APPENDIX 2

FRONTIER ECONOMICS REPORTS

WORKSTREAM A: Regulatory Mechanisms for dealing with uncertainty

WORKSTREAM B: Balancing Incentives

The response from Northern Electric Distribution Ltd
and Yorkshire Electricity Distribution plc
to the Frontier Economics reports
and the specific issues raised in
Ofgem's open letter - 13 March 2003.

Contents of Appendix 2

1. FORMAT OF OUR RESPONSE 4

2. REGULATORY MECHANISMS FOR DEALING WITH UNCERTAINTY 5

Ofgem has invited views on the decision-making framework that has been developed to identify the most appropriate regulatory response to dealing with uncertainty, including its application to the various examples identified. 5

The problem of uncertainty 5

Diversifiable risks 6

Practical objections 6

Pure uncertainty 6

The need for more formal mechanisms to deal with uncertainty 8

Applications of the Framework 9

Ofgem has invited views on the best way of dealing with the uncertainty caused by distributed generation. 10

3. BALANCING INCENTIVES 12

Ofgem has invited views on the most appropriate balance between the strength of efficiency incentives provided to companies and the reflection of efficiency savings in prices paid by consumers and whether there should be any difference in the strength of incentives provided for opex and capex savings. 12

Benchmarking and Yardstick Approaches 12

Incentives for outperformance 14

Power of Incentives 15

Ofgem has invited views on the most appropriate way of incentivising companies to deliver a good quality and security of supply to consumers – including ways in which the existing IIP incentive scheme for the DNOs could be improved. 16

Generic Approaches 16

Improvements to the Existing IIP Regime 17

Contents (continued)

Ofgem has invited views on dealing with periodicity of incentives including the applicability to electricity and gas of the approach used by other regulators. 17

Ofwat's treatment of operating expenditure savings 17

Ofwat's treatment of capital expenditure savings 17

Comparison of the incentive mechanism introduced in Victoria, Australia 18

Calculation of incentive payment floors 18

Capital expenditure incentive payments 18

Ofgem has invited views on the most appropriate way of defining capital expenditure for a model of total costs. 19

Ofgem has invited views on how quality (and other outputs) could be best incorporated into an assessment of companies' efficiency. 19

1. FORMAT OF OUR RESPONSE

1. Appendix 2 to the NEDL and YEDL response provides comments on the Frontier Economics reports on *'Regulatory mechanisms for dealing with uncertainty'* and *'Balancing incentives'*.

2. The views provided are set out to consider in turn the issues raised by the reports produced by Frontier Economics which Ofgem particularly request comment on in their '*Open letter on developing network monopoly price controls and the next distribution price control review of the electricity distribution network operators (DNOs) – 13 March 2003'.*

3. The bold numbered paragraphs indicate comments which have been drawn out in the main response from Northern Electric Distribution Ltd and Yorkshire Electricity Distribution plc.

2. REGULATORY MECHANISMS FOR DEALING WITH UNCERTAINTY

Ofgem has invited views on the decision-making framework that has been developed to identify the most appropriate regulatory response to dealing with uncertainty, including its application to the various examples identified.

4. **We support the principle of the development of an overall framework to assist in determining the best regulatory response to uncertainty. The Frontier Economics work which sets out a high level framework of decision trees to determine the best regulatory response to uncertainty is a very valuable contribution to this debate.**

5. The work by Frontier Economics achieves the terms of reference defined by Ofgem to develop a framework to enable it to ask the right questions to determine the best regulatory response to uncertainty. We recognise and agree that the framework does not, and could not, represent a simple procedure to be followed to arrive at a single correct answer. Instead, it indicates what the range of solutions (or policy options) is likely to be.

6. It is important that Ofgem continue to develop the work on policy options for the key areas of uncertainty relevant to the DNO price control review. We support Ofgem's proposal for the *dealing with uncertainty* working group to use the framework developed by Frontier Economics to review the areas of uncertainty which have already been identified and then to discuss appropriate mechanisms for each.

7. It would be sensible for Ofgem to develop and consult on their policy approach for the key areas of uncertainty relevant to the DNO review by the summer and to consult on more detailed regulatory options by the end of the year. The approach to distributed generation is a key area where Ofgem and companies are already working together to examine policy options and detailed mechanisms. Ofgem intends to include an outline of the steps that could be taken in this area in their May 2003 *principles* document on developing price controls.

