National Audit Office

THE OFFICE OF GAS AND ELECTRICITY MARKETS

Sale of gas networks by National Grid

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John Bourn
Comptroller and Auditor General
National Audit Office

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The National Audit Office study team consisted of:

Richard Baynham, Ed Humpherson, Lauren Kininmonth, Andrew Packer and Simon Reason

This report can be found on the National Audit Office web site at www.nao.org.uk

For further information about the National Audit Office please contact:

National Audit Office
Press Office
157-197 Buckingham Palace Road
Victoria
London
SW1W 9SP

Tel: 020 7798 7400

Email: enquiries@nao.gsi.gov.uk

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EXECUTIVE SUMMARY

1 Gas bills have continued to rise sharply in 2005. This report looks at major developments in the regional gas distribution networks that have the potential to reduce gas bills in the longer term. On 1 June 2005, National Grid plc sold four of the eight regional distribution networks for £5.8 billion **(Figure 1)**. For a domestic customer, the cost of gas distribution amounts to approximately £80 a year, which represents about a fifth of the average gas bill.[1]

2 The companies operating the gas distribution networks are licensed so that the interests of customers and the wider public are protected. These licences are issued, modified and enforced by the Office of Gas and Electricity Markets (Ofgem), which is the regulator of the gas and electricity industries in Great Britain. Ofgem operates under the direction and governance of the Gas and Electricity Markets Authority (GEMA), which takes all major operational decisions and sets policy priorities. National Grid needed the approval of GEMA to dispose of the assets which comprised the local gas networks. Ofgem's role was to advise GEMA on whether the disposals should proceed. The test used by Ofgem was that there should be no detriment for consumers. National Grid also required the approval of the Department of Trade and Industry (DTI), and the Health and Safety Executive (HSE) which has lead responsibility for safety implications.

3 In making its recommendation, Ofgem's primary statutory responsibility was to protect the interests of consumers. Its main tasks were to:

- evaluate the costs and benefits of the sales to assess the implications for consumers;
- work with the gas industry to develop commercial and operational arrangements to support multi-ownership of the distribution networks; and
- identify and address future risks.

4 The disposals have resulted in the biggest change in the structure of the gas industry since privatisation in 1986 and the de-merger of British Gas plc in 1997.[2] The primary change has been the replacement of National Grid's monopoly ownership and control with a series of contractual relationships between independent companies. To meet its responsibilities, Ofgem had to undertake a number of significant tasks and spent £2.5 million on this work in 2004-05, making this its second largest project in that period.

5 Ofgem's involvement did not end with completion of the sales. It is seeking to maintain a stable regulatory framework which provides strong incentives for regulated companies to achieve efficiency savings and make appropriate investment in infrastructure, whilst ensuring that they can finance their activities to meet demands for gas.

1 Gas distribution represents the second largest element of the gas bill, after the cost of the raw product which accounts for one half of costs.
2 In February 1997, British Gas plc de-merged to form Centrica plc, which focussed on the retail aspects of supplying gas; and BG plc, which included the transportation and storage business.

1 Ownership of the gas distribution networks in Great Britain from 1 June 2005

Sold by National Grid

Scotland
South of England] to Scotia Gas Networks
North of England to Northern Gas Networks
Wales and the West to Wales and West Utilities

Retained by National Grid

North West
West Midlands
East of England
London

Source: National Audit Office

6 Against this background, we examined whether Ofgem was fulfilling its duties in relation to the sales. The Report is structured around Ofgem's role in approving the disposal of assets by National Grid (Parts 1 to 3); and its approach to protecting the consumer interest after the sales (Parts 4 to 6). We gathered evidence from an analysis of Ofgem papers; a survey of the gas industry; discussions with stakeholders; and an evaluation of the financial and regulatory aspects of the sales. We appointed economic consultants, Oxera, to support us in our analysis. Appendix 1 sets out our scope and methodology in more detail. Extracts from Oxera's report are at Appendix 3.

Our findings

Customer benefits

7 Ofgem concluded that the potential benefits to customers from the sales were most likely to be £325 million over the period 2008 to 2023.[3] This should mean lower prices of approximately £1 per domestic customer per year, a small saving when compared to increases in gas bills since 2003.[4] The benefits were expected to result largely from lower transportation charges for using the gas distribution networks. The assumptions used to calculate costs and benefits were well-evidenced and subject to some sensitivity analysis. Ofgem's analysis of the potential benefit, which was a conservative estimate, gave it confidence that the consumer interest would be protected and formed the basis of its recommendation to GEMA to approve the sales.

8 The sales will help Ofgem to regulate the gas distribution sector more effectively. The existence of three new operators in the gas distribution sector will allow a better comparison of costs and performance across the networks. Such comparisons will enable Ofgem to set more challenging efficiency targets at future price control reviews.[5] This approach, known as comparative regulation, is well-established and benefits have been seen in the electricity and water sectors.[6] Having new, independently-owned companies should also give rise to innovative and more efficient working practices. On the basis of a review of other regulated industries, Ofgem estimated that the additional comparators would result

3 Ofgem calculated costs of £100 million, resulting in a net benefit to customers of £225 million. Ofgem's calculations show that the net benefits could be as high as £500 million or as low as £80 million.
4 In 2005 average domestic gas bills were £435, an increase of £111 (36 per cent) since 2003 due primarily to the higher cost of gas.
5 Price controls are used to set the revenues of regulated companies. Ofgem will now be able to set the revenues that networks can recover (through customer charges) on the basis of the costs of the most efficient performer.
6 Ofgem reports that its ability to compare different companies' performance has enabled it to halve electricity distribution charges in real terms since privatisation in 1990.

in an average 1.13 per cent per annum reduction in the operating expenditure of network owners between 2008 and 2023. This equated to the potential customer benefits of £325 million, and represented the incremental value of comparative regulation.

9 There is the potential for much larger customer benefits. The objective of Ofgem's analysis was to estimate the potential for customer benefits arising as a result of sales. To calculate these benefits Ofgem had to make assumptions about the scope for efficiency savings in the gas distribution sector under the no sale scenario. It assumed that the most likely rate of improvement if the sales did not take place was an average annual reduction in operating expenditure of 3 per cent.[7] Our analysis shows that this equates to cost savings of £830 million across the gas distribution sector, bringing the total potential savings to £1.2 billion between 2008 and 2023.

10 The predicted benefits are subject to uncertainty. The benefits are forecast over a long time frame, whereas the costs of restructuring are already being incurred by the industry.[8] It is possible, therefore, that the disposals could lead to higher costs before the predicted efficiency savings are passed on to customers. The difficulties faced by Ofgem in securing customer benefits include:

- the inherent uncertainty of achieving benefits over a period as long as 15 years;
- the ability of the companies to find ways to deliver cost savings; and
- the dependence on competitive conditions in the energy market to ensure that savings in operating expenditure by the gas distribution companies are passed through to suppliers, and then on to customers via lower prices.

11 The effectiveness of comparative regulation is largely dependent upon the quality of information available to the regulator. Ofgem cannot, itself, deliver the customer benefits but must rely on the behaviour of the network owners. Its role is to create a robust regulatory framework that has incentives to encourage efficient behaviour. Ofgem has established clauses in the licences of the new operators to collect consistent data and is identifying the new information it needs to make effective comparisons between companies. It has also extended the existing gas distribution price control period by one year to provide a full year of company data before the next price control comes into effect in 2008. These measures are intended to provide Ofgem with a sound basis to conduct comparative analysis of the networks. The availability of sale-related information and historical data on the regional networks should also enable Ofgem to set challenging efficiency targets in 2008 to secure customer benefits during the next price control period. Ofgem has predicted, however, that 80 per cent of the potential customer benefit arising from independent ownership (i.e. £325 million) will come after 2013, as its information on the networks is refined.

Ofgem's role in the sale process

12 Ofgem clarified its role during the sales. In March 2004 Ofgem decided that it would recommend the approval of the sales if they did not result in a net detriment to customers. This stance was consistent with legal advice obtained by Ofgem on the scope of its statutory objective to protect the consumer interest, but differed from an earlier commitment to maximise consumer benefits. Ofgem established appropriate working relationships with the DTI and the Health and Safety Executive, which also had to provide their approval for the sales.

13 Ofgem completed all necessary tasks before the networks were sold. The new commercial and operational arrangements that enabled the disposals to proceed have, to-date, been working well. These tasks were completed against the background of a challenging context. For example, Ofgem had to: limit its initial involvement when National Grid announced its decision, to avoid prejudicing the sale process in any way; complete its tasks within the constraints of a commercial timetable; and deal with a seller and prospective purchasers whilst considering the implications for the remainder of the gas industry and the consumer.

14 This was a challenging project for Ofgem. There were a number of strengths in Ofgem's approach to managing its input, notably it had a sound understanding of the complexities of the sales; and the project team showed drive and determination to complete the tasks in the time available. There are also lessons to be learnt. The project team was under constant pressure as there were insufficient staff with the necessary expertise, which led to

7 Ofgem's best estimate was marginally tougher than had been historically achieved by National Grid.
8 One-off costs were estimated at £25 million, with annual costs of £7 million per annum.

consultants being reappointed without retendering.[9] There was also uncertainty within the industry over the project timetable, despite Ofgem's efforts to seek clarity. Ofgem faced difficulties throughout the project in reconciling the regulatory aspects of the sales with National Grid's commercial timetable. For example, in November 2003, Ofgem delayed the sales timetable to ensure sufficient time for full analysis and consultation on the impact of the sales on consumers' interests. The industry faced a large burden of consultation and many gas companies were concerned that Ofgem added complexity and costs by unnecessarily including a separate project in the sale process.[10]

Future risks

15 The prices paid by the three purchasers represented a 10-14 per cent premium to the regulatory asset value.[11] Ofgem does not believe that sale prices for licensed businesses have any future regulatory implications as it has established procedures for protecting consumers if companies get into financial difficulty and it can capture efficiency savings for consumers at future price controls. In this case, the prices paid were in line with the premiums in other disposals in UK utility sectors over the last five years. As Ofgem's role was to protect the interests of consumers, rather than maximise consumer benefits, Ofgem did not consider that there were grounds to re-open the existing price control as part of the sale process (paragraph 12).

16 There are a number of valid reasons why purchasers are prepared to pay a premium for regulated assets.[12] Public statements by National Grid and the purchasers have indicated that the new network operators expect to deliver significant efficiency savings. Ofgem's cost benefit analysis also assumed that there was potential for additional cost savings (paragraph 9). This raises the question of whether Ofgem could have set National Grid tougher targets at the 2002 price control to secure a larger share of these potential savings for the consumer. Our analysis has not, however, provided evidence of a soft settlement in 2002. Ofgem believes that the separation of National Grid's gas distribution price control into eight regional controls in 2004 was an essential first step in the process of setting future price controls that will deliver larger savings for consumers.

17 The new owners have a range of financial structures. There has been a trend across regulated sectors over the last five years for companies to fund capital investment programmes with debt financing, thus increasing the level of debt in their capital structures. Ofgem acted to ensure the consumer interest was protected by reviewing the financial strength of prospective purchasers. It also concluded that its regulatory framework to protect consumers in the event that the network owners experience financial problems was adequate. The longer-term implications of higher levels of debt in regulated companies are, however, unclear and Ofgem is researching the implications to ensure that it is able to respond promptly and appropriately to any risks.

18 All network owners take safety seriously. The HSE has lead enforcement responsibility for the safety of the gas distribution networks and has put arrangements in place to seek to minimise public risks. All prospective purchasers had to prepare a safety case, which required HSE acceptance before the disposals proceeded. HSE has also introduced an enhanced programme of safety audits to ensure the new owners comply with their obligations.

9 In January 2004 a contract was let to PA Consulting, after competitive tender, for a maximum value of £187,000. A number of extensions were approved in 2004 and 2005 to complete additional work. Final outturn is expected to be £1.3 million.
10 Ofgem introduced a major change to the way the capacity of the National Transmission System is allocated (see paragraph 2.16).
11 Regulatory asset value is Ofgem's assessment of the asset value.
12 Sale premiums are likely to be due to a combination of factors, including expectations of outperforming regulatory assumptions; economies of scale; and the advantages offered by more efficient capital structures.

RECOMMENDATIONS

19 Our examination found that Ofgem had successfully fulfilled its duties in relation to the sales, which have the potential to deliver customer benefits (paragraph 7). There are a number of lessons to be learned from Ofgem's achievements, together with actions that should be considered in the future. Our recommendations are intended to highlight these lessons to assist Ofgem when similar developments arise again and help secure the predicted benefits. They will also be helpful to other regulators.

On calculating customer benefits:

a The costs of each option, and the method of calculation, should be presented transparently to the industry, without compromising confidentiality.

b Predicted savings based on theoretical assumptions should be tested to understand the practical measures that might be taken.

c When setting future price controls for the gas distribution networks, the options for changing the length of the price control period should be explicitly considered to ensure that customers receive the potential benefits of the sales promptly.

d The principles of good information management should remain a priority when collecting the data needed to set robust price controls, without imposing undue costs on the industry.

On the internal management of projects involving sales and mergers:

e As a matter of best practice, when a commercial transaction with regulatory implications arises, Ofgem should clearly specify at the outset the regulatory tasks involved. The regulatory activities should not be compromised by the commercial timetable but, at the same time, the regulator should work expeditiously to ensure it does not compromise the effective working of the markets.

f Detailed project planning should be supplemented with a comprehensive strategic framework that sets out the issues, risks, priorities, resourcing and timetabling. This should clarify Ofgem's role and the scope of its work.

g A project plan should be published at the outset setting out the regulatory requirements, and the industry kept informed as it is updated in the light of progress.

h The method and timing of consultation should be considered – making use of innovative approaches and co-ordinating, as far as possible, across Ofgem – to help interested parties make meaningful responses on each occasion.

i There should be optimal use of organisational expertise and experience, and procedures for integrating the knowledge provided by consultants. Ofgem should also consider the scope for sharing expertise between regulators on disposals and mergers.

j The fees paid to consultants should be properly controlled.

On protecting the consumer interest in the future:

k Ofgem should continue to monitor developments to ensure that the existing measures for protecting consumers from financial mismanagement in regulated companies are adequate.

l The price paid for regulated assets should be considered as it provides a useful source of information about the market's perception of the value of the regulated company.

m Ofgem and other regulators should continue their research into the regulatory implications of gearing in order to ensure a timely and proportionate response to any emerging risks.

APPROVING THE DISPOSAL OF ASSETS BY NATIONAL GRID:

Part 1 Ofgem's role and responsibilities

This Part examines if Ofgem defined clearly its role and responsibilities in the sales.

Part 2 Ofgem's management of its tasks

This part examines whether Ofgem executed its responsibilities well.

Part 3 Estimating the costs and benefits

This part examines whether the sales are expected to lead to net benefits for consumers.

PART ONE
Ofgem's role and responsibilities

Introduction

1.1 Domestic and small business customers buy their gas from gas suppliers **(Figure 2)**. The suppliers obtain the gas from shippers, who buy from producers and arrange its transportation. This report focuses on the local transporters of gas. On average, a domestic user of gas spends £435 a year, an increase of 36 per cent (£111) since 2003 which is due mainly to a substantial increase in the cost of gas. The raw product now accounts for half the domestic gas bill; distribution is the next largest cost, accounting for about a fifth.

1.2 Since the 1970s most gas used in Great Britain has come from the North Sea. It is transported across Great Britain using the high pressure National Transmission System (NTS). At 116 points this System links with eight low-pressure distribution networks that deliver gas to 21 million smaller users, of which 97 per cent are domestic consumers and three per cent are business users. A further 640,000 customers are connected to small networks, such as housing estates, that take gas from the eight principal networks. Very large industrial users of gas connect direct to the NTS.

1.3 Prior to June 2005, Transco, a subsidiary of National Grid plc[13], owned and operated the NTS and all eight principal gas distribution networks. In May 2003 National Grid announced its intention to consider selling one or more of the eight networks, to maximise shareholder value. The sales attracted interest from 60 prospective buyers worldwide and the three successful companies paid £5.8 billion for the four networks **(Figure 3)**. The new network owners now serve about 10 million customers, while National Grid continues to deliver to 11 million customers through its retained distribution networks.

1.4 The sales have resulted in a major change to the way the gas industry operates. Because National Grid owned the NTS and all eight principal distribution networks, the transportation systems were internal to its subsidiary, Transco. The new arrangements are summarised at **Figure 4 overleaf**.

GEMA's responsibilities

1.5 The Gas and Electricity Markets Authority (GEMA) was established by the Utilities Act 2000 to regulate Great Britain's electricity and gas markets.[14] It has a statutory responsibility for licensing companies in the gas industry. GEMA's executive arm is Ofgem, a non-Ministerial Government Department that carries out its day-to-day business. GEMA determines policy, sets priorities and takes all major operational decisions. Its principal statutory duty is to protect the interests of consumers, wherever appropriate by promoting effective competition. It has a wide range of secondary and third-tier responsibilities **(Figure 5 overleaf)**. GEMA shares all these responsibilities with the Secretary of State for the Department of Trade and Industry (DTI).

