA basis)	Min 3x
Cash interest cover (EBITDA basis)	Min 2x
Debt payback period (EBITDA basis)	Max 5 years
Debt payback period (EBDA basis	Max 7 years
Cashflow to capex ratio (EBDA basis)	Min 50%

5.68 The interest coverage indicators given by OFWAT are comparable with the Standard & Poor's median data cited in Ofgem's May consultation paper (e.g. EBIDA interest coverage of 2x is similar to Standard & Poor's median statistic for Funds from Operations Interest Coverage). OFWAT's indicators reflect lower levels of gearing than the Standard & Poor's data, however (e.g. EBDA debt payback of 7 years, equivalent to a ratio of 14 per cent, may be compared to the Standard & Poor's median statistic for Funds from Operations to Total Debt of 10 per cent). This may be explained by the substantially greater capital expenditure requirements faced by the water and sewerage companies, a factor which is less relevant to the distribution businesses of the PESs.

5.69 Ofgem's consultations support the view that, in relation to PESs, indicators in the ranges cited by OFWAT would in general be consistent with long-term ratings above the minimum investment grade. This suggests that, notwithstanding the statistical criticism of the Standard & Poor's data, it remains appropriate to base judgements about the potential reaction of credit rating agencies to revisions of the price control on the assumption that observance throughout the period of the revised price control of minimum interest coverage and maximum gearing in line with the Standard & Poor's median data would be consistent with sustainable investment grade credit ratings. Nonetheless, in order to provide a margin to absorb possible strain from whatever cause, Ofgem proposes a modest adjustment in the case of the ratio of free cashflow to total debt.

5.70 Ofgem's consultations also support the view that cash flow measures of interest coverage are more widely used by both credit rating agencies and banks to evaluate financial strength than measures based on accounted profits. However, Ofgem accepts that EBIT interest coverage is also a relevant statistic. It should be noted that the EBITDA measure differs from the Funds from Operations (FFO) measure chiefly in respect of the treatment of taxation: taxes payable currently are deducted in computing FFO. Moreover, provisions and other non-cash charges to income are generally deducted in computing EBITDA but not in computing FFO. Subject to these items, however, FFO interest coverage at any given level is generally consistent with a significantly higher level of EBITDA coverage. Nonetheless, it is appropriate to set a minimum level for

EBITDA coverage by reference to current market terms in respect of financial convenants. Recent evidence suggests that the market may be hardening in this respect and that a figure of 2.25 x may therefore better reflect prospective conditions.

5.71 Ofgem has therefore had regard to the level and trends of the following financial indicators in its financial modelling:

TABLE 5.4 OFGEM'S FINANCIAL INDICATORS

Indicator	Level
EBIT interest coverage	Min 1.5 x
EBITDA interest coverage	Min 2.25 x
FFO interest coverage	Min 2 x
FFO to total debt	Min 12%
Gearing (D/D + E)	Max 65%

5.72 In its financial modelling of PESs, Ofgem has looked at a variety of scenarios, using actual data, forecasts provided by the PESs and data consistent with the assumptions underlying this price control review.

5.73 The present financial structures of the PESs are not consistent with the assumptions about efficient financing set out in this document. In order to model the financial effects of Ofgem's draft proposals on PESs, it has been necessary to assume an initial gearing level of 50 per cent for the distribution business. In order to reconcile this assumption to the forecast balance sheets of the PESs at 31 March 2000, a stylised adjustment has been made to increase or decrease the amount of shareholders' funds.

5.74 The dividend stream from the resulting shareholders' equity in distribution (i.e. 50 per cent of the distribution regulatory asset base) has been set consistent with an assumed nominal post-tax equity return of 9 per cent. Assuming volume growth in the distribution business of 1.25 per cent and inflation around 3 per cent, the implied yield is around 4.75 per cent. It should be noted that this level of dividend may differ substantially from the actual dividends paid by PESs in recent years.

5.75 In applying the minima and maximum in table 5.4 Ofgem has had regard to trends as well as to absolute levels, both during the period of the control and beyond 2005. In no case has any of these factors acted as a constraint.

6 PRICE CONTROL CALCULATIONS

Introduction

6.1 It is important to be transparent about the way in which price controls are calculated. Setting RPI-X price controls requires an estimate of the revenue that would be sufficient to finance an efficient business. The principles governing the calculation of the controls are set out in Chapter 1, while commentary on individual cost components can be found in Chapter 2 (operating costs), Chapter 3 (capital expenditure) and Chapter 5 (financial issues). Consistent with the principles set out in Chapter 1, it will be important to balance incentives for cost reduction with those for quality of supply.

6.2 This chapter explains how Ofgem has derived the draft distribution price control proposals for each PES over the next five years, incorporating the analysis set out earlier in this paper. At this stage, these are expressed as ranges, to be refined in the light of responses to this consultation and further analysis, before final proposals are announced around the end of November.

6.3 Over time, distribution prices may be considered the sum of:

- the allowed operating costs;
- an allowance for the depreciation of the regulatory asset base; and
- a return on the appropriate regulatory asset base.

6.4 The focus of this chapter is to determine the total revenue requirement for each PES over the next review period. There is then the question of how to sculpt that revenue over that period, thus generating annual price reductions. The price in the first year of the next price control period is referred to as P_0. The subsequent annual reduction in prices is referred to as X. The balance between P_0 and X is considered later in paragraphs 6.57 to 6.62. For illustrative purposes the following calculations assume an X factor of 3 for all PESs, with the majority of proposed price reductions allocated to P_0.

Deriving a Range for the Price Controls

6.5 Ofgem has derived a range for each company of:

- efficient operating expenditures;
- capital expenditure forecasts; and
- hence a path of regulatory asset values; and
- the cost of capital to use as the appropriate return.

These can been combined to form ranges for the path of prices over the next five years for each PES.

6.6 The draft proposals for each PES have been expressed as possible P_0 reductions (compared to prices in 1999/2000), within a range of 5 per cent for those P_0 reductions together with an X factor of 3 per cent per annum in later years.

Operating Expenditure

6.7 The higher projections of allowed operating expenditure set out in Chapter 2 assume that the most efficient companies are entitled to retain all the benefit of future cost savings beyond Ofgem's view of an efficient PES's operating costs during the next price control period. The lower projections assume that the same companies are required to achieve further savings unit cost of about 2.25 per cent per annum.

6.8 It is intended that those companies which are genuinely more efficient should earn a higher rate of return. This could be achieved by allowing the most efficient companies an initial cost allowance higher than their actual or projected cost levels; or the company could be given an allowance for operating costs over the next review period which is higher than Ofgem's forecast of efficient operating costs for that company in 2004/05, thereby allowing the company to earn a higher return if it achieves Ofgem's efficient operating cost forecasts. There need be no difference in the present value of the anticipated benefit to the efficient PES over the next price control period under either method.

6.9 The second of these methods seems preferable. Customers of the efficient PES should enjoy the benefit of the cost savings already made by that PES from the start of the next price control period. Such companies should have a continuing incentive to find further cost savings but should also be able to see a real prospect of an above-average return if they achieve Ofgem's targets.

6.10 However, even against this background, it could be considered lax to assume that the most efficient companies should retain all the benefits of future cost savings. This would be an insufficiently challenging target, particularly in the light of historical out-performance to date and the five year duration proposed for the control.

6.11 A central operating cost case might assumed that the most efficient PESs could find further operating cost savings of the order of 7.5 per cent by the end of the next control period. It should be stressed that Ofgem believes that this target can be exceeded and expects these companies to make above average returns during the next control period if they exceed the target.

6.12 The issue arises whether it is practical to ask the less efficient companies to achieve the same level of efficiency which is being asked of the

efficient companies by the end of the price control period. On the one hand, the actual levels of annual cost savings required would be challenging. On the other, Ofgem does not believe that it is consistent with the principles of incentive based regulation that inefficient companies should be treated more leniently than the efficient.

6.13 Balancing these two concerns, a central case might assume that the relatively inefficient can achieve the same efficiency levels as are being asked of the efficient by the end of the period. Bearing in mind that the efficiency comparisons on operating expenditure are made by reference to 1997/98 (the last year for which information was available upon which to base the efficiency analysis), this target is effectively being set to be achieved over a seven year period. This represents a period shorter by only one year than the period from privatisation to the date of the comparison. It has been assumed that these cost savings are spread evenly over the seven year period, despite evidence that the efficient companies have been able to cut their costs more quickly than this during the present price control period. It is for consideration whether the balance of challenge and incentive in these assumptions is appropriate.

Capital Expenditure

6.14 In respect of capital expenditure, the central case is consistent with a central capital expenditure scenario, between the two cases identified in Chapter 3. Ofgem believes this to be achievable by all companies using the best techniques presently available, without detriment to the short or medium term system performance.

Cost of Capital

6.15 In respect of the cost of capital, the central case assumes a weighted average cost of capital (WACC) of 6.5 per cent, consistent with the discussion set at in Chapter 5.

Summary

6.16 It should be stressed that this combination of variables is just one way of deriving a central case yielding a particular P_0 cut for each PES. The calculation given here has been produced in the interests of transparency. It should not be regarded as a definitive judgement about each assumption, merely illustrative of a central case for achievable price cuts.