The problem of uncertainty

8. The Frontier Economics paper sets up a framework on the basis of the following argument (pages 2-3):

   - *'if prices adjust instead [of profits], the risk is passed to consumers – but in addition, incentives for the firm to reduce its controllable costs will almost certainly be weaker…';*
   - '*at the heart of regulation, therefore, is a tension between offering the firm incentives to reveal its efficient cost level, and offering it insurance against unforeseen events';*
   - *'if the insurance effect dominates, low-powered regulation (providing weak, or no incentives) is appropriate; if the incentive effect dominates, high-powered regulation is appropriate. The regulator's decision is driven by the degree of uncertainty and the firm's managers' risk-aversion.'; and*

- *'financially diversifiable risks have no effect on the cost of capital but can impose uncertainty on managers and can therefore be expected to affect incentives'.*

9. The analysis by Frontier oversimplifies the trade-offs involved. We believe that:

- exogenous cost shocks can be passed through without weakening incentives to reduce costs, provided some observable measure or price index for the costs in question is available (this is discussed further in the section below on the need for more formal mechanisms to deal with uncertainty); and
- to ensure that expected *ex post* returns match *ex ante* planning assumptions, regulatory formulae should be symmetric, or the expected impact of asymmetric formulae should be factored into allowed *ex ante* revenues. For example, the interaction of an asymmetric treatment of severe weather exemptions for guaranteed payments and random shocks due to weather events would be to reduce expected revenues from those assumed under the central planning assumptions.

Diversifiable risks

10. At a number of points in their analysis Frontier Economics argue that risks that are diversifiable do not add to the cost of capital. There are a number of problems with this assertion – both practical and theoretical.

Practical objections

11. The theory of capital markets that asserts that risks that may be diversified do not attract a higher return assumes that investors' portfolios may be fully diversified. In practice investors in the electricity sector do not have such diversified portfolios and, more importantly, it is not clear how they could do so given that three out of fourteen distribution licensees are 100 per cent owned by the French government and a further two are in private ownership. With such a constraint on diversifiability it is not realistic to assume that the assumptions behind the theory of capital markets are satisfied in practice. Risk placed on companies will add to the cost of equity since, in practice, it cannot be diversified away.

Pure uncertainty

12. Recent developments in economics and finance suggest three reasons why pure uncertainty, even if it is diversifiable, may be costly:

- pure uncertainty may raise investment hurdle rates, and raise entry and exit thresholds in an industry;
- pure uncertainty makes it harder for principals (owners) to monitor agents (managers) since it is more difficult to identify and reward the difference between good management and good luck; and
- pure uncertainty increases the risk that the free cash flow available to businesses will be inadequate to meet debt repayments.

13. Each of these is considered in turn:

Hurdle rates

14. When investment has the following characteristics:

- it entails sunk costs,
- there is uncertainty; and
- there is flexibility over the timing of investment,

waiting has a positive (option) value that investment decision-makers balance against the expected return. The value of waiting is analogous to a financial option value, and implies that uncertainty can raise required returns (investment hurdle rates). Note that the real option effect is unrelated to risk aversion, and applies whether the uncertainty in question is diversifiable or non-diversifiable.

15. This explains why firms often use hurdle rates substantially higher than the cost of capital in appraising investment decisions.

Principal-agent relationship

16. The performance of a firm can be improved in many situations by relating the pay of managers to the outcomes achieved. However, outcomes generally depend to some extent on factors that are outside the control of the firm or of the individual manager. Given that individual managers (as distinct from equity investors) are risk averse, basing pay too closely on variable outcomes is counter-productive. Analysis of this principal-agent problem shows that, for the efficient contract, the relationship between pay and profit is:

- inversely proportional to the variance of profit; and
- proportional to the responsiveness of profit to employee effort.

