OXERA

OXFORD ECONOMIC RESEARCH ASSOCIATES

WHAT ARE THE IMPLICATIONS OF DIFFERENT AGENCY OPTIONS FOR THE SALE OF DISTRIBUTION NETWORKS?

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Executive Summary

In April 2004, Ofgem published a Regulatory Impact Assessment (RIA) on the options for the development of appropriate agency and governance arrangements to facilitate the sale of one or more of National Grid Transco's (NGT) gas distribution networks (DNs). The analysis of the costs and benefits associated with the various options presented was entirely qualitative. Even though Ofgem had undertaken a survey of gas shippers to identify the costs anticipated under each agency option, no absolute cost implications for the industry were presented. Similarly, on the benefits side, the agency options are discussed in terms of their relative attractiveness for ensuring that benefits emerge, but nowhere is it stated what level of total benefit is potentially at risk from broader agency arrangements.

This OXERA study, commissioned by The Gas Forum, presents an independent assessment of the costs and benefits associated with different agency options, thus providing the first quantification of potential impacts. The study comprises an assessment of four main elements of the potential costs and benefits that should be analysed as part of a full RIA:

- the costs facing shippers as a result of the introduction of an alternative operational, commercial and regulatory framework for the gas industry;
- the extent to which the full benefits of DN cost savings can be realised under different agency arrangements;
- the impact of the loss of economies of scale of centralised operation and governance; and
- the potential effect on the development and nature of retail supply competition.

Agency options

The categories of costs and benefits are assessed against four well-defined scenarios of the scope of the agency function in the market. These scenarios were developed to be compatible with the options being discussed in the agency working group set up by Ofgem and are summarised in Table 1. In its April RIA, Ofgem investigated a wider range of agency options, and Table 1 identifies the Ofgem option to which each OXERA scenario is broadly equivalent.

Table 1: Agency options

OXERA agency scenario	Brief description	Equivalent Ofgem option
Option Gamma	Broad agency	F
Option Beta	Narrow agency, but with national governance arrangements	B1
Option Alpha	Narrow agency	A
Full fragmentation	No agency arrangements	No agency

Source: OXERA.

Shipper cost impact

To ascertain the effect on shipper costs of different operational arrangements and interfaces with network operators, OXERA undertook a cost survey. This survey served a similar purpose to that conducted by Ofgem, but differed in the following key areas.

- *The definition of the agency options*: the OXERA survey requested information on the four options described above, whereas the Ofgem proforma was used to analyse a range of agency options without these being clearly specified in the survey. As such, there may be inconsistencies in the data provided for the 'agency' and 'no agency' options if respondents interpreted the scenarios differently.

- *The categorisation of cost impacts*: the OXERA survey was framed to identify the cost implications for each of the main cost centres of shipper activity, as opposed to those associated with individual components of network functions carried out by NGT, DNs or an agent.

- *The assessment of cost drivers*: OXERA explicitly asked for justification of the cost increments and for a quantification of the implied resource requirement and unit cost.

The Gas Forum circulated the survey to 13 gas shippers and suppliers, and seven responses were received. Respondents represented over 70% of the domestic gas market and a high share of the industrial and commercial (I&C) market. The cost information was differentiated between one-off and ongoing costs and a net present value (NPV) calculation was undertaken over a 15- year period, using an illustrative discount rate of 6.25%.

Results of the survey are presented in Table 2.[1] The impact on individual shippers varied significantly, but this is to be expected, given the differences in both the number of supply points served and the focus of activities on different market segments. As Table 3 shows, the escalation in costs for larger shippers is more severe as the centralised agency function becomes narrower, reflecting the greater uncertainty in data quality, account management, customer queries and invoicing/billing that emerge as individual DNs have more scope for divergent action. This is also reflected in the fact that the majority of cost impacts are anticipated to be ongoing rather than one-off implementation costs.

Table 2: Shipper costs (£m, NPV)—survey results

Agency option	Range	Total cost
Gamma	1.5 to 14.2	32.5
Beta	1.4 to 33.9	66.3
Alpha	1.4 to 34.1	74.5
Full fragmentation	4.6 to 342.5	550.3

Source: OXERA cost survey.

[1] The cost estimates produced by survey respondents have not been independently verified.

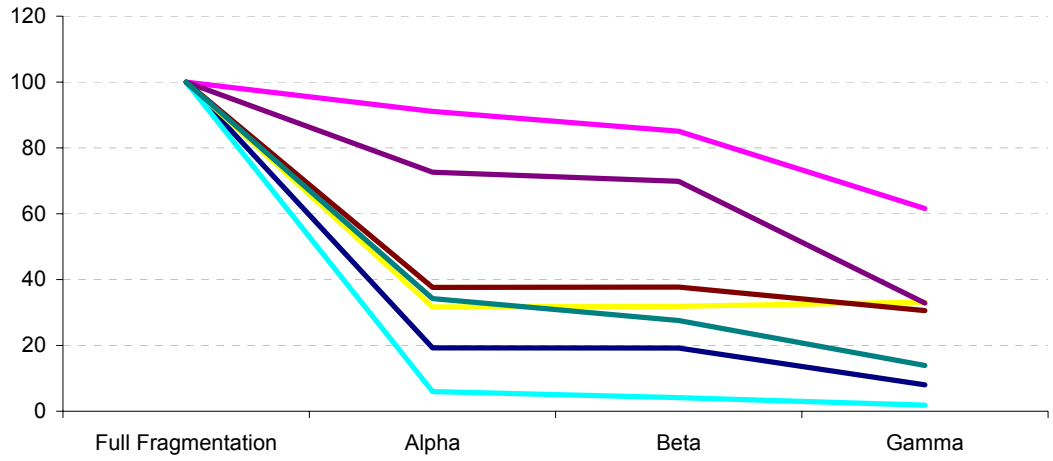
Table 3: Average estimated NPV of costs by shipper size (£m)

	Small shippers (<100,000 supply points)	Large shippers (>100,000 supply points)
Gamma	2.9	10.2
Beta	4.4	23.8
Alpha	4.7	27.1
Full fragmentation	8.8	257.6

Source: OXERA cost survey.

Table 2 illustrates that full fragmentation imposes substantial costs on shippers, a finding that has already been acknowledged by Ofgem, implying the need for an agency to be established. However, Table 2 also highlights that shipper costs are expected to increase significantly as a move from a broad (gamma) to a narrow (beta or alpha) agency occurs. The absolute costs for each option analysed in the Ofgem RIA are unknown, but, as Figure 1 shows, the indexed cost assessments from the OXERA survey exhibit similar patterns to those presented in Ofgem. Therefore, it is possible that the same absolute cost differences between options underlie the Ofgem analysis.

Figure 1: Index of shipper assessment of DN sales relative to full fragmentation scenario



Source: OXERA cost survey.