6.17 A range constrained to 5 per cent has been created around the central case. The central case is broadly in the middle of this range. Since it will be seen that there is potential variability for operating costs, capital expenditure or cost of capital, it seems inappropriate to define the limits of the range in terms of a movement in any one of these or any particular combination. However, for illustrative purposes, a reduction of the rate

of return to 6 per cent (the lower end of Ofgem's range) and a further reduction in allowed operating costs of 2.5 per cent would account for an increase of approximately 2.5 percentage points in the P_0 cut. Similarly, a higher allowance for capital expenditure, in line with the higher capital expenditure case set out in Chapter 3, and a modest increase in the allowance for operating costs would account for a reduction of 2.5 percentage points in the P_0 cut.

6.18 It will be appropriate to consider the position of each PES in the light of further analysis and responses to this paper. For the reasons set out above (and taking into account the adjustments proposed for consideration in the following sections), it should not necessarily be assumed that the final proposals for reductions in P_0 will show a consistent movement within the draft price ranges set out below.

Making Adjustments Within the Ranges

6.19 In reaching a judgement on final proposals for distribution prices around the end of November, it will be necessary to determine for each PES an appropriate combination of operating costs, capital expenditure and returns, as described above. It may also be appropriate to allow the final proposal for each company to be influenced by a number of other factors, including measures which seek to reflect quality of supply performance and total cost efficiency. Each of these is considered further below.

(i) Quality of Supply

6.20 Companies ought to have an incentive within the price control to maintain adequate quality of supply. The MORI customer surveys suggest that customers are generally concerned about degradation of quality but are less willing to pay more for improvements. While there are existing penalties in relation to quality of supply, Ofgem believes that these should be strengthened in order to balance the financial incentives on companies to reduce their expenditure on quality of supply, particularly by reducing discretionary capital expenditure.

6.21 It seems appropriate therefore to put an additional incentive on PESs not to miss quality of supply targets. One possible way of doing this is described below. Additional incentives for further improvements in quality of supply will be given priority as part of the future work programme on information and incentives.

6.22 Table 4.4 (in Chapter 4) sets out a matrix for the PESs in relation to quality of supply, showing a stylised view of the companies by reference to the comparative degree of improvement represented by their targets and their likelihood of achieving them. There are a number of difficulties about the definition of targets and the measurement of achievement both of which it is intended to address as part of the future work on improving incentives.

Nevertheless, those companies likely to achieve comparatively more demanding targets may reasonably be considered to have achieved more than those who are considered likely to fail to meet comparatively easy targets. The ranking of companies in between would depend on an assessment of the relative importance of the target and its achievement, as well as a view of the starting-point from which the target was set.

6.23 The scope of the penalty is for further consideration. There is sufficient uncertainty about the relevant information, in terms of consistent measurement and application, to suggest a cautious treatment. But it is important that companies have a financial incentive to maintain their systems and quality of supply. Regulatory practice is still developing in this area. For example, OFWAT recently constrained adjustments relating to quality of service in the water industry to 0.5 per cent of allowed revenues because of similar measurement difficulties.

6.24 It seems prudent in this review to adopt the same constraint. Nevertheless, it is for further consideration whether the incentives relating to quality of supply should be increased in the future.

(ii) Total Cost Analysis

6.25 Importance was attached in the 20 May paper to total cost analysis as a supporting check when considering relative efficiency. In particular, this might help to reduce the apparent stronger incentives on PESs to reduce operating costs rather than capital expenditure. That paper included a regression analysis to show how total cost analysis might reach different conclusions on the relative efficiency of PESs.

6.26 To a large extent, the separate analysis of operating expenditure and capital expenditure replicates the effect of the total cost analysis, which is broadly supported by further total cost regression analysis that has been conducted (although it would not appear to be appropriate to put too much weight on total cost regression analysis alone at this stage). As with quality of supply, this is a priority area for the future work programme on information and incentives.

6.27 However, it is in customers' interests that companies should seek to reduce their regulatory asset values consistent with meeting quality of supply targets. It is therefore proposed to recognise an increased element of total cost incentive within this price control review by rewarding and penalising companies by reference to the movement in asset values which are principally affected by the level of capital expenditure and depreciation over the present regulatory period.

6.28 It would not be appropriate to cause this incentive either to outweigh the quality of supply adjustment or to increase the existing incentive on companies to sculpt their capital expenditure within a price control

period. Therefore Ofgem proposes that the effect should also be constrained to 0.5 per cent of allowed revenues and measured by reference to the anticipated regulatory asset values (RAV) in 2000 based on the companies' updated 1998 forecasts.

6.29 PESs should have a disincentive to overspend as well as an incentive to spend less. It therefore seems appropriate that companies who have reduced their RAVs should have a benefit in proportion to the relative reduction (in percentage terms) while the converse would be true for those whose RAVs had increased.

(iii) Other Issues for Consideration as Adjustments

6.30 It is clearly desirable that PESs are encouraged to behave responsibly in areas where they have no natural financial incentive. Consideration is therefore being given to the inclusion of an element of financial incentive within the price control to improve incentives in such areas.

Energy Efficiency

6.31 One important area is energy efficiency. Although there is currently an incentive in the price control formula to reduce distribution system losses, it is clear that this has been insufficient to prevent a noticeable rise in losses during the present price control period.

6.32 While the level of electrical losses needs to be considered in the context of the wider efficiency of the PESs' operations and assets, it could be argued that the present incentives do not adequately capture the value of losses, taking into account generating costs. There was broad support from consumer groups for the initiative announced in the May paper to investigate losses further. This will be taken forward as part of the future work programme on improving incentives.

6.33 In the meantime, it seems appropriate to consider strengthening the incentive on losses. Ofgem is considering a further within-range adjustment to incentivise companies to reduce losses. It is proposed to adjust each PES's P_0 according to the movement on electrical losses in its area during the present price control period. For any PES whose losses have increased it seems appropriate for it to incur a penalty, while PESs who have reduced losses should receive an uplift.

Forecasting Accuracy

6.34 It is a source of continuing concern that PESs have an incentive to misforecast key elements of information which affect price controls, including cost levels, capital expenditure requirements and levels of demand and customer numbers. There does not appear to be a straightforward way to devise a set of arrangements to prevent this: hence

the emphasis on improving information and incentives in ongoing work. The 20 May consultation paper also noted the potential for companies which were closer to their forecasts to have been less efficient than those who under-shot by a larger margin.

6.35 This remains a major priority for the future work on improving incentives. There was considerable support from respondents to the 20 May consultation paper for improved monitoring and more regular and consistent reporting. However, Ofgem is keen that the PESs should not be in any doubt about the importance of these issues and the disadvantage at which they are putting their own customers as a result.

6.36 It is therefore for consideration whether to penalise PESs by reference to:

- the variance between the companies' 1995 forecasts and the 1997/98 out-turns (although this might in some cases reward inefficiency); and

- the variance between the companies' present business plan questionnaire responses and the allowed costs in the November proposals.

6.37 Whichever measure is adopted, it seems appropriate that companies should not be able to benefit from forecasting inaccuracy. This suggests that this test should be applied only as a penalty. Ofgem suggest that it should be restricted in this instance to no more than 0.25 per cent of allowed income.

Customer Satisfaction

6.38 The satisfaction of customers should be an important test of any business's efficiency. Consideration has been given to the possibility of introducing an incentive, based on the customer opinion surveys, which has also been suggested by one PES. It is questionable whether it is worth pursuing this particular measure as part of this review due to the limited customer sample and the potentially perverse incentive for companies to spend money on their image rather than addressing poorly served customers, particularly that minority which is suffering a quality of supply which is significantly lower than that which they may reasonably expect.

6.39 Ofgem proposes for consideration an adjustment related to the number of complaints received by OFFER/Ofgem during the present price control period, even though it is recognised that this is not a completely reliable indicator of customer satisfaction and may be manipulable. Such a measure would be consistent with Ofgem's desire to attach additional weight to the plight of worst-served customers.

6.40 Customer complaints are categorised by Ofgem but not specifically between distribution and supply. Following the separation of distribution and supply, such a categorisation will be possible for future reviews. For the purposes of the present review, it may be appropriate to take only those complaints which can attributed to distribution. Given the importance of customer satisfaction, Ofgem proposes to allocate a further 0.5 per cent of revenue to this measure.

Summary of Adjustments

6.41 In summary, if all of these proposals for adjustments were adopted, PESs could see significant adjustments within the proposed ranges of P_0. Table 6.1 shows that the cumulative effect could increase a PES's P_0 by 1.25 percentage points and reduce by 2.0 percentage points. The combined impact on PESs could result in an adjustment of their relative positions by as much as 3.25 percentage points. However, even if all the measures were adopted, it is not intended that the combined effect of these measures should take a PES outside its draft P_0 range.

TABLE 6.1: SCHEDULE OF POSSIBLE ADJUSTMENTS TO P_0

Proposed measure	Potential upside (percentage of P_0)	Potential downside (percentage of P_0)
Quality of supply	0.0	0.5
RAV movement	0.5	0.5
Energy efficiency (losses)	0.25	0.25
Accuracy of information	0.0	0.25
Complaints to offer	0.5	0.5
TOTAL	1.25	2.0

Mergers

6.42 Every PES has been involved in some form of merger or take-over. As such transactions are initiated with the aim of creating value, Ofgem believes that it is appropriate that customers should share in that additional value. The different types of merger need to be analysed and proposals considered for sharing the benefits in each case.