17. Empirical studies have validated the theoretical contention that managers' remuneration packages respond more to changes in costs (i.e. incentives are lower powered) the larger the fluctuations in costs. Managers with superior ability will also tend to seek opportunities where exogenous uncertainty is lower (in other sectors or countries) so that they can enjoy a package with a stronger performance pay element. Therefore, even if it is true that equity investors are not concerned with diversifiable risk, there is an overall detriment to the efficiency of the firm that arises from increasing risk even if it can, in principle, be diversified. This detriment is implicitly acknowledged at points in Frontier Economics' papers but at other points the incorrect inference could be drawn that increases in diversifiable risk are of no consequence.

Diversifiable risk and the cost of debt

18. Variance in cash flows can have an adverse impact on firms' ability to raise debt, thereby raising the overall cost of capital. This is because increased volatility of returns increases the risk of financial distress that in turn increases the probability of default. In practice this is true of risks that capital finance theory would suggest can be diversified by equity holders holding fully diversified portfolios. For example the credit rating agency, Moody's, has observed the increase in risk associated with comparator-based methods of regulation in the UK.[1]

19. For these reasons we conclude that the emphasis given by Frontier Economics to the diversifiability of risk and the claim that this does not affect the cost of capital is misplaced. Equity holders cannot fully diversify their risk. Additional risk, whether or not diversifiable in principle by equity holders, adds to the cost of debt, thereby increasing the cost of capital. Additional risk also interferes with the efficient operation of the firm because of its impact on managerial incentives and because of its impact on real options and hurdle rates.

The need for more formal mechanisms to deal with uncertainty

20. **There are currently no formal mechanisms whereby companies can be remunerated at or before the next price control review for costs of additional obligations (or changes to existing obligations) not known or identifiable at the time of the previous price review. We believe that Ofgem should consult on the potential for such mechanisms to be codified and then incorporated into a Licence modification.**

21. Frontier Economics propose a range of options for dealing with uncertainty but none of these deals with the mechanism for dealing with uncertainty arising during a price control period. Such mechanisms merit consideration as they can reduce regulatory risk from exogenous price shocks which were not anticipated, or not determinable, in advance. They need not weaken incentives for efficiency (provided some observable measure or price index for the costs in question is available). If retention periods are lengthened the development of such mechanisms will be even more important. If there is no mechanism for dealing with uncertainty arising during the price control period then a higher cost of capital will generally be required.

22. The Ofwat approach to this issue is to provide companies with incentives to perform efficiently together with a methodology that provides assurance that unexpected events or changes to outputs will not be so large as to outweigh the incentives to continue to improve efficiency. Part of this assurance is provided through the interim determination mechanism and the logging up and down processes.[2]

[1] See Moody's Investor Service, February 2001, *The UK Water Sector, Moody's Approach to Rating Highly-Leveraged Structures for Asset Ownership*, p6.

[2] These are described in more detail in the Ofwat consultation paper – *Logging up and down – Dealing with shortfalls in outputs and new requirements between periodic reviews* (June 2002).

23. We believe that Ofgem should consult on the merits of adopting a logging up process for the DNOs. We believe there could be benefits in adapting the water method to work with better incentive properties and to be applied *ex ante* rather than *ex post*. This could provide a valuable tool to have in place to deal with changes in cost drivers between reviews, particularly new capital requirements such as unforeseen distributed generation (DG) related expenditure.

24. We believe that important principles for consideration for such a mechanism include the following:

- the logging up process aims to put companies in the same financial position as if the obligation had been included in price limits at a periodic review. It also creates incentives for efficiency;
- where obligations are accepted for logging up, agreed costs should be remunerated. Retrospective reduction of agreed costs to actual costs creates disincentives and adds to regulatory risk;
- where capital costs are allowed for logging up, these can simply be added to the capital value, on which the company earns a return, from the point at which the investment was incurred. Companies therefore receive remuneration for the financing charges incurred in the current period, as they would have, had the obligation been known at the last price review;
- logging up must be applied to opex as well as capex. Companies should be specifically remunerated for increased costs incurred over the current period and the ongoing costs that will be incurred in the next period must be added into the cost base; and
- a forward looking approach, is required which, once new obligations are identified, seeks to agree with companies future allowances for costs taking into account expected efficiencies, and how these will be dealt with at the next review. This would ensure companies' functions are properly financed in accordance with the statutory duties of the regulator and provide appropriate incentives on companies, in the interests of customers and the environment.