13 From October 2002, following the merger of National Grid plc and the Lattice Group, the present company was known as National Grid Transco plc. In August 2005 it renamed itself National Grid plc.

14 GEMA consists of a Chairman (presently Sir John Mogg); four executive members comprising Ofgem's Chief Executive (Alistair Buchanan) and its three Managing Directors; and seven non-executives that bring a wide range of expertise on such matters as social policy, environment, finance and Europe.

2 How gas reaches domestic and small business customers

Producers and Importers Companies which bring gas onshore from North Sea gasfields, the connector pipeline with Belgium or liquified natural gas (LNG) terminals.

↓

Shippers Companies that contract with:

a) offshore producers to bring gas onshore;
b) transporters to use their pipeline systems to move the gas across Great Britain; and
c) suppliers who buy the gas for their customers.

↓

Transporters Transco's high-pressure **National Transmission System** moves gas across Great Britain.

The National Transmission System connects with the eight principle low-pressure **distribution** networks that deliver gas to customers (Figure 1). Before June 2005 Transco also operated all eight of these networks but since then three new consortiums operate four of the networks (Figure 3).

↓

Suppliers Companies that sell the gas to users.

↓

Customers End users of gas for heating and cooking.

Source: National Audit Office

3 The eight principal gas distribution networks in Great Britain

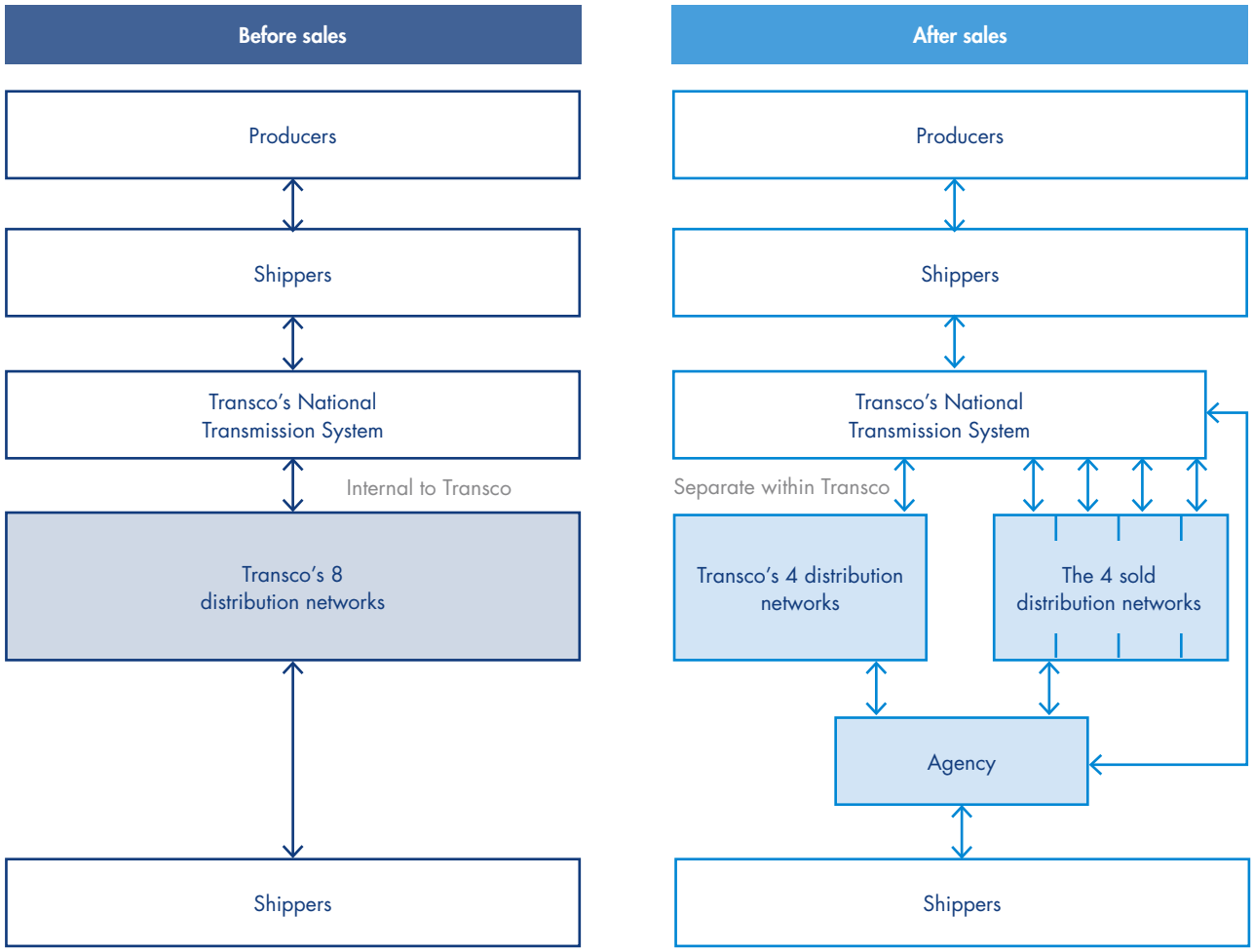
Network	Current owner	Sale prices
North of England	Northern Gas Networks, a consortium led by Hong Kong's Cheung Kong Infrastructure Holdings Ltd. United Utilities[15], which has a 15 per cent stake, will run the network for an initial eight-year period on a contract valued at about £1 billion.	£1.4 billion
Scotland South of England	Scotia Gas Networks plc, a consortium in which Scottish and Southern Energy plc[16] has 50 per cent of the equity. The other partners, with 25 per cent each, are Borealis Infrastructure Europe (UK) Ltd and OTPPB Investments (UK) Ltd.	£3.2 billion
Wales and the West	Wales and West Utilities, a consortium led by the Australian banking group Macquarie, through its specialised investment fund Macquarie European Infrastructure Fund. Macquarie is Australia's biggest investment bank and infrastructure represents more than a quarter of its managed assets (e.g. it owns the M6 toll motorway and South East Water).	£1.2 billion
East of England London North West West Midlands	All four networks have been retained by National Grid plc and continue to be operated by its subsidiary, Transco.	–
	Total	**£5.8 billion**

Source: National Audit Office

15 United Utilities plc was created from the merger of North West Water and Norweb in November 1995. Its principal activities are managing the regulated electricity distribution, water and sewerage networks in North West England.

16 Scottish and Southern Energy own electricity networks covering southern England and the north of Scotland.

4 Changes to the gas industry



Source: National Audit Office

5 Summary of Ofgem's statutory duties in relation to gas

Principal duty	Protect the interests of consumers, wherever appropriate by promoting effective competition
Secondary duties	■ Ensure all reasonable demands in Great Britain for gas are met
	■ Ensure the holders of gas licences are able to finance their activities
	■ Have regard to the interests of the disabled, chronically sick, pensioners, those on low incomes and those living in rural areas
Other duties	■ Promote efficiency and economy by holders of gas licences
	■ Promote the efficient use of gas
	■ Protect the public from dangers arising from the conveyance of gas and its use
	■ Secure a diverse and viable long-term energy supply
	■ Have regard to the effect on the environment

Source: Gas Act 1986, as amended by the Utilities Act 2000

1.6 National Grid needed the authority of GEMA and the Secretary of State for DTI to dispose of the assets which comprised the four networks. All the work necessary for GEMA to reach a decision was undertaken by Ofgem. On Ofgem's advice, GEMA gave conditional approval to the four sales in January 2005. This was closely followed by the Secretary of State, who identified the three key areas as the implications for prices and standards of service, security of supply and safety.

Ofgem's role

1.7 Ofgem had no preferred ownership structure for the gas industry but its general policy was to seek the benefits of competition. Having more than one owner of the eight distribution networks offered the opportunity of comparing the costs and quality of service provided by different networks when setting future price controls. The sales were therefore, in principle, a change which Ofgem was minded to support, providing the interests of consumers were protected.

1.8 Ofgem's role in approving the sales evolved as its work progressed. At the time of the first public consultation paper in July 2003 it stated that the sales should result in net benefits for consumers. In Ofgem's second consultation paper, in December 2003, this had changed to 'maximising' the net benefits for consumers. The accompanying press release stressed that National Grid had to demonstrate benefits to consumers. Subsequent legal advice, obtained by Ofgem in March 2004, concluded that GEMA's statutory remit did not extend beyond protecting consumers and did not include maximising benefits. As a result, Ofgem redefined again the criteria for a recommendation to GEMA. The final position was that the sales should result in no net detriment for consumers (i.e. anything equal to or more than £nil).

1.9 Ofgem was responsible for developing the new commercial, administrative and regulatory arrangements to support the sales and, to guide its input, established a set of broad principles **(Figure 6)**. It identified the changes to the regulatory system that had to be completed prior to consent being given to the disposal of network assets and took a leading role to complete many of the tasks it identified (Part 2).

1.10 Ofgem and DTI worked closely together, drawing on Ofgem's expertise in the sales. Rather than commission its own work, DTI formed its own conclusions based on the work done by Ofgem. Ofgem also established a good working relationship with the Health and Safety Executive (HSE) to ensure the issues related to the safety of gas were addressed (see Part 6). Ofgem has a duty in respect of safety (Figure 5), but HSE has primary responsibility.

1.11 The industry feedback obtained by the NAO showed that companies had a clear understanding of Ofgem's role and duties in the sale process. In addition to statutory responsibilities, some companies viewed Ofgem as having a facilitating role in the sales process. Ofgem sought to be helpful without compromising its independence, for example by helping bidders and potential bidders to understand the regulatory framework.

6 Ofgem's objectives and principles in developing new regulatory arrangements

- Ensure that Transco does not discriminate between distribution network businesses and/or shippers in its operation of the transmission system
- Ensure the economic and efficient operation of the National Transmission System and the distribution network systems
- Not distort competition between shippers and suppliers
- Not preclude future reforms that may improve the economic and efficient operation of the gas pipeline system or that facilitate competition between shippers and suppliers
- Ensure security of supply and the effective management of emergencies
- Where appropriate, be consistent with the arrangements applying in the electricity sector

Source: Ofgem's first consultation paper (July 2003)

PART TWO
Ofgem's management of its tasks

Ofgem's planning of its work

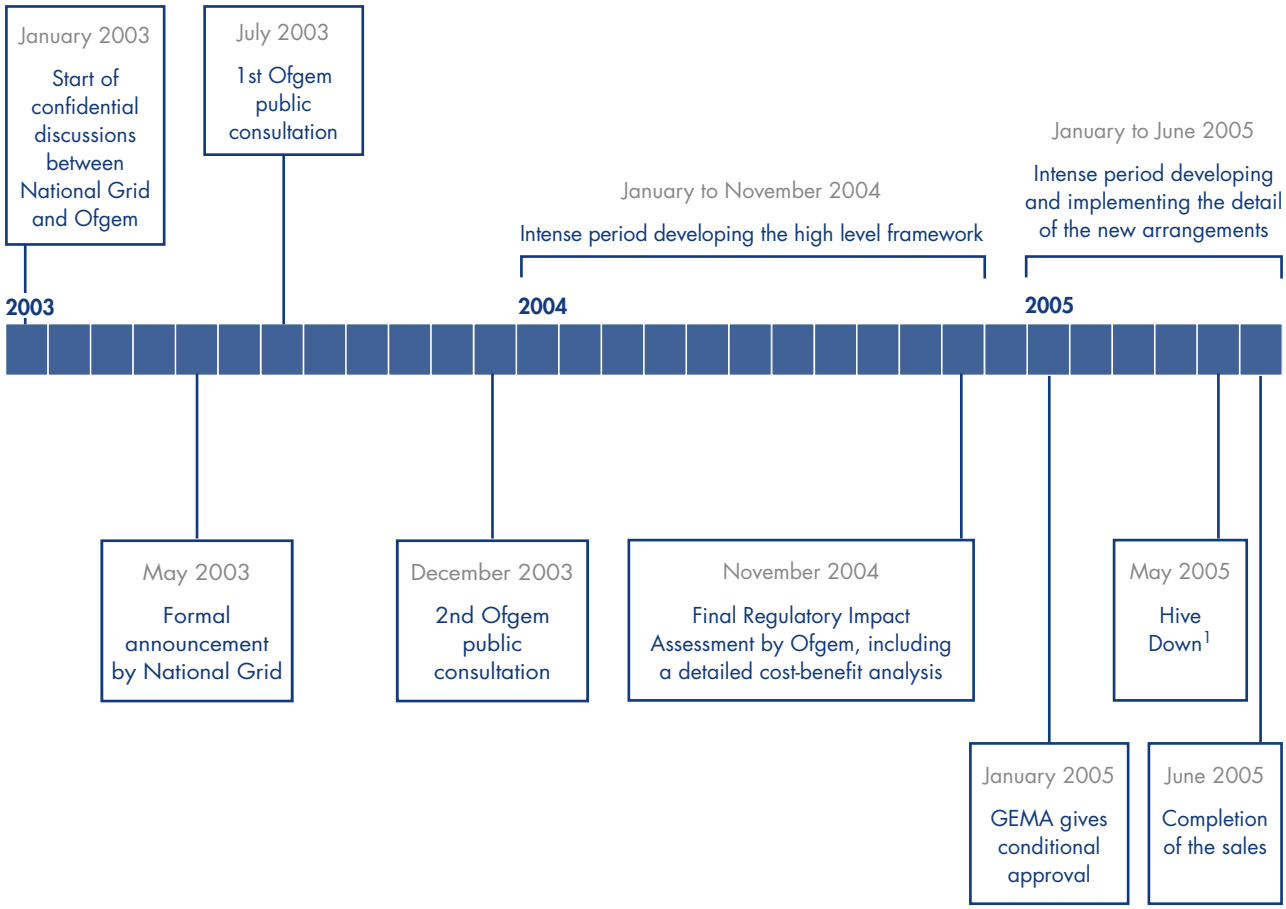
2.1 In July 2002, Ofgem began a consultation on whether to replace the aggregate price control for Transco's distribution networks by individual controls for each of the eight networks, as this could enhance the incentives for efficiency. This consultation stated that the company may decide to sell one or more of its regional networks. When National Grid approached Ofgem in January 2003 about possible sales it was not therefore a surprise, but Ofgem's position as an impartial regulator meant it could not respond to the company's proposals until they were made public.

2.2 Ofgem began planning its work as soon as National Grid made its intentions public in May 2003. The main milestones of the sales are set out in **Figure 7**. Ofgem's tasks arising from the sales sat alongside and overlapped with a large number of private commercial tasks involving National Grid as the seller, Transco as the existing operator of the networks, the purchasers and third-parties to the sales **(Figure 8)**.

2.3 The programme of work prepared by Ofgem identified those tasks, termed 'gateway issues', that needed to be resolved before the sales could take effect:

- **Changes to gas transporter licence conditions**. The licence had to be rewritten to reflect that Transco no longer operated the NTS and all eight principal networks. This was a major task.
- **The allocation of roles and responsibilities between transporters**. Ofgem had to ensure that responsibility for investment planning, system operation when problems arise and minimising the risk to security of supply were allocated between the NTS and the distribution networks in an efficient and effective way.
- **New arrangements for handling the day-to-day gas transactions of shippers and transporters**. Although it is ultimately the responsibility of the gas companies to ensure that commercial systems are in place for the use of the NTS and the distribution networks, there are major implications for consumers in terms of cost and quality of service if these systems do not work properly. Ofgem therefore took a leading role in developing the overall arrangements, including satisfactory governance safeguards (paragraphs 6.6 – 6.8).
- **Introduction of the Uniform Network Code (UNC)**. This attributes rights and responsibilities to users of the gas transportation system, and represents a contract between transporters and shippers. It replaced the Network Code, which had to be restructured so that it could support multi-ownership of the distribution networks. Although Transco was responsible for the detailed work, Ofgem needed to ensure that the UNC protected the interests of consumers.

7 Main milestones in the sale of the gas networks



Source: National Audit Office

NOTE

1 On 1 May 2003, the four networks to be sold were made wholly owned subsidiaries within Transco. This change, which was an essential step to National Grid selling these businesses to the purchasers on 1 June, was known as *Hive Down*. GEMA consented to *Hive Down* on 25 April 2005.