6.43 As far as electricity distribution is concerned, the mergers can broadly be identified in three categories:

- mergers between groups comprising two PES distribution businesses (ScottishPower/Manweb, Southern/Hydro and, prospectively, Yorkshire/SEEBOARD);

- mergers between groups comprising a PES distribution business and another regulated utility business in the UK (ScottishPower/Southern Water, North West Water/NORWEB (United Utilities) and Welsh Water/Swalec (Hyder)); and

- mergers between a group comprising a PES distribution business and another group with no other regulated utility business in the UK (Eastern (twice), London, Midlands, Northern, SEEBOARD, South Western, Yorkshire). Ofgem considers PowerGen's acquisition of East Midlands should be included in this category. It is for further consideration whether Eastern ought also to be considered for inclusion in this group in the context of its acquisition of plant from National Power and PowerGen. Ofgem would not propose to include the two subsequent share sales in South Western and Midlands, since neither of these involved the passing of control nor were they qualifying mergers under the Fair Trading Act 1973.

6.44 It should be noted that mergers involving PES supply businesses are not considered here.

Merger Savings

6.45 The identification of merger savings is not straightforward. Measurement of value creation by reference to management projections or share price movements is unreliable and not always possible. Attribution of cost savings to either of the merged parties is judgmental.

6.46 Nevertheless, it is clear that the merger of two PES distribution businesses creates the potential for considerable savings attributable directly to the distribution businesses of the merged entity. Certain reductions in fixed costs, such as corporate costs, can be estimated with a high degree of confidence. There are undoubtedly other fixed cost reductions and may be other benefits. These savings would not necessarily show in the regulatory accounts for each PES distribution subsidiary of the merged group.

6.47 Given the reasonable expectation that such savings can be achieved, Ofgem believes that it is appropriate for customers to see benefits in line with other efficiency savings (cf. the discussion in 5.60 in Chapter 5). Ofgem's advisers have estimated that approximately one half of the fixed costs of a PES may be required to maintain any PES system, irrespective of corporate structure. Ofgem proposes that the other half should be capable of being eliminated by the merged group quickly but that the benefit of doing so should be retained for an appropriate period. The fixed costs of a PES have been estimated by Ofgem's advisers at between £20 million and £25 million. Accordingly it is proposed that an additional sustained reduction of the order of £10 million to £12.5 million be made from the combined operating costs of ScottishPower and Manweb and of Southern and Hydro-Electric. The proportion of cost reduction attributable to each individual PES is a matter for further consideration as is the appropriate period of time for the retention of the financial benefits. The draft proposals set out in this document do not

include such an adjustment at present. Ofgem will particularly welcome views on this subject.

6.48 It is arguable that similar cost savings ought to be achievable from the merger of groups combining regulated utility businesses in Great Britain. Accordingly it is for consideration whether a similar sustained reduction in operating costs should be made by ScottishPower, NORWEB and Swalec on the fifth anniversary of their respective mergers with Southern Water, North West Water and Welsh Water. The level of fixed costs attributable to each company is for further consideration, although it seems reasonable to expect not less than a half of the fixed cost saving obtainable from the distribution business to be attributable to the PES and hence lead to a reduction in customer prices in due course. An adjustment of this sort has not been included in the operating cost modelling set out in this document but views are invited on the appropriateness of such an adjustment.

6.49 It is more difficult to make a case for overt cost savings attributable to the distribution business arising out of its acquisition by an entity which has no other regulated GB utility interests, even though it is clear that groups with other interests in the GB are likely to be able to achieve head office savings. Consequently, Ofgem has not proposed a further cost saving arising from such mergers. Views are invited on the appropriateness of this approach.

Information and Comparison

6.50 The preceding paragraphs have addressed the issues in connection with efficiency savings arising from mergers. However, there remains the issue of the quality and comparability of information available to the regulator when mergers occur. There can be no doubt that both the quality of information and the comparability of information deteriorate with each transaction. The impact of this on the ability to regulate effectively is more difficult to assess.

6.51 As soon as a PES distribution business becomes part of a larger group, the ability to reallocate and reattribute costs becomes significantly greater. Consequently Ofgem believes that there is an information deficit arising from any merger. While Ofgem has sought to address this deficit through the ring-fencing conditions included in PES licences, the scope for financial obfuscation remains.

6.52 Furthermore, in the case of the merger of groups accounting for more than one PES distribution business, there is a real diminution in comparators available for the kind of analysis which has proven so valuable in this review. This is because the number of different management approaches is reduced; the real number of observable data-points for any efficiency measure is reduced and the scope for

inappropriate cost allocation increased. As the number of comparators dwindles, so the scope for collusion may increase. There may be particular issues relating to the merger of adjacent PES distribution businesses.

6.53 Ofgem attaches weight to these arguments. There is considerable scope for detriment arising out of further PES/PES distribution mergers. Ofgem recognises that the pressure on total costs and the desire of PES distribution businesses to achieve further efficiency savings, which Ofgem wishes to promote, may prompt further proposals for PESs to merge their distribution businesses. Given these conflicting pressures, Ofgem believes that it would be appropriate for the issues arising from any future combination of PES distribution businesses to be addressed in detail by the Competition Commission. Accordingly it is likely that Ofgem, subject to any special circumstances, will wish to recommend that the next proposed merger should be referred to that body for consideration of the public interest issues involved.

Other Adjustments to the Ranges

6.54 The draft distribution price proposals set out below assume no substantial change in business rates. To the extent that the Government makes firm proposals to change business rates before 30 November it should be possible to accommodate these within the final distribution price proposals around the end of November. If not, it will be appropriate at the time of any change to consider the impact that such a change should have on future prices. The impact is likely to differ from PES to PES.

Separation

6.55 The proper analysis of distribution operating costs cannot be concluded until the proposals for separation of businesses, including the granting of any derogations, have been concluded. Ofgem believes that the ranges set out above include an appropriate allowance for the most likely out-turn in each case and do not expect the ranges to alter significantly as a consequence.

Allocating P_0 and X

6.56 The scale of the proposed price reductions makes consideration of this issue important.

6.57 At the time of the 1994 price control review, the balance of cost reduction was allocated to P_0 rather than X, on the basis that customers would prefer a larger immediate price cut and that companies preferred a financial profile which did not deteriorate throughout the period. High levels of X also risk giving a misleading picture of the sustainable level of price cuts over time, as well as creating a greater risk of unsustainably low

prices at the end of a review period, necessitating subsequent price increases and a generally less stable path of prices over time.

6.58 On the other hand, loading all the anticipated cost savings into the P_0 reduction appears unjustified, giving an equally misleading picture of ongoing efficiency potential and leading almost certainly to price increases (in nominal if not in real terms) for distribution in four out of the five years.

6.59 The same arguments apply to the present review. Furthermore, the revenue path will provide some additional incentive to companies to cut costs faster than the assumed path of costs. To the extent that companies cut costs according to the profile of allowed costs, the higher level of P_0 will serve to offer companies closer to the efficiency frontier a higher rate of return than those further away, consistent with the principles set out in the 20 May consultation paper.

6.60 As with all the measures proposed in this chapter, the effects have been considered in the light of the financial profiles of the PESs. Ofgem is satisfied that the allocation between P_0 and X does not cause undue strain on these profiles.

6.61 For the reasons set out above, it is proposed in respect of all companies to set the value of X at 3 for the remaining years of the next price control period.

Other Factors Affecting Calculation of P_0 and X

6.62 The ranges for the path of prices generated by the calculations set out above are the principal driver of the P_0 and X proposals for the PESs. However, in order to convert the calculations into proposals, it is necessary to reconcile the new path of prices with the 1999/2000 prices arising out of the existing price control.

6.63 When the existing price control was set, forecasts were made about demand and customer numbers, as well as about the individual cost components which make up the allowed distribution price. For most companies, the revenue being generated by the 1999/2000 price control is in excess of that envisaged when the control was set although for some companies the converse is true.

6.64 Forecasting error is likely when setting incentive based price controls. Provided that there is no evidence of systematic gaming by the companies of the factors that have led revenues to be higher in 1999/2000, there is no case for seeking clawback of the gain from the companies nor for reimbursing companies whose revenue has been lower. However, it is appropriate to strip out the excess or shortfall when re-setting the price control. This adjustment has been made to each PES. The effect of this

adjustment for each PES forms part of the specimen calculations set out in annex 5.

6.65 A different sort of forecasting error has arisen from the manner during the price reviews of 1994 and 1995 in which PESs were grouped into three broad bands, to which three sets of common P_0 reductions were allocated. This grouping meant that some PESs were given cost allowances higher than those which OFFER felt otherwise justifiable at the time. These adjustments could be attributable to any of the principal cost categories, but in the interests of clarity and consistency, the revenue impact of these adjustments have been considered separately from any individual cost category, thus permitting a proper comparison of costs with the underlying allowances used by OFFER in those reviews. It is not felt that such grouping is appropriate or necessary during the current review.

6.66 The effect of this adjustment for each PES forms part of the specimen calculations in annex 5.

The Draft Proposals

6.67 On the basis of all the information available to Ofgem, and taking into account the considerations described above, it is proposed that all companies should have an X of 3 for each of the years 2001/02 to 2004/05. The ranges for P_0 for each company are shown in Table 6.2 below.