25. The logging up process could be codified and agreed between Ofgem and companies and then incorporated into a licence modification.

Applications of the Framework

26. Frontier Economics has applied the decision making framework to a number of real examples faced by Ofgem namely:

- licence fees;
- DNOs recovery of NGC exit charges;
- One off IT costs;

- Overstay fines and lane rentals;
- Distributed generation; and
- Severe weather exemptions for guaranteed payments.

27. Overall, the decision making framework appears to result in sensible conclusions. The first four cases above are relatively simple. Frontier Economics conclusions on how to deal with uncertainty with respect to distributed generation and severe weather exemptions for guaranteed payments are more complex. Our comments on the former are outlined below and our comments on the latter are outlined in Appendix 1 Chapter 5.

Ofgem has invited views on the best way of dealing with the uncertainty caused by distributed generation.

28. With respect to distributed generation Frontier Economics state that the regulatory problem associated with DG is that even though the costs and volumes of DG are uncertain *ex ante*, at the time connection decisions are made, the DNOs are likely to have some control over the volume of DG to be connected, and the cost of connection (including reinforcement). If Ofgem seeks to impose a high powered incentive regime to incentivise cost reduction it might reduce incentives to connect. On the other hand, if it adopts a cost pass through approach there is a risk that the absence of incentives will lead to inefficient behaviour. We believe that, even in the short term, it is possible to design a framework that incorporates elements of an incentive regime rather than a pure pass through approach. Obviously this will need to be reviewed and developed over time as more information becomes available.

29. **We have responded to Callum McCarthy and Cemil Altin in relation to the open letter to Chief Executives on distributed generation (DG) and since then we have met with Richard Ramsay and John Scott and presented a paper (jointly written with OXERA) on incentives for DG. We would welcome further discussion with Ofgem on the proposals put forward in this paper, and we remain keen to contribute to the continuing debate on DG . We believe the two key elements of an appropriate incentive scheme are:**

- ***a higher rate of return on investment in 'used and useful' network assets to facilitate DG*. The problem some have identified with this solution is that of labelling the investment. A solution to this would be a requirement to pre-register work with Ofgem in order to earn the chance of a higher return. Pre-registration could also ensure that a higher return is not available unless a company also subjects itself to the risk of a lower return. This downside risk could be limited to the rate of return on other network assets provided the investment was used and useful for load; and**

- ***a MWh revenue driver based on network capacity availability*. In principle DNOs should be incentivised to facilitate DG output. We believe that the best measure of the DNO's performance is the MWh that the network is capable of transporting from DG rather than the total MWh generated by DG which will be affected by many other extraneous factors that impact on the generator but are beyond the control of the DNO.**

30. There is a wide consensus that the level and mix of generation that will connect to distribution systems is highly uncertain, and may vary significantly between firms.

31. In addressing this, we need to balance the interest of users and shareholders. One suitable option is to adopt the approach applied to NGC for its generation-related investment, of a pre-set £/MW revenue driver on the price control. Such an option would:

- protect users in the short term, as revenues would be capped;
- protect users in the medium term, as there is an incentive on distributors to connect efficiently, leading to a lower overall rate base than might otherwise be the case; and
- protect distributors, as the revenue driver would mitigate against cashflow risk.

32. There is also a balance to be struck between individual new users and the general mass of transportation charge payers. The deeper the connection charging regime, the more the financial risk is transferred to the new user that is causing the costs to be incurred. The shallower the regime, the greater the financial risk borne by users in general and distributors.

33. With a common charging regime applied to generation and demand, shallower charging regimes will:

- increase the value of the revenue driver we have proposed;
- increase the cash flow impact on distributors; and
- increase the residual financial risk on companies, due both to potential error in setting the revenue driver and making a greater part of income and expenditure subject to third party requests.

34. All of these impacts must be reflected in the overall price control settlement, not least in raising the allowed rate of return.

35. The impact of a shallower charging regime must also be managed by clearly defining the product offered to developers. The greater the availability required, the higher the costs to be recovered through transportation charges, with the associated financial risks. It is unlikely to be in customers' best interests to bear the costs of a universally high availability regime.