The survey results have been aggregated to produce an estimate of total shipper costs. Without more detailed cost differentiation between I&C and domestic markets, the aggregation has been done using an average cost per supply point. While this is an imperfect proxy, it provides an indicative estimation of total industry costs. As Table 4 shows, the expected costs vary from £43.0m under option gamma, to £98.8m under option alpha. The lower end of this cost range is broadly comparable with that produced by Ilex Energy Consulting in December 2003, where shipper costs were estimated at £38.2m in 2003 prices under a minimum change scenario (similar to option gamma). It is not possible to compare the narrower agency options fully because these are not well defined as part of that initial RIA; however, the OXERA survey suggests that ongoing costs are likely to be higher than anticipated in the previous Ilex Energy Consulting analysis.

Table 4: Implied industry cost (NPV)

Scenario	Sum of respondents' costs (£m)	Supply points covered (m)	Average cost per supply point (£)	Estimated industry-wide cost (£m)
Gamma	32.5	15.5	2.10	43.0
Beta	66.3	15.5	4.29	87.9
Alpha	74.5	15.5	4.82	98.8
Full fragmentation	550.3	15.5	35.59	729.5

Source: OXERA cost survey.

DN cost savings

The main benefit identified with the DN sales is the scope for improved cost efficiencies in the operation of the DNs through a more incentivised comparative-regulation regime. Over the last year, other parties have produced a wide range of estimates of the savings, from £50m (Ilex Energy Consulting RIA) to £558m (NGT RIA). The range depends on the number of DNs sold and the assumed strength of the post-sale regulatory regime. Although the creation of an agency maintains the economies of scale that have existed until now in shipper services, Ofgem's RIA has considered the impact that different agency options may have on the incentive for cost reduction in the provision of these services in the longer term.

In analysing the agency impact, OXERA has made two key assumptions:

- the agency does not constrain the ability of the DNs to achieve cost savings related to other areas of their business—ie, it does not affect their ability to alter procurement procedures, maintenance and CAPEX programmes, adopt new management practices, etc, which have been identified in other sectors as the main sources of efficiency savings;
- the costs of the agency are, at maximum, the shipper service costs identified in Transco's previous activity-based costing analysis and business planning questionnaire.

OXERA has assumed that the agency costs which would become controllable by DNs under full fragmentation are in the range £20m–£50m. OXERA has employed the modelling approach described in its previous review of Ofgem's preliminary RIA on DN sales[2] to estimate the extent to which transferring OPEX from DNs to the agency may affect the level of consumer benefit from DN cost savings. Table 5 shows the results of this modelling, under a scenario in which four DNs are sold.

[2] OXERA (2003), 'Potential Sales of National Grid Transco's Distribution Networks: Critical Review of the Preliminary Regulatory Impact Assessment', September.

Table 5: Agency impact on consumer benefit from DN cost savings

	Original result	Reduction in controllable OPEX due to creation of agency	
		£20m	£50m
Estimated consumer benefits			
4% annual OPEX efficiency assumption	141.1	133.0	128.5
3.5% annual OPEX efficiency assumption	102.2	97.2	94.9
Reduction in benefits (£m)			
4% annual OPEX efficiency assumption	–	8.1	12.6
3.5% annual OPEX efficiency assumption	–	5.0	7.3

Source: OXERA modelling.

Under the high efficiency scenario, the transfer of £20m of OPEX from DNs to the agency would reduce consumer benefits by £8.1m, whereas the transfer of £50m of OPEX would reduce benefits by £12.6m. Analysis of the functions carried out by the agency under different models suggests that the bulk of any OPEX transfer would occur as a result of the creation of a narrow agency. Therefore, the incremental reduction in DN cost savings that would occur in moving from a narrow to a broad agency is likely to be even smaller than these figures.

Retail competition

The different agency options may have implications for the development of competition in retail supply, connections and metering. In this report, OXERA looks solely at the impact on retail competition, and discusses qualitatively several potential impacts of the various proposed options, namely:

- as there is a move away from a broad agency, the potential impact of higher shipper costs and more complex DN–shipper interfaces on the perceived or actual barriers to new entry for shippers, or on the viability of smaller shippers as the minimum efficient scale of operation increases;

- the impact on the customer-transfer process of a more fragmented marketplace, and, hence, potential adverse implications for customer switching.

Table 6 highlights the potential impacts on the customer-transfer process of the different agency options, focusing on the five main areas of concern for customer transfer, as defined in a recent report from the Customer Transfer Programme.[3] The impact is much higher with full fragmentation due to multiple shipper–DN interfaces and possible divergence in quality and standard of information. However, there is not likely to be much difference in the risk under any of the agency options. Furthermore, although there is a potential for increased complaints regarding the customer-transfer process, it is not clear that this will automatically imply lower switching. Indeed, it could be argued that the ongoing cost estimates of shippers are capturing

[3] Customer Transfer Programme (2004), 'End Stage Report—Stage 1', April, available at www.energy-retail.org.uk.

the impact on competition because they reflect additional resources required to maintain a standard of service as the underlying operational and contractual framework becomes more complex and risky.

Table 6: Impact of agency options on customer-transfer process

Option	Data quality	Data availability	Design complexity	Multiple points of failure	Compliance
Gamma	Low	Low	Low	Low	Low
Beta	Low/medium	Low/medium	Low/medium	Low/medium	Low/medium
Alpha	Low/medium	Low/medium	Low/medium	Low/medium	Low/medium
Full fragmentation	High	High	High	High	High

Note: A high impact will result in more difficulties in the customer-transfer process.
Source: OXERA.

Conclusions

The analysis conducted by OXERA has combined qualitative and quantitative assessments of the costs and benefits associated with different proposed agency options. A summary of these costs and benefits is provided in Table 7. From the results, it is possible to draw several conclusions:

- the costs to shippers increase substantively with full fragmentation, which implies that an agency arrangement is a necessary component of any future regime;
- shippers anticipate the costs associated with a narrow agency to be significantly higher than those of a broad agency, due mainly to additional ongoing costs of dealing with data quality issues, account management and additional regulatory and governance issues;
- the detrimental impact on total DN cost savings of a broad agency, assuming the agency cost figures used in this report, is outweighed by the higher shipper costs and the risk to competition associated with a shift to a narrow agency.

Table 7: Summary of cost and benefits associated with agency options

	Gamma	Beta	Alpha	Full fragmentation
Shipper costs (£m)	43.0	87.9	98.8	729.5
Risks to supply competition	Low	Low/medium	Low/medium	High
Lost scale economies in provision of shipper services	Low	Low	Low	High
Potential reduction in consumer benefits from DN cost savings (£m)	8.1–12.6	8.1–12.6	8.1–12.6	0

Source: OXERA.