TABLE 6.2: RANGE OF P_0 FOR EACH COMPANY

PES	Proposed reduction in P_0 including reallocation of costs (%)	Impact on P_0 of proposed reallocation of costs (mainly from Distribution to supply) (%)	Proposed reduction in P_0 excluding reallocation of costs (%)
Eastern	28 – 33	10	18 - 23
East Midlands	28 – 33	9	19 - 24
London	30 – 35	17	13 - 18
Manweb	23 – 28	10	13 – 18
Midlands	26 – 31	5	21 - 26
Northern	26 – 31	8	18 - 23
NORWEB	30 – 35	9	21 - 26
SEEBOARD	37 – 42	15	22 - 27
Southern	21 – 26	3	18 - 23
Swalec	29 – 34	7	22 - 27
South Western	21 – 26	5	16 - 21
Yorkshire	24 – 29	9	15 - 20
ScottishPower	12 – 17	8	4 - 9
Hydro-Electric	15 – 20	7	8 - 13

Hydro Benefit

6.68 In order to equalise domestic electricity tariffs in Scotland, and recognising the higher costs involved in distribution in Hydro-Electric's area, a mechanism has been developed, known as the Hydro Benefit, whereby Hydro-Electric's distribution prices are effectively reduced by a transfer from its predominantly low-cost hydro-electric generation business. A similar consideration applies for transmission in Scotland. The total annual amount of the Hydro Benefit is capped at approximately £40 million (in 1990/91 prices), with sub-caps for transmission and distribution of approximately £29 million and £11 million respectively.

6.69 If the relationship between the draft P_0 cuts for ScottishPower and Hydro-Electric is maintained, there would be sufficient Hydro Benefit in total to equalise unit distribution revenues in Scotland but insufficient if the sub-cap for distribution were maintained at present levels. This issue will require further consideration in the light of the draft price proposals for Scottish transmission (due to be published by Ofgem in the next few weeks) and other relevant factors.

Analysis

6.70 For the reasons given above, there is a complex relationship between the level of P_0 and the judgement made about a company's efficiency, particularly with regard to future anticipated cost savings. In order to aid understanding of table 6.2, there is, in annex 5, a stylised analysis showing how an aggregated P_0 and X can be analysed in terms of the principal factors driving the revenue reduction.

ANNEX 1

SUMMARY OF RESPONSES TO MAY CONSULTATION PAPER ON PRICE CONTROLS AND COMPETITION

1.1 There were 47 responses from a range of interested parties - 14 Public Electricity Suppliers (PESs), 13 Electricity Consumers' Committees (ECC's) and the National Electricity Consumers' Council, and 19 others.

Views of Public Electricity Suppliers

Form of Control

1.2 All PESs supported RPI-X price controls, strengthening incentives for efficiency and reducing the emphasis on the periodic price control review process. PESs suggested that an Error Correction Mechanism would blunt incentives towards efficiency and could increase the cost of capital. The majority of PESs said that it would be undesirable to have a regulatory period of price control which was shorter than the present five years.

1.3 There was qualified support for an increase in emphasis on comparative analysis and yardstick regulation. Concern focused on the quality of data and that any revised mechanism would need to function in a consistent and transparent manner.

1.4 PESs generally supported continuing with the present range of excluded service categories and pass-through of certain NGC transmission charges. The majority of PESs supported the proposal that the price control revenue driver should continue to be based on 50 per cent units and 50 per cent customer numbers.

1.5 There was support for measures aimed at ensuring electrical losses remained at an economic level. Two PESs suggested a switch to some form of benchmarking for losses together with appropriate incentives to achieve best practice.

1.6 PESs were concerned to ensure there was recognition for legitimately incurred costs in any revised arrangements for separation. The majority of PESs supported the retention of metering assets within distribution. A number of PESs supported the use of a tendering process to secure the meter reading service of last resort.

Operating Costs

1.7 A number of PESs agreed that those companies with the greatest forecasting error were the same companies that revealed the greatest apparent efficiency improvements. PESs suggested that further

opportunities for efficiency improvements in distribution were severely restricted. Two PESs said that increases in non controllable costs, such as network rates and provision of DMS, could cancel the effect of any future efficiency savings.

1.8 PESs criticised the approach adopted by Ofgem's consultants to reallocate costs between distribution and supply. A number of PESs said that turnover was an inappropriate measure to use to allocate costs between the two businesses and that the elimination of margins on transactions with affiliates was inappropriate.

1.9 The majority of PESs supported the use of regression analysis for comparing the performance of companies operating costs and capital expenditure. Most PESs supported the modelling of total costs, while a few PESs proposed separate modelling of operating and capital costs. A number of PESs suggested changes to the regression analysis and or that greater weight should be given to regional factors.

1.10 All PESs expressed some concern at the approach Ofgem consultants appeared to be taking to assess the efficient level of distribution operating costs. The approach was criticised for lacking transparency, having insufficient focus on outputs and as being too simplistic.

Capital Expenditure

1.11 A number of PESs commented that differences between forecast and actual capital expenditure were due to economic and other external factors outside their control. Some supported strengthening the incentives for capital expenditure efficiencies.

1.12 Some PESs suggested that regulation should focus on outputs, others that there should be an explicit regulatory contract for capital expenditure. A number of PESs opposed any clawback of past capital underspends.

Quality of Supply

1.13 Most PESs supported a common basis for reporting quality improvements and expenditure, with systems to provide consistent and reliable data.

1.14 Many PESs suggested company specific levels for targets in order to take account of such factors as sparsity and network length. One PES suggested the use of a target bandwidth. All PESs supported a higher priority for worse served customers, but the introduction of targets would depend on having robust measurement systems in place.

1.15 A number of PESs said that the severe weather exemption should be retained. A few PESs said that reporting programmes for transient interruptions could not be justified. Several PESs supported the inclusion

of capital expenditure allowances which related specifically to quality improvements provided measurements and targets were clearly defined.

1.16 A number of PESs were opposed to the requirement to make Guaranteed Standard payments automatic, mainly because of the additional costs involved in changes to customer record systems. One PES said that it already made automatic payments.

1.17 There was opposition to a reduction of the period of interruption after which Guaranteed Standards Payments were due from 24 to 12 hours as it would not be achievable. Some PESs suggested a reduction to 18 hours, others an Overall Standard based on 12 hour restoration performance. Many PESs supported the principle of a new standard for telephone answering.

1.18 Several PESs opposed the requirement to underground 5 per cent of the HV network.

Financial Issues

1.19 PESs were concerned about certain aspects of the approach to estimating the cost of capital. There was support for the assumption of 50 per cent gearing, although a few PESs recommended a level of 40 per cent. Several PESs said that a credit rating of BBB was too low, an A rating represented a reasonably efficient capital structure.

1.20 A majority of PESs said the proposed range of 2.0 - 2.5 per cent for risk free rate was too low. Some PESs suggested that the debt premium range was inconsistent with assumed gearing and credit rating. PESs said that estimates for the risk free rate should be based on longer term averages rather than present market rates

1.21 There was support for the notion of allowing for a premium on embedded debt but the allowance in the May consultation paper did not adequately reflect nominal interest rates on long term debt. Some PESs said that company specific adjustments would be more appropriate than an adjustment to the overall cost of capital.

1.22 PESs generally supported the use of the capital asset pricing model to estimate the cost of equity capital. However PESs preferred a long term view of a risk free rate and equity risk premium in line with MMC decisions. Three PESs said it was inappropriate to use evidence from the water and gas industries.

1.23 PESs concluded that the evidence available did not justify a reduction in the 7 per cent rate of cost of capital used in previous reviews.

1.24 All PESs supported the retention of the 15 per cent uprate to flotation assets. There was also support for the use of a rolling adjustment to the regulatory asset base for actual capital expenditure and for the adjustment to depreciation profiles.

Views of Electricity Consumers' Council

Form of Control

1.25 ECCs were broadly supportive of the principles in the May consultation paper. RPI-X regulation should continue with enhancements to strengthen efficiency incentives and reduce the emphasis on periodic price reviews. However, several ECCs supported Error Correction Mechanisms and some advocated a shorter duration period for the price control.

1.26 There was support for the development of yardstick regulation, greater emphasis on comparative analysis and regular monitoring of distribution business performance. They stressed the need for increasing transparency and reducing uncertainty in the regulatory process. A few ECCs said that PPM surcharges should not be treated as an excluded service. There was general support for continuing with the present revenue driver, although two respondents said further analysis of the issues was required.

1.27 Several ECCs supported the suggestion that ownership of metering assets should remain with the distribution business. A separate element in the price control was necessary to cover this activity.

1.28 A number of ECCs suggested the need for further measures on energy efficiency and the reduction of electrical losses. Some recommended that capital expenditure over the next price control should include an element aimed at reducing distribution losses.

Operating Costs

1.29 ECCs said that PES forecasts of controllable operating costs should be treated with caution in the light of disparities between forecasts and actuals in the last price control period.

1.30 There was support for the work by Ofgem's consultants to put distribution costs on a common basis by adjusting for capitalisation policy, allocations, attributions and recharges. A few ECCs said the percentage of corporate costs remaining in distribution was too high, others commented that regional adjustments should be the exception rather than the rule.

Capital Expenditure

1.31 A number of ECCs were concerned about past underspends and the bias in expenditure towards the end of a review period. Several were concerned as to whether past underspends reflected genuine efficiencies. They welcomed the modelling of load and non load related expenditure which should facilitate a more robust evaluation of company forecasts and performance. There was support for penalties particularly where there was evidence of deliberate distortion in the phasing of capital expenditure programmes.

1.32 A number of ECCs recommended quarterly reports to explain achievements and cost effectiveness compared with original forecasts. League tables of comparative performance on outputs should be published to incentivise companies.