36. We propose that all users be offered a basic product of connection to a system that satisfies the engineering and planning standard P2/5 and is subject to the IIP and guaranteed standards regimes. Should any user require additional security, this can be offered on a site-specific (and determinable) basis. This will secure the efficient development of the network, offer individual users a genuine choice, and ensure that users in general do not bear inefficient levels of cost.

3. BALANCING INCENTIVES

Ofgem has invited views on the most appropriate balance between the strength of efficiency incentives provided to companies and the reflection of efficiency savings in prices paid by consumers and whether there should be any difference in the strength of incentives provided for opex and capex savings.

Benchmarking and Yardstick Approaches

37. The executive summary of the Frontier Economics report concludes that benchmarking and yardstick approaches offer significant benefits over regulatory regimes in which there is less direct comparison of performance across companies, through increasing the incentive power of the regime without reducing the amount of benefit passed through to customers. Frontier Economics identify a number of common criticisms of yardstick competition but conclude that these criticisms can be answered through robust modelling and careful regulatory design.

38. **In principle total cost approaches are theoretically superior to separate analysis and should start to be developed. However, the development of a model that appropriately captures the capital cost element and that introduces quality into the equation is probably some way off.**

39. **We have significant concerns regarding the use of benchmarking and yardstick approaches in price control reviews. The problems surrounding comparability, including model specification and cost allocation, and the introduction of quality into the assessment are well known and remain to be resolved before benchmarking or yardstick methods can be used to determine the efficient costs of each company.**

40. **A further problem, which has attracted less attention to date but which Frontier Economics readily acknowledged at the workshop, is that the regulator needs to be satisfied that the companies whose costs are determining the yardstick or benchmark have adopted a reasonable position with respect to risk. Otherwise yardstick or benchmark methods can have the unintended effect of driving companies towards the position taken by the least risk-averse company. The Asset Risk Management (ARM) and Medium Term Performance (MTP) work has not sought to determine the appropriate risk profile for network companies to adopt and we do not believe that Ofgem wishes to make such judgements in place of the companies. If such judgements are to be left to companies, Ofgem should take care to ensure that a willingness to take on risk above that which is implicit in the allowed cost of capital does not lead to a systematic, but unintended, pressure on all companies to take on greater risk. This is especially important given the asymmetry of customers' likely preferences as between lower costs and security of supply.**

41. **One way to avoid this problem would be to determine each company's allowed costs by reference to the rolling average of its costs in the previous ten years.**

This would resolve periodicity problems and would ensure that incentives to efficiency were strong but grounded in the reality of each business. The danger of a company targeting higher returns and taking on additional risk by being overly aggressive in its cost cutting would be confined to that company (as would the consequences of failure) and would not infect the determination of other, more responsible, companies' allowed costs. If this approach was thought to give companies insufficiently stretching targets (given the cost reductions achieved since privatisation) the costs of the early years of the first ten years of the yardstick could be prescribed by Ofgem as part of the review and could be informed by responsible use of comparative analysis. Comparative analysis could also be used periodically to indicate any companies whose performance has diverged significantly from that of the sector. This might indicate that further investigation or action might be needed with respect to such companies.

42. **If Ofgem remains convinced that yardstick or benchmarking methods have a part to play then, as Frontier Economics suggested at the workshop, confidence can be restored to some extent by the use of average, rather than lowest, cost models.**

43. Since Frontier Economics claim a number of benefits may be secured by the use of benchmark or yardstick approaches it is important to ask under what assumptions the claimed benefits of yardstick approaches may be valid. If these conditions are never met, or never likely to be met in practice, then it is unsafe to rely on this approach to price regulation.

44. In a seminal article on yardstick competition Andrei Shleifer showed that yardstick competition could lead to efficient outcomes (via high powered incentives without reducing the amount of benefit passed through to customers) under the following strict conditions:[3]

- *'it is essential for the regulator to commit himself not to pay attention to the firms' complaints and to be prepared to let the firms go bankrupt…'; and*
- '*if firms are identical, or if heterogeneity is accounted for correctly and completely, the equilibrium outcome is efficient…'.*

45. Frontier Economics consider the underlying assumptions and trade-offs involved in considering yardstick competition in Annex 1 of their paper under 'Common criticisms of yardstick competition' where they note that:

'This problem [of firms under yardstick competition running into financial trouble or being bailed out by the regulator] requires the regulator to simultaneously demonstrate commitment to the yardstick regime, whilst at the same time signalling sufficient discretion to be able to change the parameters of the regime if, with the benefit of hindsight, they have been inappropriately applied.'