8 The main regulatory and commercial tasks

Commercial tasks

- Contract documentation for the sales
- Due diligence tests
- Finance by purchasers
- Investment grade credit rating by purchasers
- Business plans
- Safety Cases acceptance by HSE
- New arrangements for handling the day-to-day transactions of shippers and suppliers
- Introduction of the Uniform Network Code (see paragraph 2.3)

Regulatory tasks

- Regulatory Impact Assessment on sales as a whole, including a cost-benefit analysis
- Allocation of roles and responsibilities between the National Transmission System and the eight regional distribution networks
- Licence changes
- Offtake & Interruptions (see paragraphs 2.16 - 2.17)
- Safety

Source: National Audit Office

2.4 Ofgem is used to responding to developments in the electricity and gas markets and makes an annual provision for this work in its budget. The tasks arising from the gas network sales, however, were particularly resource intensive due to their scale and complexity. In 2004-05, Ofgem spent £2.5 million on work related to the sales, 7 per cent of gross administrative costs. By size of spend this was Ofgem's second largest project in 2004-05 and the only one of its six main projects that was not an Ofgem inspired initiative. When first applying for resources in November 2003, Ofgem informed GEMA that, since there was no specific funding for this project in 2003-04, further work, including legal assistance estimated at £250,000, would inevitably divert staff resources away from other projects (e.g. work involving the customer transfer process and security of supply).[17]

Ofgem's management of its work

2.5 There were many features of good practice in the way Ofgem project managed its tasks. It established detailed risk and issue registers at an early stage and updated them regularly. A key counter-measure was dialogue with relevant parties, which Ofgem implemented through its extensive consultations, its constructive working relationship with National Grid and close liaison with HSE. Other features of good project management were the use of MS Project software to structure the sequence and timing of tasks, and regular progress reports to GEMA.

2.6 There are, however, lessons to be learned from other aspects of Ofgem's internal project management. Staffing was a problem throughout the project. It was consistently under-resourced. A key factor was the non-availability within Ofgem, due to vacancies and competing priorities, of staff with the necessary specialist skills and experience. To a large measure it was only through the drive and determination of the individual members of Ofgem's small project team, including working long hours each day and working at weekends, that GEMA was able to meet its responsibilities in the timetable it did.

2.7 To overcome the pressure on resources and problems with the availability of expertise, Ofgem has made extensive use of consultancy assistance from PA Consulting. The firm was appointed in January 2004 after competitive tender.[18] The contract was awarded on the basis that it would have a value of £100,000 and last three months, with a two month extension option worth £87,000. This option was taken up due to the need to meet work deadlines. Further extensions were approved in 2004 and 2005 to ensure the timely completion of regulatory tasks. These extensions were funded using a contingency budget that Ofgem had in place for projects of this nature. The main reason for not re-tendering the work was the loss of accumulated knowledge and expertise, and the potential impact this would have on meeting Ofgem's tight timetable for completing tasks. At the time of the most recent extension, in February 2005, total expenditure had reached nearly £900,000. Final outturn is expected to be £1.3 million.

2.8 The input from PA Consulting was critical to the delivery of Ofgem's work programme for the sales. The consulting firm worked on a number of aspects related to the sales, most notably the modelling of costs and benefits; the allocation of roles and responsibilities between transporters; and the new arrangements for handling day-to-day gas transactions of shippers and transporters (paragraph 2.3). In addition to PA Consulting, Ofgem has also employed a number of external lawyers to provide legal advice on the sales at a total cost of £334,000.

17 Ofgem's security of supply work includes ensuring that all reasonable demands for electricity and gas are met, and securing a diverse and viable long-term energy supply.

18 Five tenders were received. Using its structured scoring methodology, PA Consultancy was assessed at 59 points out of a maximum of 87 – the highest of the five tenders. Ofgem concluded that PA Consulting had the appropriate mix of economic as well as operational knowledge of the wholesale gas regime.

The outcome of Ofgem's planning

2.9 All the 'gateway issues' (paragraph 2.3) were duly completed by Ofgem before 1 June 2005, enabling GEMA to discharge its statutory responsibilities in respect of the sales. In completing its programme of work for the sales Ofgem sought to apply the five principles for good regulation – proportionality, accountability, consistency, transparency and targeting[19] **(Figure 9)**. A particular effort was given to consulting the gas industry, a key aspect of transparency; and to explain how and why final decisions had been reached, a central tenet of accountability. However, shippers considered that towards the latter stages of the sales process the established arrangements for consultation were not always used for the Uniform Network Code (paragraph 2.13).

2.10 The Utility Act 2000, as amended, requires GEMA to complete a Regulatory Impact Assessment[20] for all its important proposals. Ofgem sought to use the RIA technique widely in the sales and produced seven RIA-type consultation papers. These were an integral part of Ofgem's overall approach of constructive engagement. In addition to these papers, Ofgem established several workgroups during the sales **(Figure 10 overleaf)**. These were open to all interested parties to attend. The feedback obtained through both approaches helped Ofgem to overcome the asymmetry of information between itself and National Grid, a process that also required the company to provide specific items of data.

9 Principles of good regulation

Principle	Summary of good practice	Examples of how Ofgem applied the principles during the sales
Proportionality	Regulators should only intervene when necessary. Remedies should be appropriate to the risk posed, and costs identified and minimised	■ Six options were considered during the regulatory impact assessment of the agency and governance arrangements ■ Included a detailed cost-benefit analysis in the final regulatory impact assessment (November 2004)
Accountability	Regulators must be able to justify decisions, and be subject to public scrutiny	■ All key decisions were published and explained
Consistency	Government rules and standards must be joined up and implemented fairly	■ The amended conditions in the transporter licences help to provide stability and certainty for the industry, the regulator and consumers
Transparency	Regulators should be open, and keep regulations simple and user friendly	■ Ofgem made it clear from March 2004 that all its decisions would comply with its role to protect consumers
Targeting	Regulation should be focused on the problem, and minimise side effects	■ Focused on the most serious risks by identifying its 'gateway issues'

Source: National Audit Office and the 'Principles of Good Regulation' guidance issued by the Better Regulation Task Force

19 Better Regulation Task Force: Principles of Good Regulation (December 1997, revised 2000 and 2005).
20 Or to say why it is unnecessary.

10 Workgroups established by Ofgem for the sales

Work group	Role
Development and Implementation Steering Group	■ To provide guidance and monitor progress of the three other workgroups
Commercial Interfaces Workgroup	■ To determine how the commercial interface between the NTS and the eight principal distribution networks should be modified to accommodate separate ownership (e.g. pricing of exit capacity from the NTS, management of interruptions)
Regulatory Architecture Workgroup	■ To develop a legal framework that supports the proposed new industry structure, and to give legal effect to the policy positions developed in the other workgroups
Agency Workgroup	■ To consider the detailed arrangements for an agency to handle the day-to-day gas transactions of shippers and transporters, especially funding, ownership and governance

Source: Ofgem

2.11 Stakeholder responses to the NAO acknowledged the efforts made by Ofgem to consult. Ofgem's papers were generally regarded to be of good quality and the working groups to have been useful. Companies were, however, stretched to respond in the timescales allowed and attend all meetings, especially as other parts of Ofgem continued to issue numerous consultation papers. For example, Ofgem published four consultation documents on different aspects of the sales within a two month period in summer 2004.[21] Ofgem was not able to comply with the Cabinet Office's Code of Practice in respect to consultation periods (i.e. 12 weeks) due to the commercial timetable for the sales, but supplemented formal consultation with contacts at working group meetings. Interested parties, however, were able to inform their understanding through participation in the workgroups, although shippers considered that the Commercial Interfaces Workgroup and the Regulatory Architecture Workgroup (Figure 10) were disbanded too soon.

2.12 Ofgem considered all responses to its consultations. As its role was to protect consumers and not to seek consensus in the gas industry, some responses were not taken forward. This was bound to arise as there were strong vested interests. Although Ofgem sought to explain its decisions in full, it was sometimes constrained by the need to respect the commercial sensitivity of some information.

2.13 Feedback to the NAO from third-parties indicates that Ofgem's day to day planning of the regulatory tasks was generally good and that Ofgem had a thorough grasp of the operational issues that arose from the sales. Aside from the heavy burden of consultation (paragraph 2.11), there were three concerns about Ofgem's planning:

- The industry would have been able to schedule its resources better if the overall timetable had been made clearer, and there were periods of uncertainty when the industry regarded the published timetable as unrealistic. Whilst Ofgem sought to provide clarity, it faced difficulty throughout the project in reconciling the regulatory aspects of the sales with National Grid's commercial timetable. For example, in November 2003, Ofgem delayed the sales timetable to ensure sufficient time for full analysis and consultation on the impact of the sales on consumers' interests.
- Work on the licence changes should have been started earlier. In Ofgem's view, Transco stalled on the high level framework, which needed to be settled before detailed work could commence.

21 Ofgem issued a large number of papers to keep the industry informed of progress on all aspects of the disposal, including technical issues. 387 documents were issued between January and November 2004.

- Shippers complained about the way Ofgem went about introducing the Uniform Network Code (paragraph 2.3). They argued that the agreed procedures for making changes to the former Network Code were not followed, putting contractual relationships at risk. Ofgem firmly dismisses this assertion on the basis that the shippers' proposed process for introducing this Code would not have worked from a legal perspective. Ofgem also stress that the Code was primarily a Transco responsibility.

2.14 The only unplanned event was the need to grant National Grid and the new owners an exemption from the Gas Act 1986. This was not foreseen by Ofgem or National Grid. It required DTI to do this at short notice and delayed completion of the sales by two months. The exemption, which took the form of a statutory instrument, was needed to enable the new commercial and operational arrangements to function efficiently.[22]

2.15 Overall, National Grid and the three purchasers were content with the way Ofgem went about its tasks. However, two of the three purchasers consider that the letter of comfort that Ofgem unexpectedly required each purchaser to provide in the week preceding completion of the sales should have been organised earlier. The letters give an undertaking by the purchasers that if any commercial, regulatory or operational issues associated with the sales arise the purchasers will notify GEMA immediately; and use all reasonable endeavours to resolve any such issues in an economic, efficient and expeditious manner.

Gas exit reform

2.16 As part of the changes to the way gas is administered by the industry after the sales, Ofgem is introducing a major change to the way total capacity in the National Transmission System is allocated. Ofgem regards this as a key reform required to ensure that the interests of customers are protected within the fragmented structure arising from the sales. Known in the industry as *'gas exit reform'*, the change comprises two elements: changes to the way available capacity from the NTS is allocated (known as *'offtake'*) and changes to the contractual arrangements for disconnecting large users on cheaper interruptible tariffs when demand exceeds supply (referred to as *'interruption'*). Ofgem completed a Regulatory Impact Assessment on each of these two elements in June 2004.

2.17 The reform of gas exit was taken forward by Ofgem in parallel with the sale of the gas networks. The gas industry, especially shippers, is deeply concerned about the way Ofgem has handled this reform. Stakeholders told the NAO that it added significantly to the complexity of the sales and that it took up considerable resources within Ofgem and gas companies. Offtake and interruptions were identified by Ofgem as key measures that should be in place for the post sale operational arrangements to be fully effective. However, in response to strong pressure from the industry, Ofgem decided in early 2005 to delay full implementation to September 2005, and then 2007.

22 The Gas Act 1986 precluded companies from holding both a gas transporter licence and a gas shipper licence in order to stimulate competition in shipping. The amendment enables the companies involved to make arrangements with each other to take gas off the transmission system and onto the distribution networks without being authorised to do so by a company holding a shipper licence. Given the commercial timetable, the statutory instrument was delivered using a 28 day consultation rather than the Government's preferred 12 week period.

PART THREE

Estimating the costs and benefits

3.1 In any cost-benefit analysis, there are three important elements. First, there are the assumptions that underpin the calculation of the net benefits of the preferred option. Second, there are the factors that are particularly sensitive and would significantly change the value of the preferred option. Third, there is an analysis of alternative options, which should include a do-nothing option. This Part sets out the results of Ofgem's analysis and then evaluates its approach against these criteria.

The outcome of Ofgem's cost-benefit analysis

3.2 Ofgem evaluated the costs and customer benefits of the proposed disposals and concluded that the best estimate of the potential gross benefit to customers was £325 million.[23] The benefits are expected to result largely from lower transportation charges for the use of the gas distribution networks, and should be passed on to customers in the form of lower prices. Ofgem calculated that the net customer benefits could be as high as £500 million or as low as £80 million. This assessment gave Ofgem confidence that the sales would provide a benefit for consumers, and formed the basis of its decision to recommend approval.

3.3 Ofgem's estimate of customer benefits was calculated using conservative assumptions. In practice, the net benefits could be higher as the analysis included operating expenditure but did not consider possible savings from more efficient capital expenditure. Ofgem believes that the introduction of comparators will also lead to significant savings in capital investment as the new owners introduce more efficient practices.

3.4 The predicted benefits are negligible when compared to the annual gas bill for the average domestic customer. The potential savings equate to approximately £1 per customer per year, which is small when compared against the average increases of £111 in domestic gas bills since 2003 (paragraph 1.1).

3.5 In many respects Ofgem's cost-benefit analysis followed Treasury's Green Book advice: avoiding spurious accuracy; costs and benefits covering the lifetime of the assets; use of a suitable discount rate; calculating a high, best estimate and low case; and, the use of sensitivity analysis. Ofgem had a clear rationale for determining the assumptions underpinning the benefits and presented them well. Some stakeholders told us, however, that even though Ofgem's analysis contained commercially confidential information the analysis could have been more transparent by showing the aggregate data and the methodology used.

Assumptions underpinning the benefits

3.6 Ofgem believes that 95 per cent of the gross benefits for consumers (£310 million out of £325 million)[24] will be delivered as a result of its ability to compare the costs of four independent network owners when setting future price controls. The availability of comparator information helps Ofgem to replicate the effects of competition

23 In net present value terms, gross benefits were £325 million and costs were £100 million.
24 The remaining £15 million is predicted to come from more efficient operation of the gas network.

through the regulatory process whereas, previously, it was only able to make internal comparisons of National Grid's performance and costs.[25] Ofgem's ability to set revenue limits for the network owners is therefore improved as it will have better information on the appropriate level of costs of an efficiently managed gas distribution business. This will enable it to set challenging targets and establish incentives for each company to out-perform its competitors. The benefits of comparative regulation are set out in **Figure 11** and Appendix 2.

3.7 Ofgem's confidence in the benefits of comparative regulation was based on its analysis of the electricity and water industries, and academic research. It has already used a comparative regulatory regime for setting price controls in the electricity distribution sector, as has the Office of Water Services (Ofwat) for the water and sewerage companies in the UK. Both Ofgem and Ofwat have pointed to reductions in the operating expenditure of companies **(Figure 12 overleaf)** and the Competition Commission has also acknowledged the value of comparators in regulation. Ofgem concluded that it was reasonable to expect the benefits seen in other sectors to be replicated in the gas distribution sector.

3.8 Ofgem believed that the rivalry created by the independent ownership of the distribution networks would lead to reductions in their controllable operating costs. Overall, based on an assessment of the cost reductions achieved in other regulated industries (Figure 12), Ofgem assumed that an average annual cost reduction of 4.13 per cent was possible **(Figure 13 overleaf)**. It estimated that the value of three additional comparators would be a 1.13 per cent per annum reduction in the operating expenditure of network owners between 2008 and 2023. This represents Ofgem's expectation of the likely rate of cost reductions as a result of comparative regulation, compared with a no sale scenario. This was in addition to a predicted efficiency saving of three per cent per annum, regardless of whether the sales proceeded (paragraph 3.17). Our analysis shows that this equates to possible savings of £1.2 billion between 2008 and 2023.

Assumptions underpinning the costs

3.9 The sales represented a fundamental restructuring of the gas industry which, inevitably, led to companies incurring increased costs. In early 2004, Ofgem published four regulatory impact assessments which investigated certain aspects of the sales and contained its estimates of costs. In some cases, for example, interruptions arrangements, the costs were quantified and used to inform the final impact assessment of November 2004. In other cases, for example, the agency and governance assessments, the main costs elements were identified but not quantified.

11 The benefits of comparative regulation

More effective regulation

Improved cost estimation

The regulator is better able to assess the true cost function of firms and put in place challenging targets for efficiency savings in the regulated companies.

An impartial view of relative performance of each company

Comparative analysis allows improved monitoring of the relative performance of each company, thus making it easier for the regulator to develop appropriate incentives.

A reduced risk of 'gaming'

There is a risk that imperfect information allows monopoly companies to meet shareholders' and the regulator's demands, but hold back some savings for the future – making it easier to meet future demands. Comparative analysis reduces this risk.

Company behaviour

Competition

The separate ownership and management of the businesses can also lead to improvements in the way firms operate. There is greater incentive to outperform competitors.