Quality of Supply

1.33 There was support for a common basis and robust measurement systems for reporting quality of supply statistics so that meaningful inter-company comparisons could be made. Many welcomed an increased focus on worse served customers, suggesting that targets should be set. A few ECCs proposed setting targets for improvements in quality of supply in a shorter period than five years.

1.34 The majority of ECCs supported a requirement to make Guaranteed Standards payments automatic. There was support for retaining the severe weather exemption, but the definition of "severe" needed to be clarified. There was support for a reduction of the period of interruption after which a Guaranteed Standards payment was due from 24 to 12 hours, although a few ECCs suggested an 18 hour reduction. There was widespread support for the introduction of a proposed new telephone answering standard.

Financial Issues

1.35 Where ECCs commented there was support for Ofgem's approach to the cost of capital and asset valuation. There was support for the calculation of the different components of cost of capital, although one respondent cautioned against relying on spot rates preferring the trend over the last five years as a more reliable indicator. Where mentioned ECCs supported a consistent approach to asset valuation; smoothing depreciation profiles after 2000; and a rolling adjustment to the regulatory asset base.

Views of Other parties

Form of Control

1.36 There was general support for RPI-X type price controls, with an increased emphasis on comparative analysis and assessment. However, one respondent suggested it would be premature to introduce a system of yardstick regulation. Several respondents stressed the need for increased transparency. A few respondents supported the introduction of Error Correction Mechanisms.

1.37 Three respondents wanted EHV charges included in the price control. Two respondents suggested that PPM surcharges should not be treated as an excluded service. Two respondents recommended a review of the 50 per cent unit and 50 per cent customer weighting in the revenue driver.

Operating Costs

1.38 A number of respondents said that PES forecasts should be scrutinised carefully. Where mentioned there was support for the proposed adjustments to operating costs. Several respondents suggested that the adjustments were too low, particularly for corporate costs. Two respondents claimed there was scope for further significant reductions in distribution operating costs.

Capital Expenditure

1.39 Several respondents recommended a robust analysis of PES forecasts in the light of their previous record. One respondent said that Ofgem should publish information on the extent to which companies had distorted the phasing of capital expenditure programmes. One respondent recommended rolling operating and capital expenditure adjustments to remove distortions in spending. Three respondents recommended embedded generation and demand management as an alternative means of reducing capital expenditure.

Quality of Supply

1.40 Six of the eight respondents who commented on quality of supply issues supported a common format for reports and a tightening of standards. A few respondents advocated cost benefit assessment of improvements.

1.41 Where comments were made, there was support for the imposition of performance improvement targets and changes to Guaranteed and Overall Standards of Performance, and the application of penalties where quality of supply levels fell below acceptable standards. Three

respondents said that business customers should be compensated for interruptions to supply.

Financial Issues

1.42 There was a mixture of views on the cost of capital. Some expressed concern at Ofgem's method. The use of present market data to estimate the risk free rate and equity risk premium was criticised. Other respondents stressed the low risk nature of the distribution business and supported correspondingly low estimates for the cost of capital.

1.43 Several respondents suggested that the impact on the cost of capital of removing the uprate to vesting assets had been overstated.

LIST OF RESPONDENTS TO THE 20 MAY 1999 CONSULTATION PAPER

1 Public Electricity Suppliers

East Midlands Electricity
Eastern Electricity
London Electricity
Manweb
Midlands Electricity
Northern Electric
NORWEB
Scottish & Southern Energy
SEEBOARD
Southern Western Electric
SWALEC
Yorkshire Electricity
ScottishPower

2 Electricity Consumers' Committees

East Midlands ECC
Eastern ECC
London ECC
Merseyside and North Wales ECC
Midlands ECC
North East ECC
North West ECC
South East ECC
South Wales ECC
South West ECC
Southern ECC
Yorkshire ECC
North Scotland ECC
National Electricity Consumers' Council

3 Other Respondents

Association of Electricity Producers
British Energy Generation
British Gas Trading
British Steel
Consumers' Association
Energy Intensive Users Group
Energy Saving Trust
Enron Capital & Trade Resources
Independent Energy UK
Mr. Ralph Turvey
RJB Mining (UK) Ltd

National Consumer Council
National Grid Company plc
Northumbrian Water Group
Severn Trent Water
Thames Water Utilities
Utility Buyers Forum
UMIST
Mr. Yogi Dutta

REGIONAL ADJUSTMENTS TO OPERATING COSTS

The May consultation paper set out regional adjustments for the costs of London, ScottishPower and Hydro-Electric.

The adjustment for London related to the higher labour costs associated with operating a distribution network in central London. Data taken from the New Earnings Survey indicated that London's costs might be 16 per cent above average, giving an adjustment of about £8 million. PKF have also considered London specific cost factors and concluded an adjustment of about £8 million is appropriate.

It is appropriate to adjust the operating costs of the two Scottish PESs to reflect the fact that 132 kV system is part of the transmission business rather than their distribution business. In the May consultation paper the 132 kV adjustment was set at £5 million for ScottishPower and £3.5 million for Hydro-Electric. Further analysis indicates that an adjustment for the operating costs associated with running the 132 kV system is around £6.1 million for ScottishPower and around £3.2 million for Hydro-Electric. Those adjustments were calculated by estimating the proportion of transmission operating costs attributable to the 132 kV system, as set out in Table 1 below.

TABLE 1: TRANSMISSION BUSINESS OPERATING COSTS ASSOCIATED WITH THE 132 kV SYSTEM £MILLION (19997/98 PRICES)

Operating cost category	Transmission business operating costs attributed to the 132 kV system
ScottishPower	
Repairs and maintenance	3.8
Non-capitalised planning and construction	0.8
System control	0.7
Wayleaves	0.2
Insurance	0.3
Corporate overheads	0.4
Other	-
Total	6.1
Hydro-Electric	
Repairs and maintenance	1.4
Non-capitalised planning and construction	0.2
System control	0.5
Wayleaves	0.1
Insurance	0.3
Corporate overheads	0.5
Other	0.2
Total	3.2

DISTRIBUTION BUSINESS COST DRIVERS

The 20 May consultation paper outlined the specification of the composite variable. Chapter 3 explained that further analysis had been undertaken on the appropriate weighting to be attached to customer numbers, units distributed and length of network. This looks at operating cost processes and splits these between fixed and variable costs. Fixed costs include all corporate overheads, a proportion of some of the operating cost processes and IT software costs. The remaining, variable costs, are then allocated a cost driver. This is shown in detail in Table 1.

TABLE 1: SPLIT OF VARIABLE COSTS ACROSS DISTRIBUTION BUSINESS COST DRIVERS

Operating cost categories	PES Average	Customer numbers	Units distributed	Length of network
Engineering costs:				
Repairs and maintenance	30.0	10	10	10
Non-capitalised planning and construction	2.7	0.9	0.9	0.9
System control	2.0	2.0		
Customer meter operation	6.3	6.3		
Advertising and marketing	0.7	0.7		
Customer records	2.2	2.2		
Wayleaves	2			2
Insurance	2.3		1.2	1.2
Other	1.9	0.6	0.6	0.6
Total	50.1	22.7	12.7	14.7
% Split		45	25	29

The percentage split of costs indicates that around 45 per cent of variable costs are driven by customer numbers, 25 per cent by units distributed and 29 per cent by length of network. In calculating the composite variable it is assumed that the weighting attached to customer numbers is 0.5, with 0.25 attached to both units distributed and length of network. The calculation of the composite variable is shown in the following tables.

TABLE 2: PES NETWORK DATA FOR 1997/98

PES	Customer numbers 1997/98 000s	Regulated Units delivered GWh	Units per customer	Units deviation from average dU	dU/U	b*dU/U
Eastern	3156	30432	9.6	-0.4	-0.039	-0.010
East Midlands	2310	25430	11.0	1.0	0.097	0.024
London	2001	21279	10.6	0.6	0.060	0.015
Manweb	1387	13458	9.7	-0.3	-0.033	-0.008
Midlands	2256	24649	10.9	0.9	0.089	0.022
Northern	1472	13106	8.9	-1.1	-0.113	-0.028
NORWEB	2211	22545	10.2	0.2	0.016	0.004
SEEBOARD	2108	17435	8.3	-1.8	-0.176	-0.044
Southern	2650	26527	10.0	0.0	-0.002	-0.001
SWALEC	977	8722	8.9	-1.1	-0.110	-0.028
South Western	1332	13041	9.8	-0.2	-0.024	-0.006
Yorkshire	2079	21163	10.2	0.1	0.015	0.004
ScottishPower	1853	19453	10.5	0.5	0.046	0.012
Hydro-Electric	636	7492	11.8	1.7	0.174	0.044
Average U			10.0			

Notes

1. The value of b = 0.25

TABLE 3: PES NETWORK DATA FOR 1997/98

PES	Customer numbers 1997/98 000s	Length of network km	Length per customer	Length deviation from average dL	dL/L	g*dL/L
Eastern	3156	89304	28.3	-3.0	-0.096	-0.024
East Midlands	2310	65846	28.5	-2.8	-0.090	-0.022
London	2001	29798	14.9	-16.4	-0.524	-0.131
Manweb	1387	45434	32.8	1.4	0.046	0.012
Midlands	2256	59498	26.4	-4.9	-0.158	-0.039
Northern	1472	41893	28.5	-2.8	-0.091	-0.023
NORWEB	2211	58010	26.2	-5.1	-0.162	-0.041
SEEBOARD	2108	44745	21.2	-10.1	-0.322	-0.081
Southern	2650	71807	27.1	-4.2	-0.135	-0.034
SWALEC	977	32529	33.3	2.0	0.063	0.016
South Western	1332	52298	39.3	8.0	0.254	0.064
Yorkshire	2079	54753	26.3	-5.0	-0.159	-0.040
ScottishPower	1853	63835	34.4	3.1	0.100	0.025
Hydro-Electric	636	45252	71.2	39.8	1.272	0.318
Average L			31.3			