46. Unfortunately, discretion does not resolve the tension between the risk of bankrupting an efficient company and the problem of ensuring that yardstick competition is credible. In

[3] Shleifer. Autumn 1985. 'A theory of yardstick competition', *Rand Journal of Economics*, Vol 16(3) see pages 323 and 326.

fact, introducing discretion, far from resolving the problem, compounds it by introducing additional regulatory uncertainty.

47. The conditions set out by Shleifer are never met in practice – firms and their operating environments are not identical and heterogeneity is never fully accounted for.

48. In practice, therefore, yardstick approaches introduce the following in relation to allowed revenues:

- a random component corresponding to the 'error term' in the statistical analysis used to set allowed revenues; and
- bias due to omitted explanatory variables for differences in observed costs (including legacy factors, environmental factors and differences in current quality and risk).

49. Random noise *per se* is likely to be harmful, even though it is in principle diversifiable, since it is likely to lead to less high-powered management incentive contracts, a greater risk of bankruptcy (and the associated costs of bankruptcy) and a higher cost of debt.

50. Bias is even more problematic since it leads to expected revenues that are excessive for some companies and inadequate for others. The outcome will therefore be one of the following in the case of inadequate revenue provision:

- the firm reduces quality to cut costs, or takes on greater risk of poor quality outcomes in future;
- the regulator bankrupts an efficient firm – a costly mistake for investors and customers; or
- the regulator backs down and increases allowed revenues, thereby undermining the incentives yardsticks were assumed to introduce.[4]

Incentives for outperformance

51. **The continuing development of incentives for outperformance is an important element in the evolution of the price control framework to deliver long term benefits to customers. We believe that it is vital to retain and strengthen incentives for outperformance in both operating and capital expenditure and that companies achieving higher rates of return as a result should be regarded as a success of regulation, provided that quality of supply and network integrity are maintained. The introduction of rolling incentives will address periodicity issues and provide stronger incentives to pursue the diminishing efficiency opportunities that remain.**

[4] Shleifer noted that where heterogeneity is not fully accounted '…*a subsidy to run the scheme without bankruptcies*' may be required. Shleifer did not however 'close the loop' in terms of the incentive implications of this in his paper.

Power of Incentives

52. **It is important that regulation should both protect the interests of customers and provide companies with incentives towards efficiency. Economic theory indicates that the optimal share of efficiency savings between customers and companies is 50/50 where there is a linear relationship between cost reduction and incentives (the retained share).[5]**

53. **In the past when efficiency savings have been easier to identify and to secure it would not have been necessary or prudent for Ofgem to move to this optimal level. However, efficiency savings are now becoming harder to identify and to deliver and, thus, increasing the company share towards the optimal level is justified and is unlikely to lead to companies making profits that are difficult to justify or that will cast doubt on the effectiveness of the regulatory regime. This leads to the conclusion that a rolling period of more than five years is appropriate (since retention for five years delivers only a 29 per cent share for the company of operating cost efficiencies and an 11 per cent share for capital expenditure efficiencies). Additionally, innovators in competitive markets would generally retain a far greater share than is retained under five year price caps.**

54. **We believe that the power of incentives in relation to operating and capital costs needs to be reviewed because, currently, the capital efficiency incentives remain much weaker than the operating cost incentives. Clearly, the management of long-lived distribution assets involves a number of significant trade-offs between capital and operating expense. Therefore we consider it important that incentives in these two expenditure categories should be in balance to ensure that, over the long-term, companies are provided with an appropriate, and balanced, set of incentives to ensure that outcomes are maintained at the desired level and at the long-run optimal cost. If this balance is not reached then there is a danger that initiatives that bring benefit in the long-term will be disregarded in favour of less valuable improvements (in overall terms).**

55. **The power of the incentive scheme will be driven by a number of factors: the length of the retention period, the proportion of the savings retained, the different treatment of operating and capital expenditure and the way in which efficiency is assessed. There is no reason why the retention period should be limited to the price control period or correspond between operating and capital costs.**

56. At present, for operating cost efficiencies, the share retained by the company ranges from 29 per cent in year 1 to 6 per cent in year 5. If the relationship between cost reduction and incentives (the retained share) were linear then the optimal company share from a customers' perspective would be 50 per cent. In contrast the share in NPV terms under a full 5 year retention is around 29 per cent (calculated with a 7 per cent discount rate) – a 10 year retention would be required for a share of around 50 per cent.