Innovation

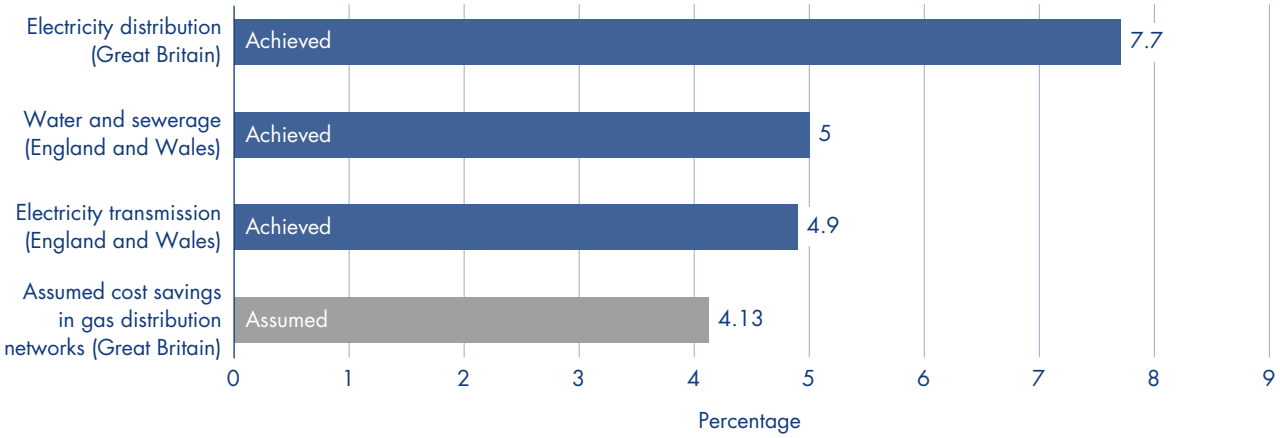
New management teams will also bring experience of operating other utility businesses in the UK and overseas. For example, new management approaches may introduce innovative and efficient working practices from other industries, including a wider use of information technology.

Source: Oxera analysis

25 Comparative performance assessments are designed to mimic a competitive market. If a market leader innovates or exploits advances in technology, competitors attempt to catch up through spill over effects and learning.

3.10 Ofgem consulted extensively with the industry in order to understand the extra costs for consumers that were likely to result from the changes. The largest single item was shippers' costs related to the development of an agency to ensure that shippers retained a single industry interface (paragraph 2.3, third bullet).[26] One-off costs incurred by shippers were approximately £25 million and on-going costs were estimated at £7 million per year. These figures were added to estimates of additional regulatory costs and offtake costs (paragraph 2.16) to calculate that net present value of costs resulting from disposals as £100 million. Ofgem also calculated the low, best estimate and high case of costs by applying a number of methodologies to the supplier data.[27]

12 Yearly reductions in operating expenditure as a result of comparative regulation: Existing examples compared to the sale of gas distribution networks



Source for achieved reductions in operating expenditure: CEPA's Final Report on productivity improvements in electricity distribution networks (November 2003) – covers periods of up to 11 years.

13 The scope for cost reductions in the gas distribution sector

Potential value of benefit	Source of benefit	When deliverable	Information
1.13% improvement (£325 million) (gross)	Separate ownership of the gas distribution networks	80 per cent of benefits from 2013 (paragraph 3.14)	Ofgem is collecting new information from the network owners to analyse performance
3% improvement (£830 million) (see paragraph 3.17)	Potential efficiency savings inherent in the networks – regardless of sales	Deliverable from next price control review – in 2008	Much of this information should already be available

Source: National Audit Office

26 The costs incurred by National Grid in setting up and running an agency had to be met from the existing price control.
27 Ofgem calculated that costs could be as high as £118 million or as low as £82 million.

3.11 Feedback from our survey indicated that most shippers and trade bodies were of the opinion that the cost to the gas industry had been understated. In particular, some respondents believed that Ofgem had focussed on evaluating shippers' costs and had not quantified end-user costs. Most respondents felt they had not received enough information from Ofgem for costs to be estimated accurately, especially in the limited time made available (paragraph 2.13). Ofgem's objective was to do sufficient preliminary planning to enable companies to provide meaningful estimates, while minimising the risk of wasted effort if GEMA decided not to approve the sales, and avoiding an accusation that its level of planning was on a scale that pre-empted GEMA's decision.

Ofgem's use of sensitivity analysis

3.12 Ofgem tested a range of assumptions for the two principal factors that have a material impact on the calculation of benefits:

- the rate of reduction in controllable operating costs; and
- limited changes to the profile of customer benefits over time.

Controllable operating costs

3.13 Ofgem explored the impact of different sale scenarios on the rate of improvement in efficiency savings and calculated the likely increase in customer benefits. The main variable was the number of new entrants to the sector, which would provide additional comparators to National Grid. This showed the benefits ranged from £145 million with one new market entrant to £355 million with four new owners **(Figure 14)**. In a scenario where only one network was sold, or one buyer purchased all four networks, Ofgem sought to protect the consumer interest by introducing a customer "safety net". The safety net would be a compulsion on National Grid to pay to customers the difference between the agreed costs and benefits of the best estimate which would, if necessary, be implemented through an adjustment to the allowed revenues at the next price control review.

The timing of customer benefits

3.14 Ofgem also considered the timing of cost reductions and the impact on the net present value of the benefits. It considered the possibility of a constant rate of improvement between 2008 and 2023 but, following discussions with the industry, concluded that the savings would not be linear and would represent a 'bell shape' **(Figure 15 overleaf)**. The highest level of savings is expected in the second price control period, between 2013 and 2018, when Ofgem has obtained more robust information on the relative efficiency of each network. Ofgem predicted relatively low levels of saving in the first period as less comparative information will be available, and lower savings in the third price control period as the potential for efficiency gains would have been exploited already. As a result, Ofgem predicted that 80 per cent of customer benefits will be delivered after 2013.

14 The effect of the number of comparators on customer benefits

Number of comparators	Low Case (£m)	Best Estimate (£m)	High Case (£m)
1	85	145	275
2	140	240	450
3[2]	**180**	**310**	**565**
4	210	355	640

Source: Final Impact Assessment, Ofgem, November 2004

NOTES

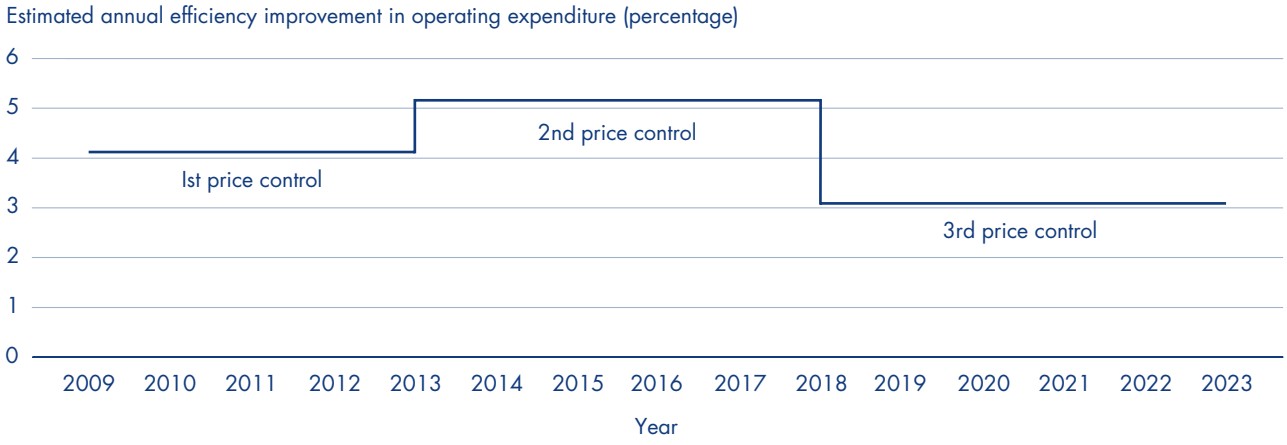
1 These figures are at 2004 prices and rounded to the nearest £5 million.

2 The actual sale scenario.

3.15 The timing of the potential savings has a significant impact on the benefits calculation: the sooner the gains occur the higher the present value of benefits. Ofgem considered the implications of a constant rate of improvement across the three price control periods – which it rejected – and variations to its 'bell-shaped' distribution. We took this analysis further and evaluated the impact of any changes to unequal distribution of cost savings between regulatory periods. **Figure 16 overleaf** shows the sensitivity of the benefits to different timings.

3.16 There was scope for further improvements to the sensitivity analysis, for example in the area of risk. To take account of the risk posed by uncertain outcomes, the Treasury Green Book recommends calculating the 'expected value' of risks. This is a technique which can reflect all known risks by multiplying the likelihood of a risk occurring by the size of the outcome in monetary terms, and summing each of the results. Ofgem could have used this technique to assess the effect of risks, for example, which might impact the phasing of the efficiency gains.

15 Phasing of the benefits of comparative regulation



Source: Ofgem's Final Impact Assessment, Ofgem, November 2004

16 How the phasing of the benefits affects their present value

Phasing of savings across price controls	**Present value of benefits (£m)**
The benefits occur in the second and third price controls, increasing throughout each price control	55
All benefits occur during the second price control	225
Benefits occur at the same rate throughout each price control (linear distribution)	260
Ofgem's best estimate	**310**
Most benefits occur in the first price control and then reduce through subsequent controls	390

Source: National Audit Office analysis

NOTE
All benefits are rounded to the nearest £5 million.

The consideration of the 'do-nothing' option

3.17 To calculate the potential benefits from the sales for customers, Ofgem considered the potential for efficiency savings under a no-sale scenario. From this analysis, which was not intended to identify the overall scope for savings in the gas distribution sector, Ofgem assumed that improvements of three per cent per annum were realistic. This was marginally tougher than the efficiency savings historically achieved by National Grid and was based on the increased transparency of costs arising from the internal restructuring of Transco in 2002, which would allow some comparisons to be made between the eight networks (see paragraph 4.10). In Ofgem's view, three per cent represented a conservative assumption as National Grid had already delivered reductions of 3.5 per cent per year in the electricity sector. The figure of three per cent is a material assumption used by Ofgem to calculate the value of the benefits from the sales: a figure higher than three per cent reduces the benefits of the sales as the 1.3 per cent is applied to a lower level of costs, and vice versa (i.e. the higher the overall level of efficiency savings, the more cautious the estimate of benefits from the sales).

PROTECTING THE CONSUMER AFTER THE SALES:

Part 4 Securing benefits for consumers

This Part examines if the benefits for consumers are likely to be realised.

Part 5 Financial risks

This part examines whether Ofgem is addressing the financial risks arising from the sales.

Part 6 Safety and other factors

This part examines whether Ofgem is addressing the non-financial issues arising from the sales.

PART FOUR
Securing benefits for consumers

4.1 Ofgem predicted that the sale of the gas distribution networks could result in gross benefits of £325 million between 2008 and 2023, which are expected to be passed to customers via lower prices. Ofgem cannot, itself, deliver the benefits as it must rely largely on the behaviour of the network owners, but the extent to which the benefits will be passed through to customers will depend upon its ability to regulate the industry effectively. This Part examines Ofgem's approach.

The challenges in securing customer benefits

4.2 Ofgem faces a number of challenges:

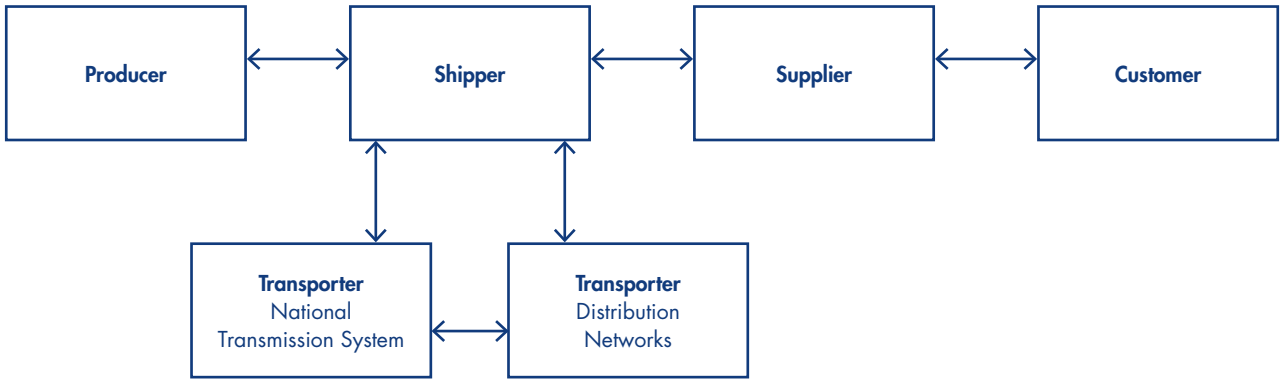
- delivering benefits over 15 years from 2008 is uncertain in a rapidly changing world;
- the predicted annual efficiency savings from the sales mean that by 2023 the network owners will have to reduce their operating expenditure by an amount that is 10 percentage points higher than the assumed scenario had the sales not taken place. The combined assumed savings are equivalent to a 47 per cent reduction in real terms by 2023. These are theoretical calculations. Ofgem tested the robustness of these assumptions by making comparisons with other industries but did not identify how the network owners might achieve such operational savings or test whether safety considerations restricted the level of savings; and
- there is no guarantee that reductions in operating expenditure will be passed on, via lower prices, to customers. Ofgem took the view that in a competitive supply market changes in the level of transportation charges, either up or down, can be expected to be passed through to customers **(Figure 17)**.

How Ofgem is seeking to secure customer benefits

4.3 Ofgem's role in securing the predicted customer benefits is to provide strong incentives for the gas distribution companies through a stable and firm regulatory framework. The main mechanism available to Ofgem is its price control reviews.[28] Ofgem's ability to set challenging targets in the price control reviews is largely dependent upon the quality of the information it is able to collect. We examined how Ofgem was tackling these issues.

28 The regulator uses the price control review to incentivise companies to provide efficient services and make the necessary investment in infrastructure whilst, at the same time, ensuring that they can finance their activities.

17 The commercial arrangements for supplying customers with gas



Source: National Audit Office

Ofgem's proposed approach to setting price control reviews

4.4 In 2003, Ofgem consulted the industry on the duration of network price controls and found that no respondents provided a strong argument for change. Ofgem generally undertakes price control reviews at five yearly intervals, which is standard regulatory practice in the UK. Given Ofgem's view that there were no grounds to re-open the price control as part of the sale process, it did not evaluate fully the different options for the timing and length of the price controls when it carried out its cost-benefit analysis. Ofgem places great value on having a reputation for predictability and stability, and was concerned that changing the period of price controls in order to maximise the value of customer benefits could be regarded as opportunistic.[29] With this in mind, in December 2005 Ofgem began consulting on the duration of the next price control period as part of its gas distribution price control review.

4.5 Ofgem extended the existing gas distribution price control by one year to March 2008. The primary purpose was to separate the gas distribution and gas transmission price controls in order to provide a more balanced workload for itself and industry. The extension also had the added advantage of providing an extra year for the companies to refine their understanding of cost drivers. Ofgem will also receive an additional year of data to compare the performance of the new companies.

4.6 Ofgem believes the existence of independently owned companies is crucial to delivering additional customer benefits (paragraph 3.6). However, the existence of just four independently owned companies, compared to 22 water companies and 8 electricity distribution groups[30], means that there are a limited number of comparators and fewer independent management styles to generate innovation. Ofgem has evaluated the implications of fewer comparators and will develop a methodology to compare the performance of the new companies during the first gas distribution price control.

Collecting information on the network owners

4.7 The effectiveness of comparative regulation is dependent on the quality of information collected by the regulator. Too little, or poor quality, data reduces the regulator's ability to make robust comparisons between firms, thus reducing its ability to incentivise companies to make efficiency savings. As the new companies have only just entered the market, there is a risk of inconsistencies in the available data as they develop their own management information and reporting systems.

29 The credibility of regulators is important because it affects the markets' perception of regulatory risk and hence the price at which regulated companies are able to gain access to capital.

30 There are 14 regional distribution networks in Great Britain. One company owns three networks, five companies each own two networks and one company has a single network.

4.8 Ofgem has responded proactively to these challenges and considered carefully how to maximise the availability and quality of comparative data **(Figure 18)**. In particular, it has begun a consultation with the industry to define its information requirements and, internally, has sought to learn lessons from the 2005 electricity distribution price control review. Ofgem has thus made a timely start to developing a robust reporting framework for collecting information on the costs and performance of the network owners. These measures build confidence that Ofgem will be well-placed to make effective comparisons between companies.

4.9 A comparative assessment of performance incurs a regulatory burden for the companies, which have to engage with the regulator on the proposed approach and supply requested data. Ofgem should adopt the principles of good regulation and consider the burden it places upon the industry. We would expect Ofgem to engage with the industry to develop a sound understanding of the key drivers of cost and performance and translate this into clear guidelines (e.g. by initiating a whole industry research project on cost functions).

Exploiting existing information

4.10 The objective of Ofgem's analysis was to estimate the potential for customer benefits arising as a result of the sales, not to estimate the overall scope for efficiency savings in the gas distribution sector. However, as noted in paragraph 3.17, in order to make an estimate of the sale benefits, Ofgem assumed that there was scope for average reductions in operating costs of three per cent per annum, irrespective of whether the sales took place. This equates to £830 million over the period 2008-2023. Important objectives of Ofgem's next price control review for gas distribution are to put in place a cost reporting framework that will maximise its ability to identify and compare the costs of distribution companies and to pass the benefits of increasing efficiency back to customers.