Notes:

1. The value of g = 0.25

TABLE 4: PES ADJUSTED CUSTOMER NUMBERS FOR 1997/98

PES	Customer numbers 1997/98 000s	Adjustment factors		1 + b*dU/U + g*dL/L	Adjusted customer numbers 000s
		b*dU/U	g* dL/L		
Eastern	3156	-0.010	-0.024	0.966	3049
East Midlands	2310	0.024	-0.022	1.002	2314
London	2001	0.015	-0.131	0.884	1769
Manweb	1387	-0.008	0.012	1.003	1392
Midlands	2256	0.022	-0.039	0.983	2217
Northern	1472	-0.028	-0.023	0.949	1397
NORWEB	2211	0.004	-0.041	0.964	2130
SEEBOARD	2108	-0.044	-0.081	0.876	1846
Southern	2650	-0.001	-0.034	0.966	2559
SWALEC	977	-0.028	0.016	0.988	966
South Western	1332	-0.006	0.064	1.057	1409
Yorkshire	2079	0.004	-0.040	0.964	2004
ScottishPower	1853	0.012	0.025	1.037	1921
Hydro-Electric	636	0.044	0.318	1.362	866

ANNEX 4

CAPITAL EXPENDITURE AND CAPITALISATION POLICY

		Adjustments				
Company	**Companies' '98 updated forecast**	**Non-Op IT**	**Capitalisation**	**Recharges**	**Total**	**Adjusted forecasts**
Eastern	737.9	0.0	-2.8	0.0	-2.8	735.1
East Midlands	488.1	-11.3	6.5	-0.9	-5.7	482.4
London	510.6	-17.1	-2.0	-7.8	-26.9	483.7
Manweb	353.2	-17.7	-4.1	0.0	-21.8	331.4
Midlands	476.7	-28.0	-25.0	0.0	-53.0	423.7
Northern	300.2	0.0	-2.0	-4.9	-6.9	293.3
NORWEB	503.8	0.0	-31.5	0.0	-31.5	472.3
SEEBOARD	362.7	-65.8	-42.9	0.0	-108.7	254.0
Southern	736.3	0.0	-38.8	-6.4	-45.2	691.1
SWALEC	349.1	0.0	-22.0	-7.4	-29.4	319.7
South Western	369.5	-10.0	-22.0	-4.8	-36.8	332.7
Yorkshire	563.4	0.0	-45.6	-3.0	-48.6	514.8
Hydro-Electric	304.60	0.0	-12.5	0.0	-12.5	303.0
ScottishPower	426.3	-18.1	-25.9	-8.9	-52.8	373.4
All 14 companies	6482.10	-168	-270.6	-44.1	-482.6	5999.5
All 12 companies	5751.2	-149.9	-232.2	-35.2	-417.3	5333.9

		Adjustments				
Company	**Companies' 2000 forecast**	**Non-Op IT**	**Capitalisation**	**Recharges**	**Total**	**Adjusted forecasts**
Eastern	1049.1	0.0	-7.0	0.0	-7.0	1042.1
East Midlands	698.0	-6.4	6.5	-0.9	-0.8	697.2
London	532.5	-1.2	-5.0	-7.8	-14.0	518.5
Manweb	431.6	-23.0	-4.5	0.0	-27.5	404.1
Midlands	485.4	0.0	-25.0	0.0	-25.0	460.4
Northern	355.7	0.0	-2.0	-8.3	-10.3	345.4
NORWEB	871.4	-36.1	-21.2	0.0	-57.3	814.1
SEEBOARD	389.9	-27.4	-52.3	0.0	-79.7	310.2
Southern	745.7	0.0	-38.8	-6.4	-45.2	700.5
Swalec	319.0	0.0	-22.0	-9.3	-31.3	287.7
South Western	350.2	-2.1	-15.3	-4.8	-22.1	328.0
Yorkshire	538.9	0.0	-76.0	-3.0	-79.0	459.9
Hydro-Electric	300.1	0.0	-9.4	0.0	0.0	300.1
ScottishPower	490.5	-18.5	-29.5	-8.9	-56.8	433.6
All 14 companies	7558.0	-114.6	-301.5	-49.3	-456.2	7092.6

Note: Recharges were previously included under Capitalisation adjustments.

Totals may not add due to rounding.

SPECIMEN CALCULATIONS

The following tables set out an example of how the assumptions on costs and returns can be combined to calculate a price control for each PES's distribution business. The level of operating and capital costs is consistent with the high case assumptions described in Chapters 2 and 3 respectively. The cost of capital is assumed to be 6½ per cent and the opening asset values and depreciation profiles are consistent with the assumptions in Chapter 5. The resulting price controls are broadly consistent with the low end of the range for price control revenue described in Chapter 6. It should be understood that this analysis is purely illustrative and should not be taken as an indication of the likely final outcome.

In each table, line 1 shows network capital expenditure and line 2 a projection of connection charge receipts. As connection charge receipts fall outside the scope of the price control, the price control is only required to fund net network capital expenditure, as shown in line 3.

The calculation of the asset base is shown in lines 4 to 7. In each year depreciation is subtracted from and net network capital expenditure is added to the opening value, to give a closing value. The closing value in any year then becomes the next year's opening value.

Lines 8 to 12 show costs and returns. The return is calculated by applying a 6½ cost of capital to the average of the opening and closing asset values shown in lines 4 and 7 respectively. The depreciation in line 9 is as shown in line 5. Line 10 shows operating costs and line 11 the total of lines 8 to 10. These totals are discounted at the cost of capital to give a present value in each year and a total of these present values (shown to the left).

Distribution revenue is then sculpted to give the same total present value, and then broken down into excluded service and price control revenue, as shown in lines 14 and 13 respectively. Price control revenue is profiled between years by assuming an X of 3 and making the residual adjustment to P_0. These values are shown in line 17.

Line 18 shows the difference in distribution revenue between 1999/00, the last year the existing price control and its average level over the next price control period (2000/01 to 2004/05). Lines 19-22 attribute this difference to the four main factors driving changes in revenue over time (forecast variance, return, depreciation and operating costs).

Forecast variance (line 19) is the difference in actual 1999/00 price control revenue compared with the assumptions made in setting the present price control for return, depreciation and operating costs. It results primarily from factors such as

differences in demand growth and the level of excluded service revenue. Return (line 20) shows the difference in revenue, resulting from reducing the cost of capital, from 7 to 6½ per cent and changes in the asset base over time. Depreciation (line 21) shows the changes resulting from the interaction of assumptions about asset lives with the level of capital expenditure. Line 22 shows the changes resulting from the different assumptions about operating costs.

In general the changes resulting from assumptions relating to operating costs explain most of the overall change in distribution revenue. Lines 23 to 26 provide a further analysis of the operating cost changes. These relate to the reduction in operating costs already made by PESs (line 23), the reallocation and redistribution of costs from distribution to supply (line 24), adjustments for margins on recharges (line 25) ad the projections of additional reductions in operating costs for the period 1997/98 to 2004/05 (line 26).

There is an additional factor explaining the change in Hydro-Electric's distribution revenue, which is Hydro Benefit. This is discussed in Chapter 6.

The estimates of the cost transfers from distribution to supply set out in these tables may differ slightly from those set out in Chapter 6, which relate to price control revenue rather than average distribution business revenue

TABLE 1: SPECIMEN CALCULATION OF A PRICE CONTROL FOR EASTERN (£MILLION 1997/98 PRICES)

		1999/00	2000/01	2001/02	2002/03	2003/04	2004/05
1 Network capex			163	168	177	181	177
2 Connection			-46	-47	-50	-51	-49
charges			117	121	127	130	128
3 Net network capex							
			1047	1067	1088	1111	1133
4 Opening asset			-97	-100	-104	-108	-90
value			117	121	127	130	128
5 Depreciation			1067	1088	1111	1133	1171
6 Net network capex							
7 Closing asset			69	70	71	73	75
values			97	100	104	108	90
			124	124	125	125	125
8 Return			290	294	300	305	290
9 Depreciation	1258		278	266	254	243	217
10 Operating costs							
11 Total		363	266	261	257	252	247
12 PV of totals		32	37	36	36	36	36
		395	303	298	293	288	283
13 Price control rev	1258		293	271	250	231	213
14 Excluded revenue							
15 Total revenue							
16 PV of totals							

17 P_o's and X values (assuming demand growth of 1.25% pa) — P_o 28% X3%

18 Revenue reduction 99/00 to average 00/01-04/05 — 26%

Analysis of revenue reduction

19 Forecast variances	-3%
20 Return	0%
21 Depreciation	0%
22 Operating costs	29%

Analysis of operating costs

23 Achieved operating costs	20%
24 Cost transfers	9%
25 Recharges	0%
26 Forward operating costs	0%

TABLE 2 : SPECIMEN CALCULATION OF A PRICE CONTROL FOR EAST MIDLANDS (£MILLION 1997/98 PRICES)