By providing a purely qualitative assessment of the agency impacts, the Ofgem RIA fails to highlight the full impact that alternative agency arrangements may have on the overall net benefits that can be achieved from the DN sales. In order to understand the ultimate impact on consumers, it will be necessary to compare the actual cost and benefit impacts of the various options. This requires both detailed cost data from shippers and a clear definition of what constitutes the cost base of the agency under each of the proposed options.

Contents

1. Introduction

In May 2003, National Grid Transco (NGT) announced its intention to sell one or more of its eight gas distribution networks (DNs) if sales served to maximise shareholder value. In response to this announcement, Ofgem initiated a consultation process to investigate the regulatory, commercial and operational changes that would be required to facilitate any sale. During the consultation process, Ofgem carried out several regulatory impact assessments (RIAs), the most recent of which were published in April 2004, and covered:

- the allocation of roles and responsibilities between Transco, as owner of the National Transmission System (NTS), and DNs;[4] and
- agency arrangements to act as an interface between network owners and shippers, and the governance regime.[5]

The RIA on agency arrangements investigated the costs and benefits of any proposed sale associated with several options for the potential range of activities to be carried out by an agency. As part of the analysis, Ofgem conducted a cost survey of 11 gas shippers to assess the impact on the shipper costs of different agency arrangements. However, two concerns arise with the structure of the Ofgem survey.

- First, there was no clear definition of the 'with agency' and 'without agency' options for which costs estimates were requested. This made it difficult to ensure consistency in the cost estimates that individual shippers submitted because of the individual assumptions made in interpreting the regime options.

- Second, the costs were split according to the network activities of the agent, DN or NGT, rather than the cost centres for shippers. Consequently, it was not easy to appreciate the impact on shipper activities or infrastructure requirements and the interdependence between the impacts associated with the various activities.

Consequently, The Gas Forum commissioned OXERA to perform an independent assessment of the costs and benefits associated with different agency options. This report details the results of the analysis.

In its RIA, Ofgem stated that:

> Ultimately, the scope of [the services provided by the agent] will be determined by the extent to which the costs that are mitigated by centralising certain services through the proposed agency outweigh any potential benefits associated with having each DN owner provide these services as a separate entity.

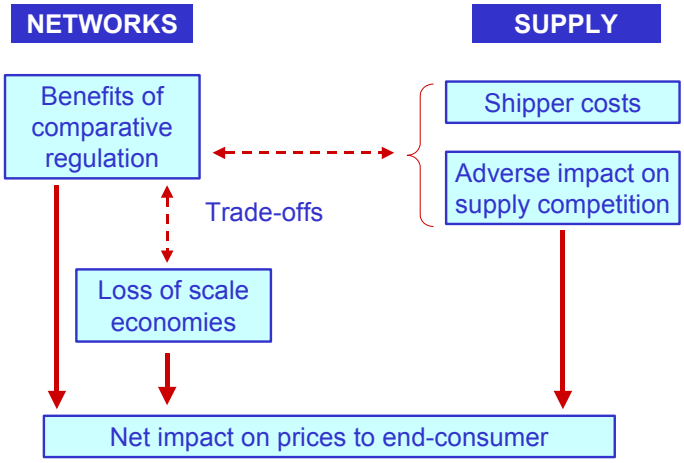
The framework used by OXERA to analyse agency options is consistent with this statement, and is illustrated in Figure 1.1. The overall impact that is of interest is the net effect on consumer

[4] Ofgem (2004), 'National Grid Transco—Potential Sale of Network Distribution Businesses: Allocations of Roles and Responsibilities between Transmission and Distribution Networks: Regulatory Impact Assessment,' April.
[5] Ofgem (2004), 'National Grid Transco—Potential Sale of Network Distribution Businesses: Agency and Governance Arrangements: Regulatory Impact Assessment,' April.

prices. Determining which agency model maximises consumer benefits involves striking the right balance between the following:

- *comparative regulation*—the more functions that are allocated to DNs, the greater the scope of activities that can be covered by comparative regulation. Ofgem argues that this form of regulation will lead to a faster rate of efficiency improvement through time;
- *economies of scale*—providing shipper services on a centralised basis could have a cost advantage over separate DN provision due to economies of scale;
- *shipper costs*—the more shipper-facing services that are allocated to the agency, the lower the costs incurred by shippers, since they will not need to establish systems for interacting with multiple DNs;
- *supply competition*—the provision of shipper services by a central agent should help safeguard the development of supply competition, by preserving a smooth customer-transfer process and ensuring that the national retail market does not segment into regional markets with only a few actively competing suppliers in each region.

Figure 1.1: Framework for analysing the consumer impact of different agency arrangements



Source: OXERA.

To provide evidence on the shipper costs associated with different agency options, OXERA conducted its own survey of shippers, requesting detailed information on anticipated cost increases in each area of their cost base under predefined agency scenarios. Shippers were requested to support their figures with details of the reasons for any cost change, the additional resources that would be required and the values used to monetise these resources.

Alongside this cost survey, OXERA carried out analysis of how the benefits claimed for comparative regulation might be affected by different agency options, and of how different degrees of fragmentation might affect the supply market. The analysis does not revisit the issue of the magnitude of DN cost savings that may be expected from any sales, only the extent to which the agency arrangements may prevent the maximum savings being realised. Where possible, OXERA drew on publicly available data to inform its analysis, but much of the discussion on impacts remains qualitative in nature, as was the case in Ofgem's recent RIA.

The remainder of the report is structured as follows:

- section 2 presents survey evidence of the impact on shipper costs of different agency options;
- section 3 examines the impact on potential DN cost savings;
- section 4 considers implications for the effectiveness of supply competition;
- section 5 concludes by comparing the overall costs and benefits of the various options.

2. The Impact on Shipper Costs

The main focus of this study is to investigate the impact that different agency arrangements may have on gas shippers in terms of both one-off implementation costs and additional ongoing costs associated with operating under the new arrangements. In order to understand the expected cost impacts, OXERA conducted a survey of gas shippers to ascertain:

- the expected incremental costs associated with various agency options; and
- the main drivers behind the increased costs.

The results of this cost survey form the basis of the analysis in this section.

2.1 Structure of cost survey

The survey requested shippers to provide information on the costs they would expect to incur under four well-defined scenarios of the scope of an agency (and hence with different implications for the underlying degree of industry fragmentation). The guidance notes for the survey, together with the pro-forma questionnaire, are attached as Appendix 1.

These scenarios were based on the options that were being considered in the Agency Working Group set up by Ofgem, as well as a fourth 'full fragmentation' option, under which there would be no central agency. The four scenarios are detailed below.