[5] It should be noted that even at this optimal level companies will not retain a 50 per cent share since the company share is pre-tax.

57. For capital, the Frontier Economics report indicates that, assuming a 20 year asset life and that both depreciation and return benefits are retained, a five-year retention of the benefits from a recurring capital efficiency results in companies retaining approximately 13 per cent of the benefits of the efficiency savings (assuming a 7 per cent rate of return) and 47 per cent assuming a one-off saving. We would contend that the bulk of capital efficiencies are recurring, in that the lessons learned can be applied generally, and that, to achieve a 50 per cent retention of the benefits, the retention period would need to be in the order of 13 years. If the assumptions were changed such that only the return benefits were retained (as opposed to depreciation and return benefits) it would not be possible to achieve a 50 per cent retention over the life of the asset.

Ofgem has invited views on the most appropriate way of incentivising companies to deliver a good quality and security of supply to consumers – including ways in which the existing IIP incentive scheme for the DNOs could be improved.

Generic Approaches

58. Frontier Economics conclude that there are two generic approaches to providing companies with incentives to deliver quality. Marginal rewards/fines will encourage companies to select the optimal level of quality, given the size of the marginal payment and the cost of providing quality. If the marginal payment is calibrated such that it is equal to the social cost/benefit of quality then what is optimal for the company will be the economic and efficient level. Absolute fines result in the regulator choosing the level of quality that companies will deliver. A combination of the two could be used to ensure minimum standards of quality while providing companies with incentives to deliver additional quality if it is valued.

59. We share this view and believe that the current regulatory framework for DNOs provides an appropriate combination of these approaches. Obligations relating to security and quality of supply are set out in the statute, in regulations made under the statute and in the Licence. A breach of Licence or of relevant quality/security related sections of the Electricity Act can now be punished by the Gas and Electricity Markets Authority (GEMA) with a financial penalty (under S27A of the Electricity Act 1989). The guaranteed and overall standards, which provide protection to individual customers and an overview on key performance measures, fall within this regime. There are also a number of other mechanisms in place to incentivise companies to deliver good quality and security of supply to customers and there are appropriate remedies open to Ofgem to deal with companies that fail to achieve the required outputs. In particular:

- the IIP has been introduced for the number and duration of interruptions and demonstrates whether companies are meeting short-term targets;
- the medium term performance returns (MTP) have been introduced to monitor the underlying asset performance; and
- the ARM survey ensures that processes are in place to secure the long-term health of the asset base.

Improvements to the Existing IIP Regime

60. Our view on the ways in which the existing IIP incentive scheme for the DNOs could be improved are discussed in Appendix 1 Chapter 5.

Ofgem has invited views on dealing with periodicity of incentives including the applicability to electricity and gas of the approach used by other regulators.

61. We support the principle of incentive mechanisms that enable companies to retain the benefits of any efficiency savings for a fixed length of time, irrespective of the timing of price reviews and the timing of efficiency savings, as a means of dealing with periodicity problems.

62. Our comments on the applicability to electricity distribution of the approach used by other regulators are as follows:

Ofwat's treatment of operating expenditure savings

63. We are generally supportive of Ofwat's mechanism for the treatment of operating expenditure savings being applied to electricity and gas. The key feature of the scheme is that outperformance, in terms of opex, will be transferred to customers on a rolling five year basis. This means that any profits earned by a company by cutting actual opex quicker than forecast opex will be retained for 5 years, as a component of the revenue allowance called the 'Incentive Allowance'.

64. We understand that in Ofwat's approach, exceptional costs are included in the calculation of incremental out-performance. Such an approach is correct only if there is an appropriate regulatory allowance to cover the manifestation of the particular uncertainties. However, if an unforeseen event occurs, for which there is no regulatory allowance, then these costs should not be included within the calculation. If these costs are not excluded (i.e. they remain within the ambit of the rolling mechanism) there is a risk that, dependent on the timing of the cost, the incentive allowance in the next period may be reduced or completely negated. If non-operational capital expenditure remains as an operating cost allowance it may also be appropriate to exclude these costs from the calculation.