		1999/00	2000/01	2001/02	2002/03	2003/04	2004/05
1 Network capex			89	94	95	95	94
2 Connection charges			-38	-36	-36	-38	-38
3 Net network capex			51	58	60	57	56
4 Opening asset value			912	889	872	855	834
5 Depreciation			-74	-75	-77	-79	-80
6 Net network capex			51	58	60	57	56
7 Closing asset values			889	872	855	834	809
8 Return			59	57	56	55	53
9 Depreciation			74	75	77	79	80
10 Operating costs			108	105	103	103	98
11 Total			240	237	236	237	232
12 PV of totals	1006		230	214	200	189	173
13 Price control rev		284	207	203	200	196	193
14 Excluded revenue		38	34	34	34	34	34
15 Total revenue		322	241	237	234	230	226
16 PV of totals	1004		234	216	200	184	170

17 $P_{o's}$ and X values (assuming demand growth of 1.25% pa) — P_o 28% X3%

18 Revenue reduction 99/00 to average 00/01-04/05 — 27%

Analysis of revenue reduction

19 Forecast variations	5%
20 Return	3%
21 Depreciation	0%
22 Operating costs	19%

Analysis of operating costs

23 Achieved operating costs	9%
24 Cost transfers	8%
25 Recharges	0%
26 Forward operating costs	3%

TABLE 3: SPECIMEN CALCULATION OF A PRICE CONTROL FOR LONDON (£MILLION 1997/98 PRICES)

		1999/00	2000/01	2001/02	2002/03	2003/04	2004/05
1 Network capex			98	98	100	103	101
2 Connection charges			-23	-22	-21	-19	-18
3 Net network capex			75	76	79	85	83
4 Opening asset value			847	857	867	877	891
5 Depreciation			-64	-66	-69	-71	-73
6 Net network capex 7			75	76	79	85	83
Closing asset values			857	867	877	891	900
8 Return			55	56	57	57	58
9 Depreciation			64	66	69	71	73
10 Operating costs			99	98	95	92	90
11 Total			219	220	220	221	221
12 PV of totals	937		212	199	186	175	165
13 Price control rev		276	196	193	189	185	182
14 Excluded revenue		32	30	30	29	29	29
15 Total revenue		309	225	222	218	215	211
16 PV of totals	939		219	202	187	172	159

17 P_o's and X values (assuming demand growth of 1.25% pa)		P_o 30% X3%
18 Revenue reduction 99/00 to average 00/01-04/05		29%
Analysis of revenue reduction		
19 Revenue headroom	-1%	
20 Return	2%	
21 Depreciation	0%	
22 Operating costs	28%	
Analysis of operating costs		
23 Achieved operating costs	8%	
24 Cost transfers	15%	
25 Recharges	0%	
26 Forward operating costs	5%	

TABLE 4: SPECIMEN CALCULATION OF A PRICE CONTROL FOR MANWEB (£MILLION 1997-98 PRICES)

		1999/00	2000/01	2001/02	2002/03	2003/04	2004/05
1 Network capex			83	84	83	84	84
2 Connection charges			-20	-20	-20	-21	-21
3 Net network capex			63	63	62	63	63
4 Opening asset value			600	617	633	645	657
5 Depreciation			-46	-48	-50	-52	-54
6 Net network capex			63	63	62	63	63
7 Closing asset values			617	633	645	657	666
8 Return			40	41	42	42	43
9 Depreciation			46	48	50	52	54
10 Operating costs			74	72	71	69	68
11 Total			159	161	162	163	164
12 PV of totals	688		153	145	137	130	123
13 Price control rev		182	144	142	139	137	134
14 Excluded revenue		25	22	21	21	21	20
15 Total revenue		207	166	163	160	157	155
16 PV of totals	688		161	148	137	126	116

17 P_o's and X values (assuming demand growth of 1.25% pa)	P_O22%	X 3%
18 Revenue reduction 99/00 to average 00/01-04/05	23%	

Analysis of revenue reduction

19 Forecast variations	-2%
20 Return	2%
21 Depreciation	-1%
22 Operating costs	24%

Analysis of operating costs

23 Achieved operating costs	12%
24 Cost transfers	9%
25 Recharges	0%
26 Forward operating costs	4%

TABLE 5: SPECIMEN CALCULATION OF A PRICE CONTROL FOR MIDLANDS (£MILLION 1997/98 PRICES)

		1999/00	2000/01	2001/02	2002/03	2003/04	2004/05
1 Network capex			87	91	96	99	103
2 Connection charges			-12	-12	-13	-13	-13
3 Net network capex			75	79	83	86	89
4 Opening asset value			843	851	861	874	886
5 Depreciation			-67	-69	-71	-74	-76
6 Net network capex			75	79	83	86	89
7 Closing asset values			851	861	874	886	899
8 Return			55	56	56	57	58
9 Depreciation			67	69	71	74	76
10 Operating costs			113	109	105	102	98
11 Total			235	234	233	232	232
12 PV of totals	994		226	211	198	185	174
13 Price control rev		286	213	210	206	202	199
14 Excluded revenue		27	26	26	25	25	25
15 Total revenue		313	239	235	231	227	224
16 PV of totals	994		231	214	198	182	168

17 P_o's and X values (assuming demand growth of 1.25% pa) — P_o22% X3%

18 Revenue reduction 99/00 to average 00/01-04/05 — 26%

Analysis of revenue reduction

19 Revenue headroom	3%
20 Return	2%
21 Depreciation	0%
22 Operating Costs	21%

Analysis of operating costs

23 Achieved operating costs	9%
24 Cost transfers	5%
25 Recharges	0%
26 Forward operating costs	7%

TABLE 6: SPECIMEN CALCULATION OF A PRICE CONTROL FOR NORTHERN (£MILLION 1997/98 PRICES)

		1999/00	2000/01	2001/02	2002/03	2003/04	2004/05
1 Network capex			63	66	69	69	73
2 Connection charges			-17	-17	-18	-18	-19
3 Net network capex			46	49	51	51	55
4 Opening asset value			489	495	502	510	517
5 Depreciation			-40	-42	-43	-45	-38
6 Net network capex			46	49	51	51	55
7 Closing asset values			495	502	510	517	534
8 Return			32	32	33	33	34
9 Depreciation			40	42	43	45	38
10 Operating costs			81	78	75	73	70
11 Total			153	152	151	151	143
12 PV of totals	640		148	138	128	120	107
13 Price control rev		181	137	135	132	130	128
14 Excluded revenue		17	17	17	17	16	16
15 Total revenue		198	154	152	149	146	144
16 PV of totals	640		150	138	127	117	108

17 P_o's and X values (assuming demand growth of 1.25% pa)		P_o 25% X3%
18 Revenue reduction 99/00 to average 00/01-04/05		25%
Analysis of revenue reduction		
19 Forecast variances	-4%	
20 Return	3%	
21 Depreciation	1%	
22 Operating costs	25%	
Analysis of operating costs		
23 Achieved operating costs	5%	
24 Cost transfers	7%	
25 Recharges	6%	
26 Forward operating costs	7%	

TABLE 7: SPECIMEN CALCULATION OF A PRICE CONTROL FOR NORWEB (£MILLION 1997/98 PRICES)

		1999/00	2000/01	2001/02	2002/03	2003/04	2004/05
1 Network capex			86	94	98	98	95
2 Connection charges			-10	-12	-11	-11	-10
3 Net network capex			76	82	86	87	85
4 Opening asset value			721	715	730	768	803
5 Depreciation			-83	-67	-48	-52	-57
6 Net network capex			76	82	86	87	85
7 Closing asset values			715	730	768	803	831
8 Return			47	47	49	51	53
9 Depreciation			83	67	48	52	57
10 Operating costs			108	103	98	93	89
11 Total			237	217	194	197	199
12 PV of totals	894		229	196	165	156	149
13 Price control rev		261	186	182	179	176	173
14 Excluded revenue		32	29	29	29	29	29
15 Total revenue		294	215	211	208	205	201
16 PV of totals	894		208	192	178	164	152

17 P_o' s and X values (assuming demand growth of 1.25% pa)		P_o 30% X3%
18 Revenue reduction 99/00 to average 00/01-04/05		29%
Analysis of revenue reduction		
19 Revenue headroom	1%	
20 Return	0%	
21 Depreciation	7%	
22 Operating costs	21%	
Analysis of operating costs		
23 Achieved operating costs	3%	
24 Cost transfers	8%	
25 Recharges	1%	
26 Forward operating costs	9%	

TABLE 8: SPECIMEN CALCULATION OF A PRICE CONTROL FOR SEEBOARD (£MILLION 1997/98 PRICES)

		1999/00	2000/01	2001/02	2002/03	2003/04	2004/05
1 Network capex			72	73	73	74	73
2 Connection charges			-18	-15	-14	-13	-12
3 Net network capex			54	58	59	61	61
4 Opening asset value			459	469	481	492	513
5 Depreciation			-45	-46	-48	-40	-36
6 Net network capex			54	58	59	61	61
7 Closing asset values			469	481	492	513	538
8 Return			30	31	32	33	34
9 Depreciation			45	46	48	40	36
10 Operating costs			85	84	83	83	82
11 Total			160	161	163	156	152
12 PV of totals	676		154	146	138	124	114
13 Price control rev		217	139	137	134	132	130
14 Excluded revenue		26	23	23	23	23	22
15 Total revenue		243	163	160	157	155	152
16 PV of totals	676		158	145	134	124	114