Option gamma	This envisages a broad agency role, with a single shipper–DN interface and national governance of codes and charging methodologies. In essence, this option assumes that shippers face minimal changes to their current operations.
Option beta	Here, the role of the agency is narrower, with greater responsibility being placed on the DN or NGT for coordinating activities such as connection and site works or energy balancing respectively. Under this option, national governance arrangements are still maintained.
Option alpha	The agency function is narrow, as in option beta, but, in addition, there is regional governance of codes and charging methodologies which may lead to greater divergence in shipper–DN relationships over time.
Full fragmentation	There is no central agency function at all, and all operational and governance arrangements are allocated between NGT and the DNs, with multiple shipper–DN interfaces emerging.

Table 2.1 describes the key characteristics of each scenario. The scenarios are not precisely comparable with those presented by Ofgem in April 2004 (see Table 2.2), but there are broad similarities between options alpha, beta and gamma and Ofgem's options A, B1 and F respectively.

Table 2.1: Fragmentation scenario descriptions

Activity	Scenario 1 Option gamma	Scenario 2 Option beta	Scenario 3 Option alpha	Scenario 4 Full fragmentation
Emergency 0800 No.	NGT	NGT	NGT	NGT
Demand derivation	NGT/DN	NGT/DN	NGT/DN	NGT/DN
Network Code development	NGT	NGT	NGT	NGT
Transmission charge development	NGT	NGT	NGT	NGT
Distribution charge development	DN	DN	DN	DN
Metering of last resort	DN	DN	DN	DN
Site works	Agency	DN	DN	DN
Connections	Agency	DN	DN	DN
Energy balancing, nominations and trading	Agency	NGT	NGT	NGT
NTS capacity auctions and trading	Agency	NGT	NGT	NGT
Network Code(s) governance and administration	Agency	Agency	NGT/DN	NGT/DN
Charging methods of governance and administration	Agency	Agency	NGT/DN	NGT/DN
Supply point administration	Agency	Agency	Agency	DN
Recording and calculation of transportation volumes	Agency	Agency	Agency	DN
Transportation charge invoicing	Agency	Agency	Agency	DN
Distribution charge invoicing	Agency	Agency	Agency	DN
Other code obligations	Agency	Agency	Agency	DN
Transportation charge credit and cash collection	Agency	NGT	NGT	NGT
Distribution charge credit and cash collection	Agency	DN	DN	DN
Demand estimation	Agency	Agency	NGT	NGT

Source: OXERA.

Table 2.2: Summary of Ofgem options for scope of agency

Option	Description
A	NGT's initial proposal, in which the agency has responsibility for core shipper services, including supply point administration, recording and calculating transportation volumes, transportation invoices and gas balancing credit and cash management
B1	In addition to A, the creation of a governance entity to oversee the administration of the Network Code and charging methodologies
B2	As for option B1, but with credit and cash collection for transmission and distribution charges within the scope of the agency
C	As for option B1, with the following systems incorporated into the agency: • AT-link (the system for gas nominations, operations and settlement) • RGTA (the system for NTS capacity)
D	As for option B1, except that the AT-link system is split, with the part relating to nominations and operations within Transco and the settlement system within the agency
E	As for option B1, except that the AT-link is within the agency
F	The broadest possible scope for the agency. In addition to C, the agency would be responsible for credit and cash collection for transmission and distribution charges, and for connections and metering

Note: This table gives only the major features of each option. For full details, see Ofgem's Agency and Governance Arrangements RIA.
Source: Ofgem.

The survey questionnaire was circulated by The Gas Forum to 13 gas shippers and suppliers. Of these, seven responses were received. These respondents represent a broad spectrum of industry participants in terms of the number, size and nature of their customers, although only two respondents were direct suppliers to domestic customers. In total, shippers responding to the survey represent more than 70% of the domestic supply market and a high share of the industrial and commercial (I&C) market, and service nearly 15.5m supply points across all DN regions. Table 2.3 gives a breakdown of the number of supply points represented in the survey by customer size.

Table 2.3: Number of supply points represented in the survey

Domestic	Small non-domestic	Large non-domestic
15,103,745	314,083	45,536

Note: The questionnaire defined the categories as follows: domestic <2,500 therms per annum; small non-domestic 2,500–50,000 therms per annum; large non-domestic >50,000 therms per annum. However, it is not clear that all respondents followed this definition.
Source: OXERA cost survey.

Rather than request information on the basis of the cost associated with individual network activities being carried out by a DN, NGT and/or agent, OXERA structured the survey to allow shippers to express the impact on their main cost centres. The cost categories applied are described briefly in Table 2.4. This allowed the broad picture of changing costs associated with different agency options to be observed. Costs were split between one-off implementation costs and ongoing costs.

Table 2.4: Cost categories

Cost category	Additional description
Customer service	Includes functions such as registration of new customers, account management, customer billing, and cash collection and credit management
Sales	Costs incurred promoting brand and recruiting new customers, including preparation of tenders and transportation pricing for quotation purposes and introduction of regional pricing schemes (where necessary)
Transportation invoicing	Payment of NTS and DN charges, including invoice receipt and verification
Credit cover	Compliance with credit requirements of Transco and any independent DNs
Energy balancing and capacity management	Booking of capacity. Balancing includes management of interruption and cash-out payments
Connection and site works	Organisation of connection works for new customers without existing gas supply and any increases in connection capacity for existing customers
Metering	Metering of last resort, assuming that reform of gas metering arrangements goes ahead
Overheads	General company overhead costs, regulatory and legal affairs, DN owner account management

Source: OXERA.

2.2 Main cost drivers

Survey respondents were asked to indicate, for each scenario, what the key drivers for cost changes would be for each cost category. Although the respondents identified a wide range of drivers, some underlying themes emerged. Table 2.5 summarises the key drivers identified under each cost category, as well as indicating how many respondents linked that driver to each of the four scenarios. Not surprisingly, the most commonly occurring cost driver was the necessary development of IT systems, which was identified under nearly all the cost categories. This was the main driver of one-off costs, exhibiting the expected rise as the degree of fragmentation increased and hence shippers required systems that would allow multiple DN interfaces for some areas of operation.

The most common ongoing cost drivers were increased regulatory and governance costs and the requirement to develop and operate new operational and billing processes. There was broad agreement that additional resources would be needed to deal with greater numbers of customer queries resulting from potential degradation of data quality under a fully fragmented system.