4.11 Ofgem also has the unusual advantage of having cost information that was made available in the sale process. National Grid identified the potential for efficiency savings in its sale documentation and, since completion of the sales, purchasers have publicly stated their intentions to reduce costs **(Figure 19)**. City analysts have also reviewed the potential for cost savings within the businesses. The availability of such information is unusual in the regulated industries, in which the scope for efficiency savings is often the subject of considerable debate between regulator and regulated companies.

18 Ofgem's response to information problems

Difficulty	Consequences	Ofgem's response
A small number of network owners.	Limits the effectiveness of comparative analysis methodologies.	Ofgem is evaluating the appropriateness of analytical techniques on the basis of available data.
Limited understanding of cost drivers and performance indicators.	The new owners are likely to review the business to identify operational savings.	Ofgem plans to consult with the industry on the reporting of costs and cost drivers, to inform its information requests. Lessons have been learnt from electricity distribution price control.
Limited historic data.	Time series data is most useful if collected consistently over time.	Ofgem has amended the licences of the new owners to supply consistent data annually. The aim is to collect consistent trend data across companies.

Source: National Audit Office/Oxera

19 Views expressed on the scope for savings in operating costs

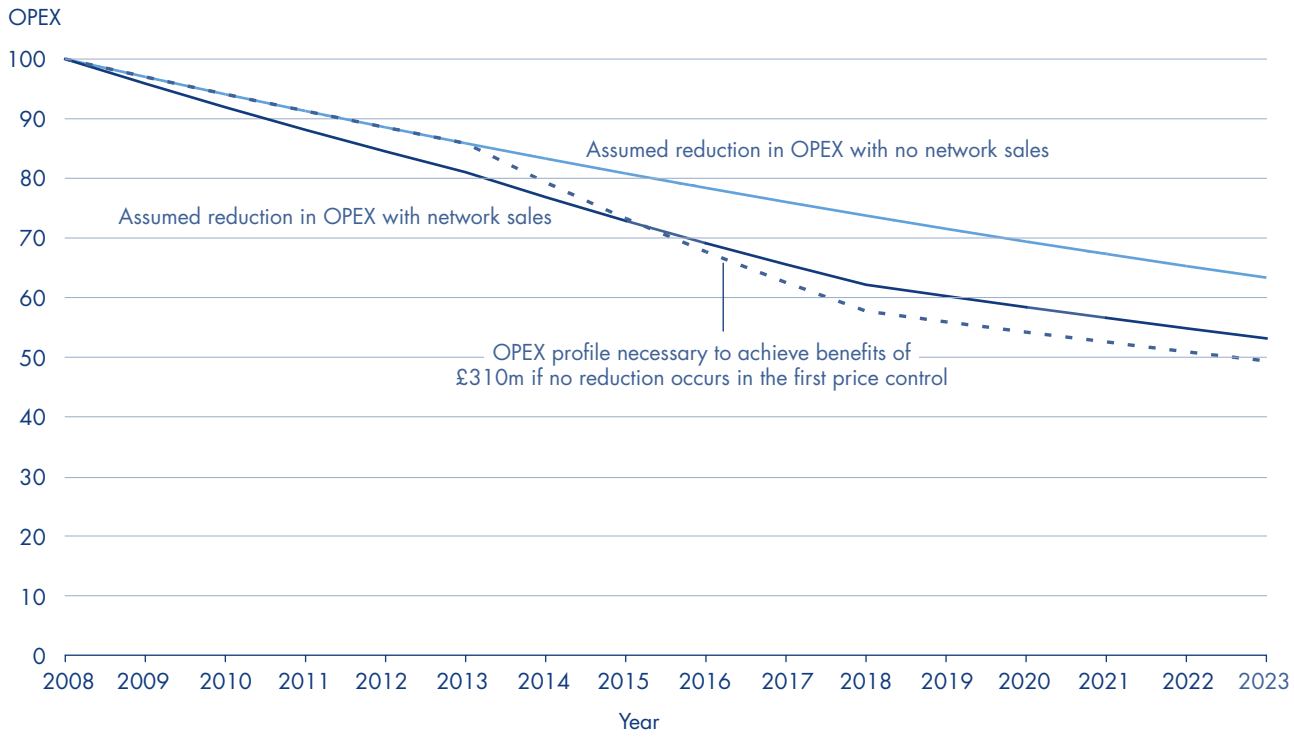
Citigroup	There is scope to extract operational and capital efficiencies from the networks. National Grid targeted a 35 per cent real reduction in controllable costs by 2007, thus outperforming regulatory assumptions by 20 per cent.
Scotia Gas Networks	There is an opportunity to reduce head office costs and operating costs through better planning and use of new technology.
Wales and West Utilities	There is significant opportunity to drive down costs.

Source: National Audit Office

4.12 Ofgem expect to set challenging targets in the 2008-2013 price control review, even though it will only have one full year of operational data from the new network owners (2006-07). The predicted savings from separate ownership of the networks equate to £60 million in the first price control period. Ofgem expects to deliver these efficiency savings. If these are not achieved during 2008-2013, then Ofgem's best estimate of total consumer benefits from the sales will reduce from £310 million to £150 million. To maintain the benefits at £310 million, operating expenditure would need to reduce by over 7.5 per cent per year in the second price control period instead of an annual saving of 5.2 per cent (Figure 15 on page 24). **Figure 20** analyses the effect the timing of predicted savings has on operating expenditure.

20 Predicted reductions in operating costs from 2008 – with and without distribution network sales

The difference between the two solid lines in this chart represents the estimated benefits of the network sales.



Source: National Audit Office analysis

NOTES

1 OPEX is the allowance in future price controls to cover operating expenditure.

2 OPEX is indexed at 100 from 2008.

PART FIVE
Financial risks

5.1 Ofgem has a statutory duty to ensure that regulated companies can finance their activities. Following the completion of the sales, we identified three risks areas that have potential implications for the future regulation of the gas distribution sector. These are:

- new companies may suffer financial distress and, consequently, not be able to maintain secure and reliable operations;
- the premiums paid by the purchasers could potentially influence their approach to operating the networks, driven by a desire to recover the premiums; and
- the trend across the regulated industries to adopt capital structures based on higher levels of debt financing can change the incentives of companies to optimise efficiency gains.

5.2 This Part examines how Ofgem is responding to these risks.

The ability of companies to finance their activities

5.3 There is a risk that the financial standing of individual regulated companies can deteriorate over time, either due to their own mis-management or as a result of unforeseen financial shocks. Other sectors, such as rail and aviation, have experienced significant shocks that have affected the financial viability of the regulated companies. There remains a risk of such a shock occurring in the gas distribution sector. For example, a large accident could lead to a need for unforeseen large scale investment in the networks.

5.4 Ofgem reviewed the financial strength of the prospective purchasers before providing its approval for the disposals, and has established procedures to protect the consumer in the event of financial failure. In particular, it:

- appointed specialist consultants to review the financing arrangements of the prospective purchasers. The review covered each purchaser's financing structure, the respective rights of capital providers by class, the flow of funds, governance arrangements and credit ratings; and
- established a regulatory framework to protect the interests of customers in the event of commercial failure **(Figure 21)**.

21 Provisions to protect the financial interests of consumers

To address the risks and consequences of insolvency, the licences include:

- Financial ring-fencing – these requirements cover such matters as limits on indebtedness, maintaining sufficient financial resources, and restrictions on business activity
- The requirement to maintain an investment grade credit rating
- Special Administration Provisions whereby the prime purpose of the administrator is to ensure the continued operation of the company, rather than maximising the returns to creditors

Source: National Audit Office

The implications of the premiums paid by the purchasers

5.5 It is possible that the price paid by the purchasers can influence management incentives. For example, a significant premium may indicate aggressive assumptions in the business plan and could encourage excessive risk-taking, including pushing the staff or the infrastructure too hard to recover the premium paid. Such a strategy could increase risks for consumers and, therefore, the prices paid can have implications for the regulatory approach. Our consultants examined the reasons for, and implications of, the premiums.

The level of the premiums paid

5.6 The three purchasers paid National Grid a combined total of £5.8 billion (Figure 3 on page 11) which represented a 14 per cent premium on the estimated regulatory asset value (RAV) at the time of the sales. The regulated asset value represents a proxy for the valuation of the company **(Figure 22)**. The actual premium paid, however, may eventually turn out to be lower. Ofgem indicated, without making a firm commitment, that it would increase the regulatory asset value of the networks at its next price review to allow them to recover efficient capital spend that was in excess of the forecasts.[31] If such regulatory adjustments are made, the level of premium paid may be closer to 10 per cent.

5.7 Oxera's analysis shows that the prices paid by the purchasers were in line with the premiums paid in other disposals in the regulated utility sectors in the UK **(Figure 23)**. With the exception of two water companies in 2003, all disposals show substantial premiums to the companies' regulatory asset value. The negative premiums for the two water companies reflected the specific circumstances at the time.[32]

Reasons purchasers may pay a premium

5.8 There are likely to be mix of reasons why purchasers were willing to pay a premium for the gas distribution networks. In general, purchasers may be willing to pay prices in excess of the regulated asset value because of:

- expectations of outperforming against regulatory assumptions – the company believes it can achieve greater cost savings than the regulator assumed[33]; and
- economies of scale – particular buyers may be able to exploit scope or scale economies. For example, Scotia Gas Networks has purchased the Scottish and Southern distribution networks, which overlaps with electricity distribution networks of Scottish and Southern Energy (Figure 3 on page 11).

22 Regulatory asset value

The regulatory asset value (RAV) of a regulated company represents the asset base on which it is allowed to earn a return. This rate of return, which is set by the regulator, provides the company with the revenue with which to pay its debt and equity holders.

If the purchaser of a regulated company expects to perform in line with the regulator's assumptions, the purchaser might be expected to offer no premium to RAV – i.e. the company would be worth the value of its RAV.

Source: National Audit Office

23 Examples of takeover premiums in the regulated industries

Date	Company	Buyer	Premium (%)
2000	Thames Water	RWE	28
2001	Eastern Electricity	EDF	14
2002	SEEBOARD	EDF	19
2003	South East Water	Macquarie	-15
2003	Northumbrian Water	Aquavit	-19
2003	Midlands Electricity	Powergen	13
2004	South Staffs Water	First Islamic Investment Bank	14
2004	Cambridge Water	Cheung Kong Infrastructure	16
2005	**Gas distribution networks[1]**	**Various**	**10-14[2]**

Source: Oxera

NOTES

1 See Figure 3 for details of purchasers and prices paid.

2 The actual premia paid by the purchasers will depend on decisions taken by Ofgem at the next price review regarding which elements of capital overspend are included in the RAV (see paragraph 5.6).

31 In March 2004 Ofgem wrote an open letter to the industry that it would consider adding certain elements of efficient capital overspend, which can be shown to provide significant benefits for consumers, to the RAVs of the new companies.

32 At this time, water companies were trading at a large discount to RAV due to a market perception of a tough regulatory settlement.

33 Under the regulated system, the company is able to retain the value of efficiency savings in excess of the regulator's assumptions for a remainder of the existing price control period of five years.

5.9 Regulated companies have also adopted capital structures that make much greater use of debt funding, often to fund large capital investment programmes, in contrast to more traditional equity-based financial structures. The ratio of debt to equity funding is known as the level of 'gearing'. National Grid sold the gas distribution networks free of debt, which enabled the purchasers to access debt markets to provide efficient sources of funding for their acquisitions. As a result, the capital structure adopted by the purchasers is an important factor in explaining the premium paid.

The regulatory implications of the premium

5.10 The size of the premium and why it was paid can have implications for the regulatory approach. Oxera's analysis shows that, in this case, the level of premiums are not problematic for Ofgem and it was right not to react to the sale premiums by re-opening the existing price control or proposing adjustments to the next price control. Such a move would have been regarded as opportunistic and could have badly affected sale negotiations or damaged Ofgem's credibility.

5.11 The willingness of purchasers to pay a premium also indicates the potential for efficiency savings in the industry. Ofgem's cost-benefit analysis also assumed possible cost savings of £830 million across the networks over the next 15 years, regardless of whether the sales took place (paragraphs 3.8 and 3.17). This raises the question of whether Ofgem should have set National Grid more challenging efficiency targets at the last price control in 2002. Our economic consultants, Oxera, analysed this issue and concluded that, as the premiums were in line with those paid in other disposals in the UK regulated sector, Ofgem's 2002 review was no softer than regulatory settlements in other sectors. Ofgem believes that the identification of potential benefits under the new industry structure illustrates the difficulties of regulating a monopoly owner.

The future implications of increasing levels of debt financing

5.12 There has been a trend towards higher levels of gearing across the regulated sectors over the last five years **(Figure 24)**. All companies have the discretion to determine their most efficient capital structures. Ofgem has a responsibility to ensure that customers are not being exposed to undue risk. The Government also has an interest in ensuring the financing arrangements of regulated companies do not jeopardise the regulatory framework or policy objectives.

24 The increasing use of debt financing by regulated companies

The principal way a company can use its financing mix to generate additional value is through reducing its cost of capital. Higher levels of gearing allow companies to reduce their cost of capital by making use of tax advantages and favourable terms in debt markets.

Four factors that encourage companies to adopt higher levels of gearing:

- tax effects – corporate tax payments are reduced as debt interest payments are tax deductible;
- risk redistribution, from investors to customers – it is the customer who may have to pay if the business fails;
- informational effects – management may be incentivised to focus on their core business by discouraging excessive expenditure of cash flow on risky diversifications; and
- risk reduction – by reducing pressure on the regulator to soften the regulatory settlement.

Since the mid-1990s companies have used debt-financing to fund large capital investment programmes and as an alternative way of generating additional value for shareholders, as the scope for efficiency gains from cutting operating costs has reduced. Since regulated companies were generally set up with low levels of debt on their balance sheets, there has been a natural incentive to take advantage of the lower costs of debt relative to equity.

Source: HM Treasury and DTI (2004)

5.13 In 2004 the Treasury and DTI commissioned joint research on the trend towards higher gearing which highlighted three key consequences that are relevant to Ofgem:

- **increased risk of company failure:** highly geared companies are more vulnerable to cost and demand shocks as they have very little equity to provide a buffer to absorb any shock. Consumers thus face a higher risk of default or bankruptcy;
- **weaker incentives on efficiency:** the absence of shareholder pressure may weaken incentives to outperform regulatory targets and optimise efficiency savings. Debt holders are primarily concerned with ensuring repayment and minimising default risk; and
- **inability to deliver capital investment programmes:** very highly geared companies may find it difficult to finance the delivery of necessary investment programmes as they are unable to issue more debt than they presently hold.

5.14 The evidence collected so far, by the Treasury, DTI and economic consultancies such as Oxera, suggests that these risks may have a lesser impact than originally envisaged. For example, evidence from other regulated sectors has suggested that higher levels of gearing do not have a damaging effect on industry-wide efficiency.

5.15 It is vital for regulated companies with high levels of gearing to maintain their credit rating, as this has a significant impact on their costs. The increased use of debt-financing has made the decisions of credit rating agencies more significant in the price control process. There is a risk that, under certain circumstances, the regulator may not be able to set a challenging price control if they have to set a 'softer' settlement in order to preserve a delicate financial position of a highly geared company, and thus not affect its credit rating. Ofgem clearly understands the risks and, in conjunction with Ofwat, has conducted research that includes the role of credit rating agencies. It will be important for Ofgem to consider the implications before the gas distribution price control review in 2008.

5.16 Ofgem believes that its regulatory discretion is not constrained by the influence of credit rating agencies. It has not given any commitment, either to individual companies or credit rating agencies, that it will provide support in the event of financial difficulty. In the gas distribution sector, like other networks, this stance may be tested as the failure of a single firm could affect the whole industry.

PART SIX
Safety and other factors

Safety

6.1 When gas pipes leak there is a risk of injuries, fatalities and damage to property from explosions. This risk is much higher when the gas from leaks emits or seeps into a confined space. Seepage into buildings is most likely to occur where there is an impermeable surface layer, such as tarmac, or a hard frost freezes the surface of the ground above a leak, so that leaking gas cannot dissipate into the atmosphere.

6.2 All owners of the gas distribution networks state that safety is paramount but, with 270,000kms of pipe in the networks, it cannot be guaranteed. To minimise the public risks from gas there is an established regulatory framework administered by the Health and Safety Executive (HSE)[34], which has primary enforcement responsibility for gas safety. At the heart of this framework is the requirement for each network owner to prepare a Safety Case, showing how it is safely managing the flow of gas. The Safety Case has to be accepted by HSE before gas can be transported. A Safety Case is also required from the network emergency co-ordinator, Transco, which has overall responsibility for co-ordinating actions across networks.