Ofwat's treatment of capital expenditure savings

65. The methodology used by Ofgem needs to ensure the retention of both return and depreciation benefits.

66. We understand that there is some confusion as to whether the Ofwat model provides for retention of both depreciation and return benefits for the fixed retention period or return benefits only. Paragraph 3.2 of Appendix 3 of Ofgem's *Update* document implies that the Ofwat incentive payment is based on the latter, i.e. retention of the rate of return benefit only. If this assumption is correct, it would not remove periodicity as retention of depreciation benefits would remain at between 1 and 5 years, depending on when the

saving was made, and would not achieve the share of benefits assumed in the analysis set out by Frontier Economics in Table 2. The statement in Ofgem's *Update* document is also contrary to the methodology that can be inferred from para 4.3.2 of the Frontier Economics report.

Comparison of the incentive mechanism introduced in Victoria, Australia

Calculation of incentive payment floors

67. We believe that it may, at least initially, be appropriate to separate completely the treatment of the operating and capital expenditure payments. The approach of the regulator in Victoria which considers combined gains and losses calculated for capital and operating expenditure could weaken incentives on capital efficiency relative to operating costs efficiency as described below. Given that incentives are currently being reviewed because it is believed that capital incentives are currently weaker than operating cost incentives and that this balance needs to be addressed then it may be appropriate that the opex and capex mechanisms should be operated entirely separately.

68. The NPV share of any unforeseen permanent cost reductions retained by a company (as opposed to being transferred to the customer) is lower for capex (11 per cent) than opex (29 per cent), i.e. opex incentives are greater than capex incentives. To generate £1m of capital efficiency savings a company must save significantly more than £1m of capital expenditure. However, all of this saving would be negated by an opex overspend of £1m.

69. An aggregation of operating and capital efficiency overspends/efficiencies places undue weight on operating expenditure, and would increase the incentives on companies to adopt solutions that could be treated as capital expenditure. Until such time as incentives between opex and capex are equalised, any mechanistic aggregation of operating expenditure overspends/efficiencies will produce erroneous results and is likely to increase the current opex/capex distortions.

Capital expenditure incentive payments

70. It would not seem appropriate for Ofgem to use the approach adopted by the regulator in Victoria which provides only for retention of return benefits for the fixed period rather than return and depreciation benefits. Again this would seem perverse since the incentives are currently being reviewed by Ofgem because it is believed that capital incentives remain weaker than operating cost incentives and that this balance needs to be addressed. Table 2 on page 7 of the Frontier Economics report, which indicates the share of a £1m efficiency saving in operating and capital expenditure retained by the company under different retention periods, assumes that both depreciation and return benefits are retained. Any move to retention based on return only benefits would further depress the capital expenditure incentive relative to the operating expenditure incentive.

Ofgem has invited views on the most appropriate way of defining capital expenditure for a model of total costs.

71. Our concerns regarding the benchmarking and yardstick approaches have been outlined above. Further work would be required by Ofgem to determine the most appropriate way of defining capital expenditure for any model of total costs. We would like to participate in this if Ofgem, notwithstanding all the problems associated with such models, see this as contributing to the review.

Ofgem has invited views on how quality (and other outputs) could be best incorporated into an assessment of companies' efficiency.

72. The Frontier Economics report states, in section 5.1, that a well-calibrated IIP quality mechanism should provide Ofgem with the confidence to increase the incentives on companies to reduce costs, safe in the knowledge that such a mechanism will ensure that companies are financially exposed to the consequences of their decisions on quality. Furthermore, Frontier Economics contend that if this scheme was an addition to a general yardstick mechanism, there would be no impact on the risk profile of the companies.

73. We would refer Ofgem to our comments on benchmarking, yardstick approaches and diversifiability above. The problems identified with yardstick approaches to cost also apply to similar approaches to quality, (especially cost allocation and model specification) and also apply to quality comparisons. Please also refer to our comments under Chapter 4 of Appendix 1.