Table 2.5: Identification of major cost drivers

Cost category	Driver	No. of respondents identifying driver	Link between driver and scenario			
			Gamma	Beta	Alpha	Full
Customer service	Agent management	1	X	X	X	
	Development of IT systems	6	XX	XX	XXX	XXXXX
	New operational processes (including billing)	5	X	X	XX	XXX
	Additional reporting	2	X	X	X	X
	Dealing with customer queries	1	X	X	X	X
	Data degradation	1				X
Sales	Regionalisation of sales and marketing literature	2	X	X	XX	XX
	Different DN pricing models	2			X	XX
	IT systems (sales quotation system)	1	X	X	X	X
	Updating transport pricing model	2	XX	XX	XX	XX
	Increased support for sales staff	1	X	X	X	X
Transportation invoicing	IT systems	5	XXX	XXXX X	XXXXX	XXXXX
	Data validation	2	X	XX	XX	XX
	Administrative costs	4	XXX	XXX	XXX	XXXX
	Reporting	1	X	X	X	X
Credit cover	Letters of credit (including legal costs)	3	XXX	XXX	XXX	XXX
	Credit assessment rigour	2	X	XX	X	XX
	Systems changes	3	X	XX	XX	XXX
	Administration	3	X	XXX	XX	XX
Energy balancing and capacity management	Interfacing with DN	1	X	X	X	X
	Reduced data quality (forecasting more difficult)	1		X	X	X
	Divergence in systems	1		X	X	X
	Review balancing processes	1	X	X	X	X
	IT systems	3	X	XXX	XXX	XX
Connection and site works	Managing multiple interfaces	2		XX	XX	XX
	Administrative complexity	2	X	X	XX	XX
Metering	DN-owned meters more expensive	1	X	X	X	X
	Additional complexity—more resources	2	XX	XX	XX	XX
	Data quality	1	X	X	X	X
	Account management	1		X	X	
	IT system	1	X	X	X	X
Overhead	Regulation and governance	5	XXXXX	XXXX	XXXX	XXXXX
	Increased account management	1	X	XX	XX	XX
	Contract management	2	X	X	X	XX
	IT support	1	X	X	X	X

Source: OXERA cost survey.

2.3 Overall costs

The survey asked respondents to estimate cost increases for each scenario in terms of one-off set-up or implementation costs, as well as the ongoing running costs. Using this information, the net present value (NPV) of these costs was calculated to provide a measure of the total cost over the anticipated lifetime of the systems. For the purposes of this analysis, an illustrative discount rate of 6.25% has been used, consistent with the allowed cost of capital for Transco. In addition, the

systems are assumed to remain in use until 2022, in line with assumptions previously used by Ofgem.[6]

As can be seen in Table 2.6, there is a wide variation in the NPV of costs estimated by shippers. One of the reasons for this is the variation in the number and type of supply points serviced by each shipper, with larger shippers (ie, those with more than 100,000 supply points and a large domestic customer base) incurring greater absolute cost increases, but also exhibiting some economies of scale as the cost per supply point served is significantly lower for these respondents. This difference is illustrated in Table 2.7, which shows the cost estimates of large shippers to be between 5 and 30 times the estimated costs for small shippers, depending on the scenario. This suggests that overall industry cost estimates will need to differentiate between small and large shippers so as to obtain a reasonable representation based on the size of the shipper and the nature of their portfolio (ie, mainly domestic or I&C).

Table 2.6: Range for estimated NPV of shipper costs (£m)

	Min.	Average	Max.
Gamma	1.5	5.0	14.2
Beta	1.4	9.9	33.9
Alpha	1.4	11.1	34.1
Full fragmentation	4.6	79.9	342.4

Source: OXERA cost survey.

Table 2.7: Average estimated NPV of costs, broken down by shipper size (£m)

	Small shippers (<100,000) supply points	Large shippers (>100,000) supply points
Gamma	2.9	10.2
Beta	4.4	23.8
Alpha	4.7	27.1
Full fragmentation	8.8	257.6

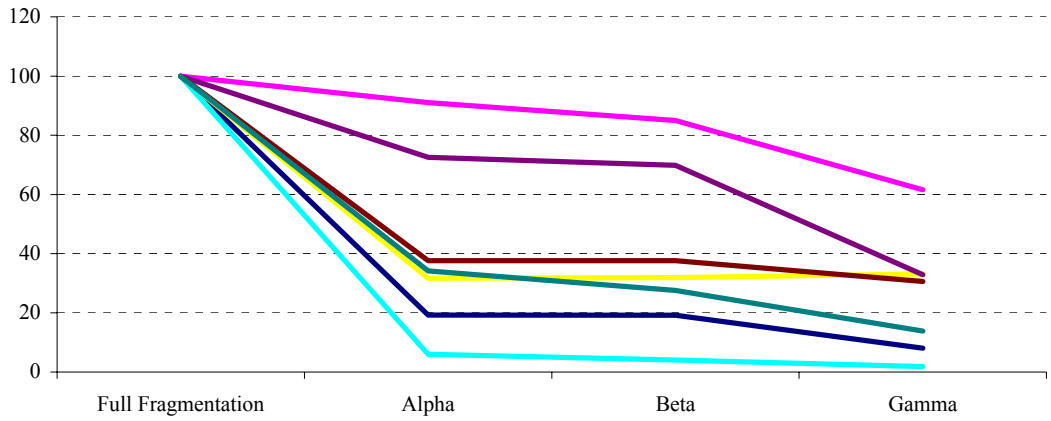
Source: OXERA cost survey.

In comparing the scenarios, it is apparent that cost estimates rise in relation to the degree of fragmentation expected under each scenario. Nearly all respondents estimated the lowest cost increases under the gamma scenario, with a broad agency role; while the full fragmentation scenario is seen as the most expensive option by all respondents, in many cases by a significant margin. The average NPV of costs per shipper responding to this study ranged from £5.0m under option gamma, to £11.1m under option alpha and £79.9m under full fragmentation.

This is illustrated further in Figure 2.1, which shows indexed figures for the costs of DN sales reported by shippers under each scenario (where 100 = each shipper's estimate of costs under the full fragmentation scenario).

[6] See appendix 2 in Ofgem (2004), 'National Grid Transco— Potential Sale of Network Distribution Businesses: Allocations of Roles and Responsibilities between Transmission and Distribution Networks: Regulatory Impact Assessment', April.

Figure 2.1: Index of shipper assessment of DN sales relative to full fragmentation scenario



Source: OXERA cost survey.

The methodology employed in constructing this figure is intended to reflect that used by Ofgem to produce Figure 9 in its RIA on agency and governance arrangements. At first glance, Figure 2.1 is quite similar to Ofgem's chart, even though OXERA's survey was structured differently to that carried out by Ofgem. The main difference between the charts would appear to be that, whereas half of the shippers that responded to Ofgem did not report any significant cost differences under the narrow and broad agency models, all but one of the respondents to OXERA's questionnaire suggested that their costs would be lower under a broad agency than under a narrow agency.[7]

As can be seen in Table 2.8, ongoing operational costs account for the majority of total cost increases estimated by shippers. The split between one-off and ongoing costs remains relatively constant across the scenarios, with the exception of the full fragmentation scenario, which is estimated to have a much higher proportion of ongoing costs.