6.3 In response to the announcement by National Grid to sell some of its eight gas distribution networks, HSE reappraised its Safety Case processes to ensure that they reflected the implications of a fragmented industry structure. This reappraisal resulted in an extension of the Safety Cases to strengthen the importance of human factors, such as relevant experience, and a major reformatting of the Safety Case manual to make it more user friendly. HSE has also introduced an enhanced programme of audits to ensure the new owners comply with their Safety Case obligations. At the time this report was finalised there had been no major unplanned interruptions to the supply of gas since the sales.

6.4 There are about 23,000 reported leaks a year from the iron pipes that were installed prior to 1997.[35] In September 2001, HSE agreed with Transco an accelerated programme for the replacement of iron pipes. The new programme seeks to replace within 30 years all pipes designated 'at risk' - defined as the iron pipes within 30 metres of buildings, which represent the greatest hazard due to potential seepage (paragraph 6.1). The need for an accelerated programme arose because in the five years to 2001 an average of 1,840 km a year of 'at risk' pipe was replaced. At this rate, it would have taken 51 years to replace all the remaining 'at risk' pipe, which HSE considered was unacceptable because of the risk of a catastrophic incident, and the consequent effect this might have on public confidence. Polyethylene, a robust but flexible type of plastic, is now used in the distribution networks.

34 HSE, which is part of the Department of Work and Pensions, is the executive arm of the Health and Safety Commission.
35 Cast iron pipes were traditionally used to distribute gas. These were mostly laid in the first half of the 20th century and their physical condition is difficult to determine without costly investigative work. Such pipes are at risk from failure due to age, ground movement and heavy traffic. Ductile iron pipe, which has greater strength and flexibility, was introduced in the 1970s but was found to fail unpredictably through corrosion.

6.5 Following the network sales, Great Britain continued to have a national gas emergency service providing an all year (24 hours a day) national service **(Figure 25)**.

Commercial and administrative arrangements

6.6 Ofgem's discussions with the gas industry during the sale process identified the important need for a body that would handle the day-to-day commercial transactions of transporters and shippers. Ofgem therefore published a Regulatory Impact Assessment setting out six options for an agency, including a no-agency option. Ofgem concluded that the sale process could not proceed without an agency as the additional costs of fragmented arrangements would outweigh the sale benefits. Using its criteria of minimising costs, the effect on competition, accountability and quality of service, Ofgem also came to a preferred option for the structure, responsibilities and governance of an agency.

25 National gas emergency service following the sales

- Transco continues to act as the Network Emergency Co-ordinator.
- The well established national emergency telephone number (0800 111 999), a free-phone number, continues in operation. And the system continues to be operated by Transco. It is an HSE requirement that calls must be answered within 30 seconds. Transco logs the call, allocates a unique reference number and forwards the case to the relevant distribution network operator. Prior to the sales, that network operator would also be Transco in all cases.
- The relevant operator is responsible for despatching engineers to all reported cases, making the situation safe and taking any further steps necessary to avert danger to life or property. Once the engineers have done this they report back to the network operator, who in turn reports back to the central hub operated by Transco. Network operators are required to meet the following response times:
  - one hour for an uncontrolled escape (an escape that cannot be isolated by turning off the gas at the meter valve); or
  - two hours for an escape where the person reporting the escape has turned the gas off and confirmed that the smell of gas has disappeared.

Source: HSE

6.7 The industry took forward Ofgem's requirements by establishing xoserve, a company owned by National Grid and the three purchasers. xoserve's key task is to issue some 13,000 invoices a year to shippers and traders for their use of the distribution networks. Another key task is managing all the information relating to the 22 million gas supply points in Great Britain[36], a task which underpins competition in the supply of gas. Ofgem has also encouraged the appointment of a non-executive director to further strengthen the governance arrangements in xoserve, which were established to prevent Transco's NTS giving preferential treatment to its retained networks.

6.8 Although Ofgem does not regulate xoserve directly, it exerts a strong regulatory influence through the licence conditions of gas transporters. Ofgem has monitored the setting up of xoserve along with its operations since it was launched on 1 May 2005 and has found no need so far for regulatory action on xoserve's operations. Our feedback from the gas industry also revealed a consensus that the service provided by xoserve has been good; the transition to the new commercial and administrative systems was smooth; and that the costs of xoserve are under control.

Anti-competitive behaviour

6.9 Ofgem has been aware of the potential risk of anti-competitive behaviour by Transco due to its dominant position as owner of the NTS and four distribution networks. Transco's licences for the NTS and its distribution networks contain conditions that preclude discrimination. As part of the reforms associated with the sales, Ofgem has consulted on the adequacy of these provisions and strengthened the business separation requirements on Transco so that its NTS business does not confer an undue commercial advantage on its retained distribution networks to the detriment of the new network owners.

36 This process is known as Supply Point Administration.

6.10 Ofgem has also required all the network owners to introduce arrangements, known as business separation, to prevent them conferring an undue advantage on their affiliates operating in the competitive sectors of the gas market. In the case of Scottish and Southern Energy plc, a leading member of the consortium that bought the Scotland and South of England networks, the company also owns the electricity networks in these two areas. Ofgem is aware of the possibility that the company could make investment decisions across its electricity and gas networks that are in the company's interest rather than consumers, but believes this risk is not significant. Feedback obtained from the gas industry by the NAO supports Ofgem's view. In addition, when reviewing the Scotland and South of England network sales, the Office of Fair Trading in April 2005 concluded that the theoretical risks to competition arising in that merger regarding possible discrimination would be addressed by Ofgem's regulatory regime.[37] Ofgem intends to watch out for anti-competitive behaviour in the gas market as part of its general oversight of the industry.

Extensions to the gas networks

6.11 Using gas to provide heating has traditionally resulted in lower energy bills for domestic consumers. Under certain circumstances, extending the gas network provides an opportunity for more households to benefit from cheaper heating by switching to gas. The sale of the four networks is expected to have a neutral impact on the number of extensions.

37 The other two network sales did not raise similar hypothetical concerns. The Wales and the West network sale was examined by OFT, but the North of England network sale fell to the European Community to examine.

APPENDIX 1

Scope, methodology and evidence

1 The National Audit Office publishes 60 value for money reports each year. It is usual for three of these reports to focus on the work of the UK's regulators, particularly the sectoral regulators such as the Office of Gas and Electricity Markets (Ofgem). In recent years these studies have emphasised consumer welfare. Sometimes the focus has been directly on the consumer experience (e.g. *Energywatch and Postwatch: Helping and protecting consumers* – HC1076/2003-04), in others the focus has been on developments or arrangements that impact on consumers (e.g. *Pipes and wires*, which examined why regulators have developed the RPI – X approach for setting price controls for monopoly activities – HC723/2001-02).

2 This report examined the work of Ofgem in respect of the sale by National Grid of four of its eight gas distribution networks on 1 June 2005. The overall purpose of our examination was to assess whether Ofgem is fulfilling its duties in relation to the sales, especially its approach to protecting the interests of consumers. The sales were unusual in that they resulted in the biggest change in the structure of the gas industry since privatisation in 1986 and the de-merger of British Gas plc in 1997. The restructuring arising from the network sales resulted in a programme of regulatory work that was particularly resource intensive due to its scale and complexity, and which had to address issues that had not previously occurred in the gas or electricity markets. Neither could Ofgem draw on experience overseas. The programme differed from most of Ofgem's projects in that it was not an Ofgem inspired initiative.

3 We did not seek to question the decision of National Grid to sell the networks. The National Audit Office has issued many reports on the sale of public assets, especially those involving the privatisation of public companies. But the sale of the four distribution networks by National Grid in 2005 did not involve public assets and is not therefore within the NAO's remit.

Study scope and methodology

4 At the scoping stage we identified the high-level audit questions that it was necessary to answer in order to assess whether Ofgem is fulfilling its duties:

- Did Ofgem ensure the interests of consumers were protected when approving the sales?
  - Did Ofgem define clearly its role and responsibilities?
  - Did Ofgem manage its input effectively to facilitate the introduction of new operational arrangements?
  - Did Ofgem assure itself that the financial interests of consumers would be protected?
- Is Ofgem taking appropriate steps to protect the interests of consumers after the sales?
  - Is Ofgem taking appropriate steps to ensure the expected financial benefits are realised?
  - Is Ofgem addressing the implications for quality of service?
  - Is Ofgem monitoring the longer term risks to infrastructure investment?

5 After collecting the evidence we drew out the key findings and marshalled the information that underpins those findings. Although this process confirmed that our original two main areas of interest (i.e. the sale itself and post-sale activities) were still applicable, the main messages from the evidence covered slightly different areas than originally envisaged (paragraph 4). This is reflected in the six Part structure of this Report.

Study evidence

6 We collected evidence from a variety of sources to enable us to answer the questions set out above:

Input from experts in the gas industry. To provide us with a sound understanding of the gas industry and to help us develop the audit issues, we commissioned a one-day seminar from Cornwall Consulting, experts in the gas industry.

Input from economic consultants. We sought independent advice on the economic, regulatory and financial aspects of the sales. After a competitive tender, we appointed Oxera, an independent economics consultant, to this role. Oxera focused on the prices paid for the gas networks, and the implications this may have for the companies and the regulator; and how future price controls may be set by Ofgem. Oxera's findings on these areas are set out in Appendix 3. Oxera also provided us with more general advice.

Questionnaire to interested parties. We sent a questionnaire to the 41 organisations that had responded to one or more of the consultation papers issued by Ofgem in connection with the sales. We asked for views and experiences on the way Ofgem had gone about its work. We received 22 completed questionnaires and two other substantive responses, a response rate of 59 per cent.

Semi-structured interviews. We spoke with National Grid and each of the purchasers about the sales. We also met with selected gas companies and other interested parties **(Figure 26)**.

Focus groups. During the scoping stage of our study we held, with the help of Energywatch, two focus groups to obtain the views and experiences of a wide range of third parties to the sales **(Figure 27)**.

Review of Ofgem's documents. We reviewed the key papers that Ofgem published in connection with the sales, together with internal documents. Particular attention was given to the 'gateway issues' identified by Ofgem (see paragraph 2.3 of Part 2), Ofgem's project management, the reform of gas exit and matters related to price controls.

26 Organisations interviewed by the NAO

Organisation	Interest
DTI	Energy policy; approval to the disposal of assets
National Grid	Seller
Northern Gas Networks	Purchaser
Scotia Gas Networks	Purchaser
Wales and West Utilities	Purchaser
xoserve Ltd	Central point for gas transactions
Statoil UK	Gas supplier
Eon UK	Gas supplier
Gas Forum	Trade body for gas shippers and suppliers
Energywatch	Consumer body covering the electricity and gas markets
Standard and Poor's	Credit rating agency

27 Attendees at the NAO's focus groups

Gas suppliers	Large users	Independent gas transporter
Centrica	BOC Gases	ES Pipelines
EDF Energy	LAGUR (a local authority association)	
Scottish Power		
Shell Gas Direct		

Meetings with Ofgem. We discussed our areas of interest with the Ofgem team dealing with the sales and with other relevant staff in Ofgem.

Cost-benefit analysis. We reviewed Ofgem's cost-benefit analysis. This included tests on the calculations and links in the underlying models. We then modelled the financial outcome of a range of additional scenarios. We also conducted further sensitivity analysis. This enabled us to form a judgement on the robustness of Ofgem's calculations and assumptions.

Review of safety issues. We met with the Health and Safety Executive and reviewed key documents relating to the safe supply of gas.

Regulatory Impact Assessments. We reviewed these against the best practice guidance issued by the Cabinet Office and the National Audit Office's criteria for assessing the quality of Regulatory Impact Assessments.

Expert Panel. We convened an Expert Panel **(Figure 28)** to assist us with the scoping of the study (6 June 2005) and to draw out the main findings (11 October 2005).

7 The National Audit Office wishes to thank the staff at Ofgem, the members of the Expert Panel and all those in the industry that gave up their time to meet with us or respond to our questionnaire for helping us with this examination. We are also grateful to Oxera and Cornwall Consulting for their assistance.

28 Expert Panel

Name	Organisation	Specialism
Karen Hill	Cabinet Office	Regulatory Impact Assessments
Sebastian Eyre	John Hall Associates (formerly with Energywatch)	Gas industry, consumers
Peter Atherton	Smith Barney (division of Citigroup)	Utility analyst
Derek Holt	Oxera	Regulation, financial issues
Richard Wade	NAO	Financial issues

APPENDIX 2

How the sales will generate customer benefits

A key issue in the sales is the extent to which new opportunities to achieve efficiency savings will be created. Efficiency savings are likely to be the primary factor in generating benefits to customers and may be created under the new industry structure through:

- comparative regulation; and
- the introduction of new management teams.

Comparative regulation

The creation of separately owned, managed and operated gas networks, which would arise as a result of the sales, should allow Ofgem to regulate the businesses on a comparative basis. Such comparative regulation could:

- reduce information asymmetries between the regulated distribution networks and Ofgem by providing Ofgem with valuable comparative information on the appropriate level of costs that an efficiently run regulated gas DN business should incur; and
- generate greater incentives for improvement amongst network operators, as they will be obliged to catch up with the benchmark efficiency level or else face shortfalls in their allowed revenue compared to their actual costs.

The presence of comparators would allow Ofgem to compare the costs of each regulated entity against their intrinsic characteristics or output and therefore establish an expected relationship between costs incurred and these observed characteristics. The comparators with costs that are lower than expected would therefore be considered efficient and could be used to derive a benchmark, or "efficiency frontier" against which other comparators could be compared.

Customers should benefit from this process of comparative regulation as the allowed revenue of the regulated businesses should be informed by the performance of the more efficient comparators, and thus the level of charges to customers are expected to be lower than they would have otherwise been had there been no comparators.

Introduction of new management

The sales will also result in the introduction of new management. This has the potential to increase efficiency savings by:

- generating greater innovation within the industry;
- facilitating the transfer of best practice; and
- allowing economies of scope to be captured with other utility networks owned by the same corporate groups.

As such, not only is Ofgem expected to be able to establish the efficiency frontier, but the efficiency frontier would be expected to shift at a faster rate as a result of the introduction of new management.

APPENDIX 3

Extracts from Oxera report to NAO

Sale prices and financial structure

1 The distribution networks (DNs) were sold for a significant cash premium to their regulatory asset value (RAV). This section examines the price that was paid, the reasons for paying a premium, and potential responses by the firms and regulator to the price paid.

How much did they pay?

2 All three purchasers paid approximately 14% more for the companies than Ofgem's estimate of the RAV at the time of the sales; this is an interesting coincidence, and may have been driven by similar assumptions on the part of all three bidders. It is not possible to ascertain the ultimate drivers of the premia; however, several possible reasons are discussed further below.

3 In some circumstances, regulators and industry commentators have interpreted substantial premia to RAV as implying that a regulatory settlement was too weak, or as providing new insight into the likely gains in efficiency that the acquiring firm believes it is possible to make. Consequently, understanding how large the premia paid actually was, how it compares with premia paid for other similar acquisitions, and why such a premia might have been paid are all of potential interest to the way the industry is regulated.

4 On the first of these three points, it seems that the premia paid may not actually be as large as set out above. The premia calculated above use the most recently published RAV estimates from Ofgem. However, Ofgem has also stated in an open letter to the industry in March 2004 that it intends to add certain elements of efficient capital overspend – efficiently incurred capital expenditure (CAPEX) and which can be shown to provide significant benefits to consumers – to the companies' RAVs.[38] Ofgem also made clear that if the spending were deemed wasteful or unnecessary, it would not be included in the RAV.

5 Inclusion of this CAPEX overspend, or the expectation that it will be included at a future date, increases the implicit RAV associated with the DNs, thereby reducing the premia paid. A press release from Macquarie, the purchaser of the Wales and West DN, suggested that when actual levels of investment are included, the premia is approximately 10% – almost one-third lower than the 14% premia set out above.

6 Even if the premia to RAV is as large as 13-14%, this is not particularly exceptional. Figure 23 (page 31 of the NAO's report) sets out a selection of takeover premia paid for regulated electricity distribution network operators and water companies in the UK in recent years. With the exception of the two water companies in 2003, all show substantial premia to the companies' RAVs. Following the periodic review of water prices in 1999, companies were trading at a large discount to their RAV, mainly due to a market perception of a tough regulatory settlement. Despite still being at a significant discount to the RAV, these bids offered small uplifts over the reduced market values. These comparisons suggest that the premium paid by the gas DN acquirers was in line with that paid in other UK regulated industries.

7 In addition, as **Figure 29 overleaf** shows, the premia for regulated company acquisitions tend to be substantially smaller than comparable premia in unregulated sectors. The table illustrates that the average takeover premium paid by acquiring companies in the UK and USA during the 1980s and 1990s was substantially in excess of that seen in the gas DN sales.