17 P_o s and X values (assuming demand growth of 1.25% pa)		P_o37% X3%
18 Revenue reduction 99/00 to average 00/01-04/05		35%
Analysis of revenue reduction		
19 Forecast variations	-2%	
20 Return	6%	
21 Depreciation	4%	
22 Operating costs	27%	
Analysis of operating costs		
23 Achieved operating costs	13%	
24 Cost transfers	13%	
25 Recharges	0%	
26 Forward operating costs	1%	

TABLE 9: SPECIMEN CALCULATION OF A PRICE CONTROL FOR SOUTHERN (£MILLION 1997/98 PRICES)

		1999/00	2000/01	2001/02	2002/03	2003/04	2004/05
1 Network capex			114	112	113	111	109
2 Connection charges			-17	-16	-16	-16	-16
3 Net network capex			97	95	96	95	92
4 Opening asset value			1307	1310	1309	1305	1297
5 Depreciation			-94	-97	-100	-103	-106
6 Net network capex			97	95	96	95	92
7 Closing asset values			1310	1309	1305	1297	1284
8 Return			85	85	85	85	84
9 Depreciation			94	97	100	103	106
10 Operating costs			105	105	105	105	105
11 Total			284	287	290	292	294
12 PV of totals	1228		273	259	245	232	220
13 Price control rev		335	269	264	259	254	250
14 Excluded revenue		29	27	27	27	27	26
15 Total revenue		364	296	291	286	281	276
16 PV of totals	1228		287	264	244	225	208

17 P_o's and X values (assuming demand growth of 1.25% pa)	P_o21%	X3%
18 Revenue reduction 99/00 to average 00/01-04/05	21%	
Analysis of revenue reduction		
19 Forecast variances	-3%	
20 Return	2%	
21 Depreciation	-2%	
22 Operating costs	24%	
Analysis of operating costs		
23 Achieved operating costs	20%	
24 Cost transfers	3%	
25 Recharges	1%	
26 Forward operating costs	0%	

TABLE 10: SPECIMEN CALCULATION OF A PRICE CONTROL FOR SWALEC (£MILLION 1997/98 PRICES)

		1999/00	2000/01	2001/02	2002/03	2003/04	2004/05
1 Network capex			46	47	45	45	43
2 Connection charges			-5	-5	-5	-5	-5
3 Net network capex			41	42	40	40	38
4 Opening asset value			496	495	501	507	510
5 Depreciation			-42	-35	-34	-36	-38
6 Net network capex			41	42	40	40	38
7 Closing asset values			495	501	507	510	510
8 Return			32	32	33	33	33
9 Depreciation			42	35	34	36	38
10 Operating costs			63	61	60	58	57
11 Total			136	129	127	127	128
12 PV of totals	552		131	116	107	101	96
13 Price control rev		155	113	110	109	107	105
14 Excluded revenue		23	20	20	20	20	20
15 Total revenue		178	133	131	128	126	124
16 PV of totals	552		129	119	110	101	93

17 P_o 's and X' values (assuming demand growth of 1.25% pa) — P_o29 % X3%

18 Revenue reduction 99/00 to average 00/01-04/05 — 28%

Analysis of revenue reduction

19 Forecast variations	1%
20 Return	1%
21 Depreciation	4%
22 Operating Costs	22%

Analysis of operating costs

23 Achieved operating costs	11%
24 Cost transfers	6%
25 Recharges	2%
26 Forward operating costs	3%

TABLE 11: SPECIMEN CALCULATION OF A PRICE CONTROL FOR SOUTH WESTERN (£MILLION 1997/98 PRICES)

		1999/00	2000/01	2001/02	2002/03	2003/04	2004/05
1 Network capex			75	77	76	74	75
2 Connection charges			-12	-12	-12	-12	-12
3 Net network capex			63	65	64	62	63
4 Opening asset value			626	643	660	674	684
5 Depreciation			-46	-48	-50	-52	-54
6 Net network capex			63	65	64	62	63
7 Closing asset values			643	660	674	684	693
8 Return			41	42	43	44	45
9 Depreciation			46	48	50	52	54
10 Operating Costs			75	73	72	70	68
11 Total			163	164	165	166	167
12 PV of totals	701		157	148	140	132	124
13 Price control revenue		193	155	153	150	147	145
14 Excluded revenue		15	13	13	13	13	13
15 Total revenue		208	169	166	163	160	158
16 PV of totals	701		164	151	139	129	119

17 P_o's and X values (assuming demand growth of 1.25% pa) — P_o 21% X 3%

18 Revenue reduction 99/00 to average 00/01-04/05 — 22%

Analysis of revenue reduction

19 Revenue headroom	-3%
20 Return	2%
21 Depreciation	-1%
22 Operating costs	24%

Analysis of operating costs

23 Achieved operating costs	14%
24 Cost transfers	5%
25 Recharges	1%
26 Forward operating costs	4%

TABLE 12: SPECIMEN CALCULATION OF A PRICE CONTROL FOR YORKSHIRE (£MILLION 1997/98 PRICES)

		1999/00	2000/01	2001/02	2002/03	2003/04	2004/05
1 Network capex			85	88	91	94	98
2 Connection charges			-29	-30	-29	-29	-30
3 Net network capex			56	58	62	65	67
4 Opening asset value			784	774	765	758	752
5 Depreciation			-66	-67	-69	-71	-73
6 Net network capex			56	58	62	65	67
7 Closing asset values			774	765	758	752	746
8 Return			51	50	49	49	49
9 Depreciation			66	67	69	71	73
10 Operating costs			98	95	92	90	87
11 Total			214	212	211	209	208
12 PV of totals	899		206	192	179	167	156
13 Price control rev		252	194	191	187	184	181
14 Excluded revenue		24	22	22	22	22	22
15 Total revenue		276	216	213	209	206	202
16 PV of totals	899		210	194	179	165	152

17 P_o's and X values — P_o 24% X3%
(assuming demand growth of 1.25% pa)

18 Revenue reduction 99/00 to average 00/01-04/05 — 24%

Analysis of revenue reduction

19 Forecast variations	-2%
20 Return	4%
21 Depreciation	0%
22 Operating costs	22%

Analysis of operating costs

23 Achieved operating costs	9%
24 Cost transfers	8%
25 Recharges	0%
26 Forward operating costs	5%

TABLE 13: SPECIMEN CALCULATION OF A PRICE CONTROL FOR SCOTTISHPOWER (£MILLION 1997/98 PRICES)

		1999/00	2000/01	2001/02	2002/03	2003/04	2004/05
1 Network capex			72	79	80	80	80
2 Connection charges			-17	-18	-18	-18	-18
3 Net network capex			55	61	62	62	63
4 Opening asset value			1267	1233	1203	1173	1141
5 Depreciation			-89	-91	-92	-94	-96
6 Net network capex			55	61	62	62	63
7 Closing asset values			1233	1203	1173	1141	1107
8 Return			81	79	77	75	73
9 Depreciation			89	91	92	94	96
10 Operating costs			102	101	100	99	98
11 Total			272	271	269	268	266
12 PV of totals	1145		261	244	228	213	199
13 Price control rev		270	240	235	231	227	223
14 Excluded revenue		36	36	35	35	35	35
15 Total revenue		305	275	271	266	262	258
16 PV of totals	1145		266	246	228	210	194

17 P_o's and X values (assuming demand growth of 1.25% pa) — P_O 13% x 3%

18 Revenue reduction 99/00 to average 00/01-04/05 — 13%

Analysis of revenue reduction

19 Forecast variations	3%
20 Return	3%
21 Depreciation	0%
22 Operating costs	7%

Analysis of operating costs

23 Achieved operating costs	-1%
24 Cost transfers	7%
25 Recharges	0%
26 Forward operating costs	1%

TABLE 14: SPECIMEN CALCULATION OF A PRICE CONTROL FOR HYDRO-ELECTRIC (£MILLION 1997/98 PRICES)

		1999/00	2000/01	2001/02	2002/03	2003/04	2004/05
1 Network capex			57	57	57	54	54
2 Connection charges			-4	-4	-4	-4	-4
3 Net network capex			53	53	53	50	50
4 Opening asset value			712	723	734	743	748
5 Depreciation			-41	-43	-44	-45	-47
6 Net network capex			53	53	53	50	50
7 Closing asset values			723	734	743	748	752
8 Return			47	47	48	48	49
9 Depreciation			41	43	44	45	47
10 Operating costs			57	56	55	54	53
11 Total			145	146	147	147	148
12 PV of totals	622		139	131	124	117	110
13 Price control rev		110	143	140	137	135	133
14 Excluded revenue		7	7	7	7	7	7
15 Total revenue		117	150	147	145	142	140
16 PV of totals	622		145	134	124	114	105
Hydro Benefit			-49	-48	-47	-46	-45
Adjusted price control rev			94	92	91	89	87

17 P_o's and X values (assuming demand growth of 1.25% pa)	P_o 15% X 3%
18 Revenue reduction 99/00 to average 00/01-04/05	16%
Analysis of revenue reduction	
Hydro Benefit	21%
19 Forecast variations	-4%
20 Return	1%
21 Depreciation	-4%
22 Operating costs	2%
Analysis of operating costs	
23 Achieved operating costs	-10%
24 Cost transfers	7%
25 Recharges	0%
26 Forward operating costs	5%