Table 2.8: Split between one-off and ongoing costs (£m)

	One-off costs	Ongoing costs (NPV)	Total costs (NPV)
Gamma	1.0	4.0	5.0
Beta	1.9	8.0	9.9
Alpha	2.0	9.1	11.1
Full fragmentation	7.9	71.9	79.9

Source: OXERA cost survey.

In order to produce an industry-wide estimate of costs under each option, the NPVs of the costs across all shippers were summed and then divided by the total number of supply points

[7] The lack of differentiation within the Ofgem analysis may arise due to the lack of definition of the individual scenarios within the proforma.

represented in the survey to give an estimated cost per supply point. These costs were then multiplied by the total number of supply points, estimated at 20.5m, as shown in Table 2.9. This analysis suggests that total industry-wide costs could range between £43.0m and £729.5m, depending on which scenario is adopted.

Table 2.9: Total NPV costs and cost per supply point

	Sum of NPV costs (£m)[1]	Supply points covered (m)	Average cost per supply point (£)	Estimated total cost (£m)
Gamma	32.5	15.463	2.10	43.0
Beta	66.3	15.463	4.29	87.9
Alpha	74.5	15.463	4.82	98.8
Full fragmentation	550.3	15.463	35.59	729.5

Note: [1] Cost estimates for suppliers that did not provide supply point information were excluded from the calculation of total costs.
Source: OXERA cost survey.

2.4 Breakdown of costs

As well as differentiating between one-off and ongoing costs, the survey asked respondents to break down their cost estimates into the eight categories (in Table 2.4) in order to provide more detail on the reasons for the variation in the cost assumptions between the scenarios, see Table 2.10.

Table 2.10: Average NPV cost broken down by shipper cost category (£m)

	Gamma	Beta	Alpha	Full fragmentation
Connection and site works	0.2	0.6	0.7	1.2
Credit cover	0.3	0.6	0.6	0.9
Customer service	0.4	0.5	0.5	64.9
Energy balancing	0.2	0.4	0.6	0.7
Metering	0.7	0.7	0.7	0.9
Overheads	2.3	1.3	5.5	27.1
Sales	0.2	0.2	0.7	1.1
Transportation invoicing	0.4	1.6	1.5	2.0
Total[1]	4.8	5.9	10.8	98.8

Note: [1] Totals differ from Table 2.6, as not all respondents provided cost breakdowns.
Source: OXERA cost survey.

The cost breakdowns show that the increase in cost estimates seen under the full fragmentation scenario is driven almost entirely by very large increases in the average estimated overhead and customer-service costs. Increases in the cost of customer service under full fragmentation might be expected, given that supply point administration would no longer be provided on a centralised basis in this scenario. Although this broad conclusion seems reasonable, it is advisable not to read too much into the absolute change in costs due to the small number of responses received and the large differences between the cost estimates of respondents. Removing the two large

respondents from the analysis reduces the average costs under the full fragmentation scenario to £1.9m for customer service, £2.7m for overheads and £8.8m in total.

2.5 Nature of resources

The majority of cost increases are due to two types of resource requirement: new IT systems, and additional staff. Excluding the resources required for the initial development and setting up of new systems, shippers indicated that the proposed changes would necessitate additional staff resources in the following areas:

- sales and marketing;
- finance;
- operations;
- analysts;
- regulatory affairs; and
- legal.

Estimates for the number of full-time equivalent (FTE) staff varied between 1.75 and 25.25, depending on the shipper and the degree of fragmentation. The average FTE requirement across all respondents is shown in Table 2.11.

Table 2.11: Average FTE requirement across all respondents

	Gamma	Beta	Alpha	Full fragmentation
Additional FTE staff required	2.8	4.8	7.6	11.4

Source: OXERA.

In terms of the costs of these resources, the estimates varied according to the type of resource required, with general operational staff estimated to cost approximately £50,000 per annum, while specialist regulatory, finance or legal staff cost fell in the range of £70–£100,000 per annum. This compares with figures of £80,000 per annum for gas industry staff and £300,000 per annum for legal staff used previously by Ofgem and its consultants.[8]

2.6 Summary

The results of this shipper survey suggest that the total cost imposed on shippers as a result of DN fragmentation would be approximately £729.5m in NPV terms in the absence of any central agency. The introduction of an agency would reduce these costs to between £43.0m and £98.8m, depending on the roles and function of the agency.[9] Hence, there are significant differences emerging between agency options, which suggest that Ofgem may need to revisit its initial cost survey to determine more precise estimates of costs.

[8] See appendix 2 in Ofgem (2004), 'National Grid Transco— Potential Sale of Network Distribution Businesses: Allocations of Roles and Responsibilities between Transmission and Distribution Networks: Regulatory Impact Assessment', April.

[9] These estimates have, however, been based on a relatively small number of responses and no attempt has been made to verify or audit these shipper cost estimates.

3. The Impact on DN Cost Savings

The analysis in section 2 suggests that the different agency options may have a substantive impact on shippers' costs. However, from the perspective of consumers, if the narrower agency enables greater DN cost savings to be made, the net impact of a narrow agency may be beneficial. OXERA has therefore considered the extent to which different agency options might constrain the ability of new DN owners to achieve efficiency savings. Previous RIAs by Ilex Energy Consulting and NGT have identified NPV consumer benefits from DN costs savings ranging from £50m (Ilex Energy Consulting RIA) to £558m (NGT RIA), depending on the number of DNs sold and the incremental gains that can be achieved from comparative regulation.

The RIA on agency arrangements presents a qualitative assessment of the implications of the agency options for potential efficiency savings. Crucially, the impact of the agency options is assumed to affect only the costs associated with the range of shipper services and activities that the agent would perform, although the level of this cost is not quantified.

In the following analysis, OXERA looks at the broad drivers for the levels of efficiency savings that the DNs may achieve in a post-sales regime. It then identifies a range for the cost base of the agency options and hence provides some indicative results of the potential impact on DN cost savings. This quantification is important to place Ofgem's qualitative analysis into context because, even if the scope for cost savings is reduced, if it is against a relatively small portion of the total DN cost base then it may be outweighed by the incremental shipper costs associated with a move to a narrow agency.

The following analysis examines whether:

- a broad agency and the adoption of a uniform Network Code and distribution charging methodology across all DNs would limit the ability of new DN owners to achieve the type of cost savings that might be expected under a comparative-regulation regime;
- an agent would lead to lower efficiency improvements in the provision of those shipper services directly within its scope.

In addition, OXERA has examined governance issues, to assess whether inappropriate governance arrangements might lead to sub-optimal fragmentation through time.

The analysis in this section is subject to the following caveats.

- In this study, OXERA has not made a judgement on whether comparative regulation will yield additional efficiency gains relative to price regulation of a single utility. Instead, the analysis considers whether the benefits that are claimed for comparative regulation, if they exist, would be materially affected by the adoption of different agency options.