8 In light of this evidence, the premiums paid to acquire the gas DNs do not seem particularly abnormal in comparison to takeovers in both regulated and unregulated sectors. In addition, if the RAV is adjusted upwards to include CAPEX overspend, these premia may fall by around one-third.

(paragraphs 2 – 8 above are considered by the NAO in Part 5 paragraphs 5.6 – 5.7).

38 Ofgem (2004), *Gas Distribution Price Controls,* open letter to industry from Andrew Walker, Director of Regulation and Financial Affairs, March.

29 Takeover premia for unregulated firms (% premium to pre-takeover market value)

	1980s	1990s
UK	18 to 34	n/a
USA	35 to 92	22 to 60

Sources: Franks, J. and Mayer, C. (1996), 'Hostile Takeovers and the Correction of Managerial Failure', Journal of Financial Economics, 40, pp. 163–81; and Vijay B., Gondhalekar, R., Sant, R. and Ferris, S.P. (2002), 'The Price of Corporate Acquisition: Determinants of Takeover Premia', Contracting and Organizations Research Institute, Working Paper No. 2002–03, December.

NOTE

Premia ranges shown are mean averages of a large number of takeover premia paid. For the UK the low value represents accepted takeovers, while the high value represents successful hostile takeovers. For the USA the low (high) values are the lowest (highest) mean average premia in any year in the appropriate decade.

9 However, this still leaves the question of why the firms were willing to pay a value above the RAV for each of the companies. The possible reasons for the price paid are examined below.

Why did the companies pay what they paid?

10 The RAV of a regulated company represents the asset base on which it is allowed to earn a return. This rate of return, which is set by the regulator, provides the company with the revenue with which to pay its debt and equity holders. If the company and capital markets perform in line with the regulator's assumptions (e.g. the company improves its efficiency at the rate assumed by the regulator, and issues debt at the same cost as allowed for), the purchase of a regulated company would not be expected to involve a premium to the RAV (i.e. the company is worth the value of its RAV since this represents the present value of the future expected cash flows that investors will receive).

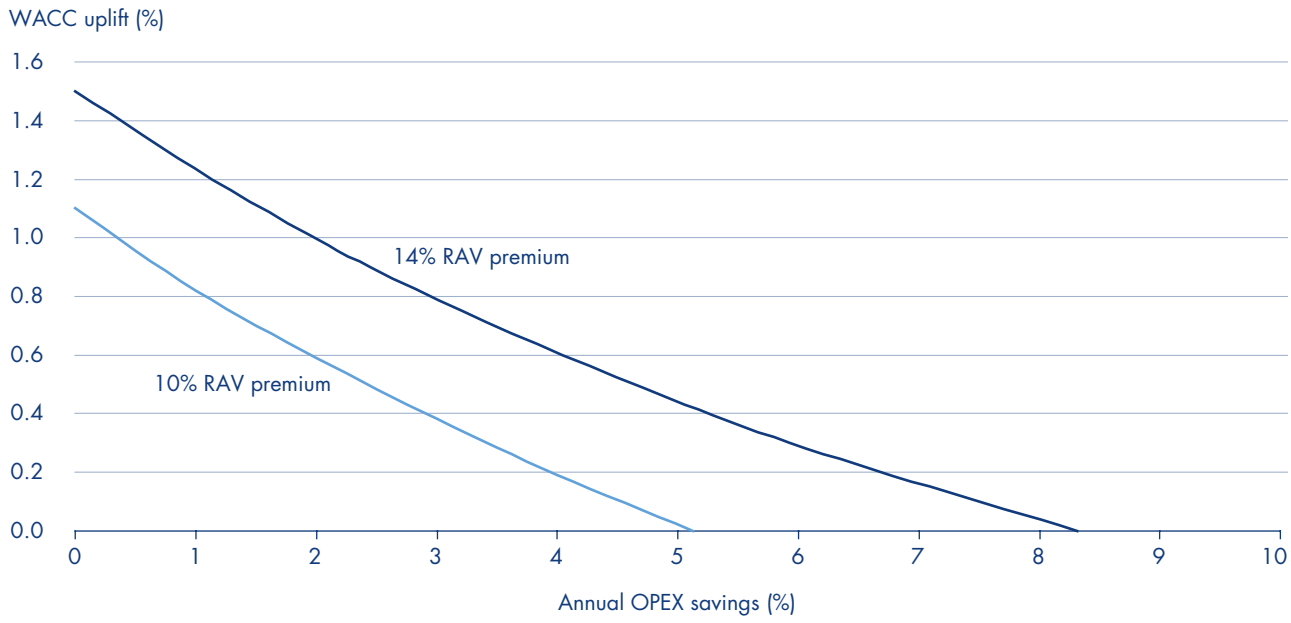
11 However, if the regulator's assumptions about either the company or the capital markets do not hold then investors may value the company above or below the RAV. In addition, there may be inefficiencies in the sale process, which can also lead to sale prices that deviate significantly from the RAV. There are at least four possible explanations why the purchasers were willing to pay prices in excess of the RAV:

a **Expectation of an increase in the RAV** – expectation of receiving an increase in the currently quoted RAV to incorporate CAPEX overspend (see previous section).

b **Expectation of outperforming against regulatory assumptions** – perhaps the most obvious explanation for a premia to the RAV is that either the company can achieve greater cost savings than the regulator assumed, or that the true cost of capital is lower than that assumed by the regulator:

- If the purchaser believes that it can achieve cost savings in excess of those assumed by the regulator in the current price control period, or future efficiency assumptions made by Ofgem, it can keep the value of these savings over a period of five years. Oxera's calculations suggest that real operating cost savings of around 5-8% per annum over and above Ofgem's assumptions would be required to justify the RAV premia range via this method alone. It is important to note that these savings are in excess of Ofgem's assumptions.
- If the purchaser's true cost of capital is lower than the value assumed by the regulator, or the purchaser is able to achieve corporation tax savings, they require a lower rate of return in the RAV than is actually being allowed. Consequently, the return offered by this investment justifies paying a higher purchase price. Oxera's calculations suggest that cost of capital savings in the region of 1.0-1.5% would be required to account for most or all of the RAV premia via this method alone.
- A purchaser may well be expecting to achieve a mixture of both cost of capital and cost savings. **Figure 30** illustrates the trade-off between these two parameters for a 10% and 14% RAV premia. This suggests that a 10% RAV premia could be justified by a cost of capital saving of around 0.6%, and annual OPEX savings of 2% in excess of the regulator's assumptions.

30 Trade-off between cost of capital and OPEX savings



Source: Oxera modelling

c **Economies of scope and control premium** – a further possible explanation is that buyers had a particular control premium associated with owning a particular gas DN – i.e. the gas DN was worth more to that buyer than to other potential buyers. Particular buyers might be able to exploit scale or scope economies not available to others. This explanation may be particularly relevant for the acquisition by Scotia Gas Networks of the gas DNs in Scotland and the South of England, since these overlap substantially with one of the consortium member's electricity distribution network operators (DNOs).[39] It may also have some relevance to the Northern Gas Networks purchase, which included United Utilities, although the geographic overlap of United Utilities North West Water with the gas DN in the North of England is less pronounced.

d **Scarcity value** – buyers may also be exhibiting a scarcity premium to purchase assets, such as regulated utilities, which provide a long-term protection against inflation via the RPI indexation of prices. For example, pension schemes, often from a desire to match their assets and liabilities, may value these stable income streams particularly highly. This explanation is analogous to arguments made about why the yields on index-linked government debt are so low at present (e.g. the real risk-free rate is currently around 1.5%; it was generally above 2.5% between 2000 and 2002).[40] In the case of bonds, a high level of investor demand pushes up the price, consequently pushing down the yield.

12 It is likely that a mixture of all four of the reasons set out above explains the cash premia paid by the purchasers. To ascertain which were the key drivers would require examination of the detail of the financial models and projections drawn up by the successful bidders; however these were not available.

(paragraphs 9 – 12 above are considered by the NAO in Part 5 paragraphs 5.8 – 5.9).

39 Scottish and Southern Energy plc, part of the consortium, owns both Southern Electric Power Distribution (the South of England DNO) which overlaps with the Southern DN, and Scottish Hydro Electric Power Distribution (the Scottish DNO) which overlaps with the Scottish DN.

40 Bank of England estimates of implied real yield to redemption on five-year index-linked government debt.

Responses to the price paid

a Company response

13 The management of a gas DN might be incentivised to take excessive risks because of the price paid by the purchasers. For example, the investors may translate the assumptions they made in their bids into incentive agreements for the DN's management. If these assumptions were unrealistic, they could encourage excessive risk-taking by management, perhaps pushing the staff or infrastructure too hard.

14 There is no evidence available in the academic literature to suggest that companies that are sold for more than their RAVs behave significantly differently from those sold for a value equal to or less than the RAV. More generally, there is scant evidence that the price paid has any significant impact on the way that the asset is operated.

15 This evidence suggests that the more general economic argument – that the price paid for an asset has no effect on the incentives to use it – seems more applicable. This is because the incentive to use an asset is based on marginal decisions, which in turn are based on its current value, rather than the value paid for it. However, while the price paid for an asset may have little impact on the way in which a firm behaves, the financing structure can affect incentives – e.g. high gearing can make the companies risk-averse. High gearing has been examined at some length by the DTI and HM Treasury.[41] Their joint study highlighted three risks associated with high gearing: an increased risk of company failure; potentially weaker incentives for efficiency; and the possibility that highly geared firms may have less flexibility to deliver large investment programmes when faced with financial shocks.

(paragraphs 13 – 15 above are considered by the NAO in Part 5 paragraph 5.5).

b Regulatory response

16 There are two notable examples in the UK where regulators have reacted explicitly to the price paid to purchase a company with an established history of being regulated. The first, in 1995, was when Trafalgar House made a bid for Northern Electric. The regulator responded to the high offer price by substantially reducing prices, which had only recently been published.[42] The second more recent example occurred in 2005 when Terra Firma bid for Phoenix Gas in Northern Ireland. The regulator threatened to respond by adjusting certain elements of the price control (e.g. the cost of capital) downwards in light of this new information.[43] This eventually led to the bid being abandoned.

17 However, there are problems, particularly with interventions that occur within regulatory periods. In particular, a regulator's credibility can be badly damaged if it is perceived as opportunistically reducing the prices that regulated companies can charge. Ultimately, if a regulator lacks credibility then it will struggle to incentivise the companies it regulates, since they may fear that they will be unable to gain a reasonable share of any savings they make, and therefore will be reluctant to generate the savings in the first place.

18 Therefore, there is no economic justification for intervention of this kind.

(paragraphs 16 – 18 above are considered by the NAO in Part 5 paragraph 5.10).

Setting future price controls

19 Ofgem estimated that the sale of the gas DNs could result in benefits of £325m to consumers over the next three regulatory periods. These benefits are expected to be passed to consumers via lower prices; hence the method and nature in which price controls are set in the future will be crucial to the delivery of this value. The key change in the approach to regulation is that Ofgem will make comparisons between independently owned companies at future price controls; without the sales it would only have been possible to make internal National Grid comparisons.

41 HM Treasury and DTI, *The Drivers and Public Policy Consequences of Increased Gearing*, October 2004.
42 Green, R. (1997), *Has Price Cap Regulation of UK Utilities Been a Success?*, Public Policy for the Private Sector: Note Number 132, World Bank, November.
43 Ofreg (2005), *A Statement by the Northern Ireland Authority for Energy Regulation: The Proposed Acquisition of East Surrey Holdings plc by Kellen Acquisitions Limited – Implications for Phoenix Natural Gas Limited*, June, part 2.

20 This section first considers how Ofgem is able to use the new comparators. Next, it identifies that changes in both the regulators' and firms' behaviour are necessary to deliver these expected benefits to consumers. Finally, it considers whether the current price control should be extended, since doing so could provide the regulator with valuable additional data with which to set prices.

Use of comparators

21 The ability to use comparative analysis of the gas DNs' performance is at the centre of Ofgem's belief in its ability to deliver benefits to consumers. This was recognised throughout the cost–benefit analyses that were undertaken to justify the sales. Indeed, Ofgem's analysis indicated that around 95% of the total £325m estimated gross consumer benefit would arise because of Ofgem's ability to use comparative analysis.[44]

22 Ofgem currently uses a comparative regulatory regime – allowing the regulator to compare the performance of similar regulated companies against one another – to set the price controls for the electricity DNOs, as does Ofwat for the water and sewerage companies in England and Wales. This contrasts with Ofgem's current approach of non-comparative regulation where only a single company is being regulated.

23 There are several benefits from comparative regulation, including those outlined below:

- **Credibility** – using comparative analysis allows regulators to better assess the true cost function of firms, and helps gauge the likely improvement in performance in future. This reduces the probability of the excessive volatility in the regulated firm's profit/loss, due to poor information on the part of the regulator. Therefore, comparative regulation, since it improves cost estimation, helps to strengthen the regulator's credibility, which in turn helps to bolster the incentive mechanisms it puts in place, as the regulator is less likely to have to reopen the price control.
- **Principal–agent/company–investor relationship** – comparative efficiency analysis provides investors and managers with an impartial view of the relative performance of each company; consequently, it may improve the monitoring of a firm's progress, making it easier for appropriate incentives to be put in place, which in turn may improve company performance.

(paragraphs 21 – 23 above are considered by the NAO in Part 3 paragraphs 3.6 – 3.8).

24 However, the quality and quantity of data available on the companies being compared is a key constraint on the use of comparative regulation; if the quantity is too small, or the quality too low, the regulator will be unable to make robust comparisons between the firms, and the benefits of this approach to regulation will be reduced. In this regard, the small number of gas DNs, and the problems with data collection Ofgem encountered at the 2004 electricity DNO review, both pose potentially important challenges for the regulator to overcome at the next regulatory review in 2008 and beyond.

Small number of DNs

25 There are only eight DNs, compared with 14 DNOs, and 22 water companies. This number could be reduced further to only four if the regulator chooses to consider only independent observations (one for National Grid, three for the independent DNs), although Ofgem compared all 14 DNOs at the last price control review, even though they were only owned by eight groups. However, it is possible that National Grid will choose to operate its four retained gas DNs as a single unit, potentially reducing the scope for comparisons between them. If this were the case, Ofgem would only be able to treat National Grid's gas DNs as single comparator. Having only a few comparators creates problems for the standard approach to comparative analysis, which uses cross-sectional ordinary least squares (OLS)[45] regression analysis. With such a small number of companies, the regression is based on a limited amount of data, in turn restricting its explanatory power. Consequently, gaining access to a good time-series dataset, adopting alternative methods of calculating efficiency frontiers, or using process modelling are likely to be important if Ofgem wishes to ensure robust efficiency analysis.

44 Calculated as £310/£325m. Ofgem (2004), *National Grid Transco – Potential Sale of Gas Distribution Network Businesses: Final Impact Assessment.*
45 Technique for estimating coefficients in a linear model by minimising the sum of the squared differences between the observed dependent data points and those predicted by the linear regression model.

Alternative estimation methods

26 One possible response to the limited number of DNs is to adopt alternative estimation approaches either to augment or replace the standard OLS approach. For example, in its review of the proposed acquisition of First Aqua (which in turn owned Southern Water) by Vivendi in 2002, the Competition Commission extensively analysed the importance of the number of independent comparators for different methods of estimating the efficiency of different firms.[46]

27 Data envelopment analysis (DEA)[47] and stochastic frontier analysis (SFA)[48] were both examined, but were considered by the Commission to be just as sensitive to the number of comparators as the existing method of OLS regression. However, this is an area that needs to be explored in future research.

28 In contrast, carrying out modelling at a sub-company level was seen as substantially more promising. This involves collecting data on sub-units within each of the companies being assessed. This approach is currently used by Ofwat to assess efficiency in the sewerage sector, as it has fewer comparators (only ten, compared with 22 for water). Ofwat collects data on the costs and outputs of each company's sewerage treatment works. The same approach is used by the Office of Rail Regulation, which compared the relative efficiency of Network Rail's geographic engineering regions. Ofgem may wish to examine the potential for adopting a similar approach for the gas DNs, perhaps by dividing them up into multiple areas. For example, the Wales and West DN could have separate areas for each large metropolitan district, such as Bristol and Cardiff, and several other areas for the more rural parts of its network. However, such sub-company comparisons may be more difficult if National Grid chooses to operate its gas DNs as a single unit, or in a substantially different way from those of the independent DNs.

Time-series data

29 This data can provide regulators with additional insight, particularly when it is combined into a panel dataset across companies. Analysing panel data[49] in this fashion generally leads to more robust results than using a series of cross-sectional analyses, since the panel dataset has a larger number of observations, making the regressions more precise.