- Limited data is available on the costs associated with each shipper service that might be included within an agency, and hence quantitative results in this section should only be interpreted as indicative. OXERA would advise that Ofgem seeks information from Transco on the costs associated with each potential agency function, in order to ascertain whether any forgone efficiency savings from including them within the scope of an agent are likely to be material relative to the broader cost savings anticipated.

3.1 Potential constraints on DN cost savings

The major cost savings anticipated under the post-sales regime arise from the ability to engage in more comparative regulation and to encourage innovative operating and investment programmes. This form of regulation has been applied in both the electricity and the water sectors, where more detailed information on the range of management actions to achieve efficiency savings can be obtained. It is interesting to consider these sectors as comparators for the likely manifestation of cost savings in the gas industry. Their applicability for this is based on the following:

- *electricity distribution sector*—the structure of the industry is similar to that which might evolve in the gas distribution sector if Transco sells several DNs. There are separate distribution network operators, and these companies must interface with electricity suppliers competing in the retail supply market;

- *water sector*—the structure of the water industry is different, with vertically integrated water companies and limited competition. However, water networks have similarities with gas networks at an engineering level (eg, use of pipes, storage issues).

3.1.1 Electricity distribution sector

A recent Ofgem document summarises information on where electricity DNOs have reported efficiency gains over the period of their current price control.[10] Appendix 2 reviews the information in this document for a sample of nine DNOs. The information is qualitative in nature, and no indication is given of relative size of savings achieved in different ways. However, some of the most frequently reported ways in which cost savings have been achieved include:

- condition-based asset management systems, allowing maintenance costs to be reduced and generating savings in renewal expenditure through the extension of asset lives;
- procurement efficiencies, with some DNOs combining to increase purchasing power;
- reductions in overhead costs through rationalisation and the elimination of duplication;
- merger savings from economies of scale and the spreading of best practice;
- outsourcing of activities.

3.1.2 Water sector

In the public summaries of their business plans for their ongoing price-control review, some companies have commented on specific areas where efficiency improvements are expected to be made in the future. For example, one company identified the following efficiency initiatives that it intended to pursue in the forthcoming price-control period:[11]

- formation of alliances with partner contractors to provide integrated and incentivised delivery of outputs and services;
- outsourcing non-core activities to specialist providers to achieve benefits of scale and expertise where economically advantageous;
- managing the supply chain to achieve overall reliability and cost savings;

[10] Ofgem (2003), 'Electricity Distribution Price Control Review: Second Consultation—Data and Cost Commentary Appendix', December.
[11] Anglian Water (2004), 'Final Business Plan; Part D: Public Summary of the Company Strategy', April

- improving utilisation of information technology for greater speed of response and overall effectiveness, particularly mobile communications technology;
- performance management culture for employees and contractors.

Another company identified the following themes in relation to capital efficiencies:[12]

- capital procurement;
- risk management;
- asset management;
- research and development of innovative technologies.

Further evidence can be gained from a recent report on economies of scale in the water and sewerage industry in England and Wales, which reported divergent views from industry participants on the existence or otherwise of scale economies.[13] One set of views was that consolidation in the sector might lead to significant cost savings. The report stated that a broad estimate would be a 20–25% reduction in the operating costs of the 'target' company, to be achieved through:

- rationalisation of contiguous operational areas;
- consolidation of support functions (eg, finance, human resources, research and development, scientific services, regulation, policy determination, public relations, property services and procurement);
- consolidation of asset management functions;
- integration of customer call centres;
- pooling of procurement and contract management;
- transfer of management best practice.

The report stated that others in the water industry held a contrary perspective that smaller-scale enterprises performed better.

3.1.3 Implications for gas DNs

Both of these examples suggest that the main drivers for additional cost savings are linked to more efficient operational, procurement and investment strategies, together with the exploitation of economies of scale and scope. Since the existence of a broad or narrow agent has very little impact on the undertaking of these actions by independent DNs, it would appear that agency arrangements may have little effect on the total cost savings that the regulator and consumers should expect from the restructured distribution sector.

The one area where effects might be observed is if DNs were to be bound to a uniform Network Code (without any short-form Network Codes)[14] and to a single distribution charging methodology. Examples of potential constraints on efficiency improvements include:

[12] Yorkshire Water (2004), 'Periodic Review 2004—Final Business Plan'.

[13] Stone and Webster Consultants (2004), 'Investigation into Evidence for Economies of Scale in the Water and Sewerage Industry in England and Wales'.

[14] The network code defines the contractual and commercial relationship that exists between Transco and gas shippers. It lays out procedures in a range of areas, including supply point maintenance, capacity booking and trading, gas nominations, measurement

- *system operation*—if DNs are given responsibility for system operation on their own networks (as proposed by Ofgem), the scope for innovation in this area might be constrained by the requirement to follow processes laid down in the Network Code;

- *structure of distribution charges*—independent distribution networks (IDNs) might seek to make cost savings by adopting a charging methodology that is simpler to implement or that induces desired changes in customer behaviour (eg, by reducing demand growth in a constrained part of the network).[15]

Cost savings arising from the introduction of new and innovative approaches through time are almost by definition, not open to prediction, and hence it is difficult to ascertain whether uniform industry documentation would constrain innovation. However, the following considerations would appear relevant:

- *size of costs that might be affected*—given that there could be impacts in areas such as DN system operation and investment, it seems likely that some significant cost areas might be affected;
- *degree to which efficiency improvements are constrained*—any incentive benefits that may arise from comparative regulation would still be available, since the cost areas under consideration would remain with DNs. However, there might be a lower increase than otherwise in the rate of efficiency improvements from comparative regulation.

Overall, effects in this area are very uncertain, but any impacts on the ability of IDNs to achieve cost savings (in areas apart from shipper services) would appear to stem mainly from any requirement to conform to national industry documentation. Even here, the evidence suggests that many of the types of efficiency improvement observed in comparable sectors would be unaffected.

However, the agency itself does remove a portion of costs from the control of individual DNs. It is therefore important to consider how significant these costs are and the consequent potential loss of benefits that may occur.

3.1.4 Identifying agency costs

There is relatively little data in the public domain on the detailed breakdown of Transco's costs between different activities. The most recent figures are from Transco's activity-based costing review in 2000, as presented in Table 3.1.[16] The column on the right shows the percentage breakdown of costs, excluding the costs associated with the NTS (which represent 14% of Transco's total cost base).

of gas flows, allocation of gas consumption between shippers, daily balancing and invoicing arrangements. It has been suggested that all DNs might subscribe to a uniform Network Code, with additional short-form Network Codes for each DN to allow for regional variations.