30 For the time-series element to be useful, it needs to be as long as possible and be consistent over time. The longer the time series, the more observations are present. Thus, for time-series data to be useful to Ofgem, it needs to begin collecting data as soon as possible, while ensuring that the data is consistent both between companies and over time. Interestingly, Ofgem may be in a unique situation at present, since all the DNs were owned by National Grid, consistent accounting methods may have been used. If so (and there may have been differences between DNs around the country), Ofgem could seek to lock in the procedures and allocation approaches used by National Grid, which may make it easier to ensure consistent data across the companies. However, since there is only a short time until the next price control, only one or two years of reliable data may be available to the regulator when setting prices. Thus time-series or panel data analysis may be a more useful tool at subsequent reviews.

31 In addition, even with good time-series data there are limits to its use. In particular, it is not necessarily reliable if the cost function of the firms being examined changes significantly over the period of estimation. Using a panel data approach was suggested during the Competition Commission inquiry into Mid Kent Water's price control; however, Ofwat argued that the cost function had changed too significantly for multi-year observations to be valid. This approach was subsequently endorsed by the Commission in the more recent water merger inquiry involving Vivendi. In addition, more recent work commissioned by Ofwat has used more flexible functional forms to cope with changes in the cost function.[50] Thus, panel data can be used in most situations to enhance the estimation process.

46 Competition Commission (2002), *Vivendi Water UK PLC and First Aqua (JVCo) Limited: A Report on the Proposed Merger*.
47 A non-parametric or mathematical programming approach to determine the best-practice production frontier.
48 SFA is an econometric method used to construct a production or cost frontier. The method explicitly corrects for data or modelling error by adjusting the frontier, using an assumed distribution of the error. The adjusted frontier may be used to carry out comparative efficiency exercises.
49 Observations of the same sample of units at several different points in time.
50 See, for example, Stone and Webster (2004), *Investigation into Evidence for Economies of Scale in the Water and Sewerage Industry in England and Wales*, January, commissioned by Ofwat, which used panel data on the water and sewerage companies.

Process modelling

32 The activities of a company can be divided into a number of different processes, and comparisons drawn between each company using these. For example, within a gas DN the main processes might consist of metering, pumping of gas, gas storage, head office administration and so on. Ofgem has used process modelling for its assessment of Transco, as this allowed it to compare certain of the company's activities with companies in other industries. On its own, process modelling does not provide more data for a particular analysis, although it can be combined with sub-company modelling to increase the number of observations. However, a bottom-up approach such as process modelling does allow clearer comparisons of the particular activities of the individual companies being regulated. Therefore, Ofgem could choose to use simple average unit costs of particular activities to benchmark the gas DNs against one another. Indeed, in comparison with the other approaches, this method, albeit simple, may be the most promising, since it would allow direct comparisons between the companies even with limited data.

33 Adopting these alternative estimation methods would be likely to enhance substantially Ofgem's ability to carry out robust comparative efficiency analysis of the gas DNs, increasing the likelihood that substantial benefits will be able to be passed to shippers, and in turn to consumers.

Problems with data collection

34 As noted above, consistency of data both over time and between companies is central to comparative analysis; Ofgem had significant problems with the consistency of the data provided to it by the DNOs at the last periodic review of charges, and had to go through an extensive normalisation process before it could begin the comparative analysis. In its post-project review, Ofgem stated that:

> *It is generally recognised and accepted that the process of data collection did not work well and that annual information gathering is likely to be the best way to improve matters. Ofgem and the distribution companies have already put significant effort over the last eight months into working together on a new system of cost reporting.*[51]

35 In addition, Ofgem noted that the recommendations from this post-project review are being incorporated into the planning for the gas DN review. Indeed, the regulator has already taken steps to ensure that annual data collection begins soon. It has inserted a clause into the DN licences that requires them to supply Ofgem with consistent data once a year. Requiring annual reporting of information is a substantially different approach from that used by Ofgem for assessing the DNO's efficiency; at the two previous electricity distribution price control reviews (sometimes referred to as DPCR3 and DPCR4), it requested all the information it required from the DNOs in the run-up to the review, rather than annually.

36 In addition, the DN licence condition contains clauses that allow for the setting up of 'price control review reporting rules', which would set clear reporting requirements for the data, with the aim of ensuring consistency across companies and over time.[52] The presence of clear guidelines on cost reporting should help ensure that data is consistent both between companies and over time.

37 The steps taken by Ofgem suggest that it intends to attempt to avoid the problems that it encountered at the previous electricity distribution price controls reviews, and begin collecting robust comparable data as soon as possible.

Other issues

38 Ofgem may wish to consider initiating a whole industry research project on cost functions in the industry and the use of benchmarking. This approach has been used particularly successfully by Ofwat, and Oxera understands that it has helped build industry consensus around the approaches it employs to assess firms' relative efficiency.

39 Ofgem may also wish to consider publishing an annual ranking of the efficiency of the firms that it assesses. This is an approach used by both Ofwat and the Performance Review Commission of Eurocontrol, the European civil air traffic control coordinator.[53] Both bodies use the annual data submitted to them to assess the relative efficiency rankings of the firms in their industries; these assessments are then published.

51 Ofgem (2005), 'Assessment of the Electricity Distribution Price Control Review Process: Conclusions', July, summary section.
52 See special condition A40, part D, of the gas DN licences, which is a new condition as part of the sale. Available from www.ofgem.gov.uk.
53 See, for example, Eurocontrol Performance Review Commission (2005), *Performance Review Report,* PRR8, April.

Publishing the assessments may spur companies to compete more aggressively against one another in achieving efficiency gains, and may aid investors in understanding how the company is performing relative to its peers. This information could then be used to incentivise and reward management.

(paragraphs 24 – 39 above are considered by the NAO in Part 4 paragraphs 4.4 – 4.12).

Change in firms' or regulator's behaviour

40 Two key mechanisms allow the sale of the gas DNs to provide benefits to consumers: changes in the way Ofgem regulates, and changes in the way firms operate. Ultimately, therefore, Ofgem cannot guarantee that the benefits that it estimated will arise, since, to a great extent, it must rely on the behaviour of both National Grid and the three new owners. However, Ofgem can ensure that it puts in place a robust framework that incentivises firms to deliver efficiency benefits, making it likely that these are passed on to consumers within a reasonable period.

41 Ofgem sets the regulatory framework in which the gas DNs operate. As such, it determines the incentive mechanisms and more generally the regulatory structure. The comparative regime discussed above is likely to give Ofgem greater confidence in the data being provided from independent firms than in data being submitted from the wholly owned subsidiaries of National Grid. This is because the costs incurred by National Grid's gas DNs are accounted for centrally, and then allocated across the different businesses using a transactions model. Therefore, Ofgem can have greater confidence in its estimates of the location of the efficiency frontier if one or more of the sold networks are at, or close to, the frontier. Consequently, it can set a more challenging frontier target, or a faster rate of catch-up for laggard firms, passing more benefits to customers than would otherwise be the case.

42 The firms ultimately generate the efficiency savings, which Ofgem then passes to shippers via lower prices, and which in turn may be passed on to consumers via lower prices from shippers. The efficiency gains are likely to come from the following three main sources:

- **New management approaches** – the new owners may adopt new styles and approaches to the management of the DNs. For example, they may bring experience of operating other utility businesses in the UK (e.g. the consortium including United Utilities), or they may bring experience of operating gas networks in other countries. They may also change or increase the use of information technology in the businesses; for example computerised despatch systems could be used to increase the productivity of the gas DNs' field force by minimising driving times.
- **New organisational structures** – allied with new management approaches, the new owners may adopt new internal organisational structures. Oxera understands that some of the gas DNs still operate along the old local distribution zone (LDZ) boundaries (National Grid's gas distribution business was previously divided into 12 LDZs; these were amalgamated into eight DNs in April 2002). Several of the DNs therefore contain two largely separate organisations within them. The new buyers may choose to merge these operations into one.
- **Economies of scale and scope** – finally, the firms may benefit from economies of scale and/or scope under the new ownership. For example, during the sale process, National Grid characterised the sale process as an efficient mechanism for determining which of these effects dominated for each DN.[54] National Grid considered that being part of the National Grid conferred various economies of scale, while new owners, particularly those with other businesses that overlap geographically, were likely to benefit from economies of scope.

43 In addition, the independent DNs may face greater incentives than the retained DNs to draw out efficiency savings. This is because the independent DNs will not take into account (e.g. by holding back their own efficiency savings) the external negative effect that this may have on the other retained DNs if they push the frontier out faster. Moving the frontier out faster harms the other DNs since it means Ofgem is likely to set tougher efficiency targets at the next review. DNs retained by National Grid would be likely to take this into account and face less of an incentive to improve their efficiency.

54 Letter from National Grid Transco to Kyran Hanks, Ofgem, 26 September 2003.

44 In summary, firms are ultimately responsible for delivering efficiency benefits, and are the only parties with the ability to do so. Nevertheless, Ofgem can assist, by providing strong incentives and a stable regulatory framework.

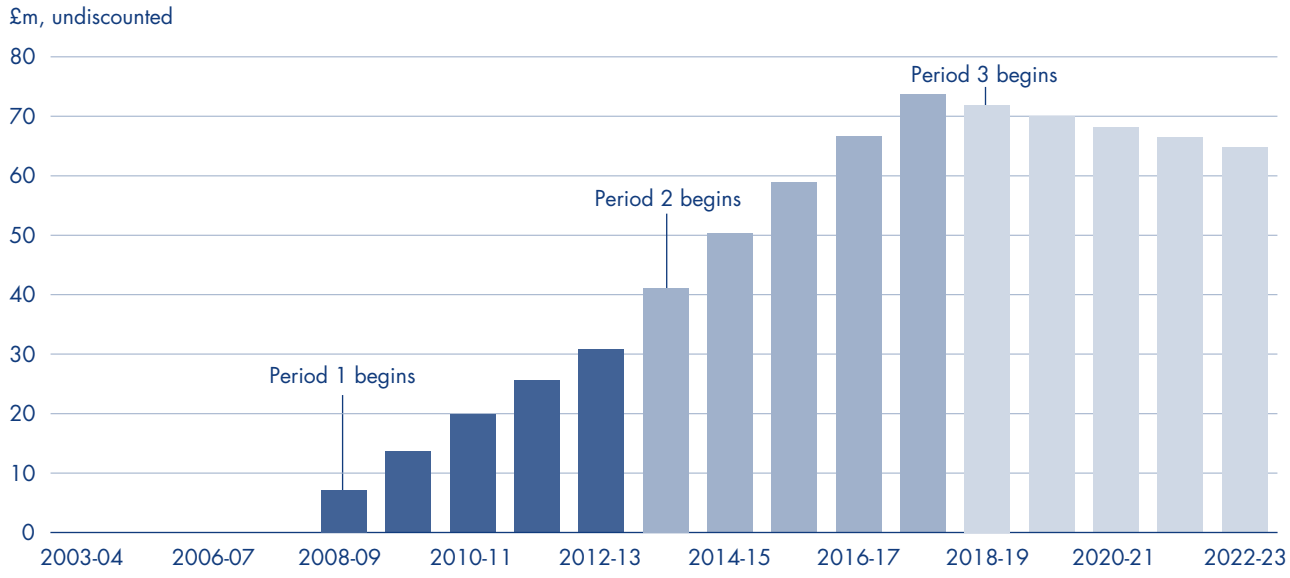
Extending the existing price control

45 Ofgem currently intends to extend the existing gas distribution price control by one year, from its original closing date of March 2007 to March 2008. The stated purpose of this is to separate the gas distribution and gas transmission price controls. Ofgem believes that this will have 'considerable advantages in terms of providing a more balanced work load' for both Ofgem and industry.[55] In many ways, Ofgem's roll-forward proposals are similar to those examined recently by the Civil Aviation Authority in respect of the timing of Manchester Airport's price control review; the stated purpose of which is also to balance the workload of industry.[56]

46 An added advantage of this roll-forward is that it provides an additional year for the new owners of the gas DNs to bed down, and an additional year of data with which Ofgem can compare company performance. This might suggest that if Ofgem were to delay the price control further, it may be able to transfer benefits to consumers sooner; this may be particularly attractive since the current profile implies that the benefits will not be delivered to consumers quickly.

47 **Figure 31** sets out the timing of benefits to consumers under Ofgem's best estimate. The figure shows that the bulk of the undiscounted benefits arrive during the second and third control periods.

31 Timing of undiscounted benefits from gas DN sales, Ofgem best estimate, 2004



Sources: Oxera modelling based on Ofgem (2004), 'National Grid Transco – Potential Sale of Gas Distribution Networks Businesses: Final Regulatory Impact Assessment Appendices', Appendix 7, November; and Ofgem (2003), 'Separation of Transco's Distribution Price Control', Table 2.3, p. 23, June

55 Ofgem (2003), *Timetables for Price Control Reviews*, open letter to the industry from David Gray, November.
56 CAA (2004), *Airport Regulation: Looking to the Future – Learning from the Past*, December, p. 16.

48 Possible options available to Ofgem include:

- **no roll-forward** – the regulator has yet to formally commit to rolling forward the price control and therefore could still choose to end the current price control in 2007, as originally planned;
- **the current one-year roll-forward proposal**;
- **a longer roll-forward, of two years** – this would provide Ofgem with more data on which to base the next price control review. However, it is not clear that one year of additional data would necessarily make a significant difference to the prices that the regulator could set;
- **a short price control period, e.g. 3-4 years** – beyond a two-year roll-forward, it may be worth considering opting for a shorter price control period, perhaps of only 3 or 4 years. This is the approach being adopted by the National Electricity Regulator in South Africa, which has only recently switched from rate of return regulation to incentive regulation, and so wishes to choose a short initial price control to allow the new form of regulation to bed down. The energy regulator in the Netherlands has also adopted this approach for the regulation of gas transportation prices.

49 Despite the possible attraction of these alternative options, Ofgem is unlikely to be able to change the date of the price control now, as to do so could harm the regulator's credibility. In particular, Ofgem issued a letter indicating that it had agreed to the one-year roll-forward plan, and based its cost-benefit analysis of the sales on five-year price controls starting from 2008.[57]

50 Furthermore, the bids to purchase the DNs were based on the assumption that the price control would be extended to 2008, and not further. Thus, changing the end-date for the price review is likely to harm the regulator's credibility and may affect incentives for the capital market to operate in the future, making it unlikely Ofgem would wish to proceed with such a change.

(paragraphs 45 – 50 above are considered by the NAO in Part 4 paragraph 4.5).

57 Ofgem (2004), *Gas Distribution Price Controls*, letter from Andrew Walker, para 7.

REPORTS BY THE COMPTROLLER AND AUDITOR GENERAL, SESSION 2005-2006

The Comptroller and Auditor General has to date, in Session 2005-2006, presented to the House of Commons the following reports under Section 9 of the National Audit Act, 1983. The reports are listed by subject category.

		Publication date
Cross-Government		
Home Office: Working with the Third Sector	HC 75	29 June 2005
Joint Targets	HC 453	14 October 2005
Culture Media and Sport		
Procurement in the Culture, Media and Sport sector	HC 596	30 November 2005
Defence		
Driving the Successful Delivery of Major Defence Projects: Effective Project Control is a Key Factor in Successful Projects	HC 30	20 May 2005
Managing the Defence Estate	HC 25	25 May 2005
Assessing and Reporting Military Readiness	HC 72	15 June 2005
Major Projects Report 2005	HC 595	25 November 2005
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Improving poorly performing schools in England	HC 679	11 January 2006
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Environment Agency: Efficiency in water resource management	HC 73	17 June 2005
Law, Order and Central		
Public Guardianship Office: Protecting and promoting the financial affairs of people who lose mental capacity	HC 27	8 June 2005
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Returning failed asylum applicants	HC 76	14 July 2005
National Offender Management Service: Dealing with increased numbers in custody	HC 458	27 October 2005
The Electronic Monitoring of Adult Offenders	HC 800	1 February 2006

		Publication date
National Health Service		
Innovation in the NHS: Local Improvement Finance Trusts	HC 28	19 May 2005
The Refinancing of the Norfolk and Norwich PFI Hospital: how the deal can be viewed in the light of the refinancing	HC 78	10 June 2005
A Safer Place for Patients: Learning to improve patient safety	HC 456	3 November 2005
Reducing Brain Damage: Faster access to better stroke care	HC 452	16 November 2005
Overseas Affairs		
The Foreign and Commonwealth Office: Consular Services to British Nationals	HC 594	24 November 2005
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Progress on the Channel Tunnel Rail Link	HC 77	21 July 2005
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The Office of Fair Trading: Enforcing competition in markets	HC 593	17 November 2005
The Office of Gas and Electricity Markets: Sale of gas networks by National Grid	HC 804	10 February 2006
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Corporation Tax: companies managed by HM Revenue and Customs' Area offices	HC 678	13 January 2006
Transport		
Maintaining and improving Britain's railway stations	HC 132	20 July 2005
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Department for Work and Pensions: Using leaflets to communicate with the public about services and entitlements	HC 797	25 January 2006

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