[15] Such changes in customer behaviour are only likely to be beneficial if charges are cost-reflective, otherwise the IDN might deter gas consumption which was socially optimal.

[16] Transco, 'Activity Based Costing Review 2000'.

Table 3.1: Activity-based cost breakdown for Transco, 2000

	£m	Percentage of total costs	Percentage of total costs (excluding NTS)
National Transmission System	254	13.7	–
Local Transmission System	122	6.6	7.6
Intermediate/medium-pressure distribution systems	145	7.8	9.0
Low-pressure distribution system	522	28.1	32.5
Service pipes	259	13.9	16.1
Emergency work	135	7.3	8.4
Shipper services	46	2.5	2.9
Meter reading	30	1.6	1.9
Metering	295	15.9	18.4
Other	50	2.7	3.1
Total	**1,858**	**100.0**	**100.0**

Source: Transco, 'Activity Based Costing Review 2000'.

The table shows that shipper services accounted for £46m of Transco's costs in 2000, representing 2.5% of the total cost base, or 2.9% of the cost base excluding NTS-related costs. This compared with shipper service costs of £136m in real terms in the previous year, with the main reason for the large reduction being the reallocation of the cost of operating UK link[17] from shipper services to other services.

The breakdown of shipper service costs in 1999 and 2000 is shown in Table 3.2. While it is not possible to match these cost categories one-for-one with the various proposed agency functions, there are some cost elements which seem likely to fall within the scope of the agent (eg, billing costs, due to the agent's responsibility for transportation invoicing under all of the proposed agency options).

[17] This cost comprised information service costs of £53m in 1999, and associated depreciation charges of £10m.

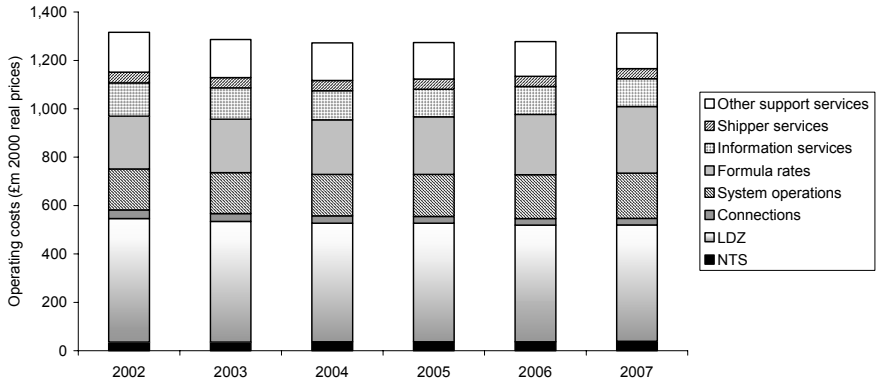
Table 3.2: Breakdown of shipper service costs in 1999 and 2000 (£m)

	2000	1999
Depreciation	5	19
Account manager	3	3
Customer portfolio management	11	10
Billing	10	17
Other shipper and support	1	11
System operation	1	4
Licence to operate	1	1
Regulation	0	4
Support services	1	4
Information systems	5	61
Central departments	3	4
Bad-debt provision	–	(8)
Corporate recharge	4	6
Total	**46**	**136**

Source: Transco, 'Activity Based Costing Review 2000'.

The Business Plan Questionnaire (BPQ) submitted by Transco during the last price review contained projections of operating costs broken down by business area. While many of the detailed figures were not released into the public domain, the scenario projections contained in Figure 3.1 were published in an appendix in an Ofgem document. NTS costs appear to form a relatively small proportion of operating costs in these projections. Shipper service costs were projected to be £46m in 2002 and then £42m throughout the remainder of the period.

Figure 3.1: Projected operating costs in Transco's BPQ at last price-control review, 2002–07



Note: These figures are for scenario C (baseline demand, interconnector balance). BPQ figures for other scenarios do not appear to be in the public domain.
Source: Appendix 6 in Ofgem (2001), 'Review of Transco's Price Control from 2002: Initial Thoughts Consultation Document', February.

In the absence of public data on the costs of an agency, OXERA has used this evidence to postulate a ballpark figure for the purposes of carrying out some illustrative modelling.[18] The activity-based costing breakdown and BPQ scenario suggest that a figure of £50m might represent a reasonable high scenario for the operating expenditure (OPEX) of a broad agency that encompassed most shipper-facing services. However, some of the functions undertaken by an agency would be transferred from the NTS rather than from DNs. Therefore, OXERA has also used a lower figure of £20m for OPEX transferred from DNs to an agency in its modelling (reported later) of potential consumer benefits from DN cost savings.

3.1.5 Agency costs by option

Whereas the broad agency option may be assumed to incorporate the total costs currently incurred in providing shipper services, the degree to which some of these costs are controllable by the DN under the narrower agency options—and hence the extent to which they may be subject to stronger efficiency incentives—is hard to ascertain.[19]

Table 3.3 summarises the functions that might be shifted from DNs to the agent, first comparing a narrow agent (option alpha) to the situation that would arise without an agent (the full fragmentation scenario), and then moving progressively to broader agency models (options beta and gamma). The largest transfer of functions occurs as a result of the creation of even a narrow agent; fewer functions are switched from DNs as a consequence of moving to broader agency options. The same pattern is evident in Table 3.4, which analyses the transfer of functions from DNs to an agent for the various options analysed in Ofgem's RIA.

Table 3.3: Functions transferred away from DNs (using agency options from OXERA survey)

Moving from full fragmentation scenario to option alpha	Moving from option alpha to option beta	Moving from option beta to option gamma
Supply point administration	Network Code governance and administration	Site works
Record and calculate transportation volumes	Charging methodologies governance and administration	Connections
Transportation charge invoicing		Distribution charging credit and cash collection
Distribution charge invoicing		
Other code obligations		

Source: OXERA.

[18] A proportion of the costs quoted in the BPQ for Information Services might be allocated to an agency, although, in the absence of a more detailed cost breakdown, further analysis on this is not possible.

[19] The loss of any benefits claimed for comparative regulation applies only to functions transferred to the agent from DNs, not to functions transferred from the NTS.

Table 3.4: Functions transferred away from DNs (using agency options from Ofgem RIA)

Moving from 'no agency' to option A (narrowest agency)[1]	Moving from option A (narrowest agency) to option F (broadest agency)
Supply point administration	Distribution charging administration
Record and calculate transportation volumes	Distribution charges credit and cash collection
Transportation invoices	Connections
Gas balancing credit and cash collection?[1]	Metering
Transportation licence obligations	
Other Network Code obligations	

Note: [1] It is not clear that all these functions would be undertaken by DNs in the absence of an agency. For example, gas balancing and cash collection would only be carried out by DNs if shippers were required to balance each DN region separately.
Source: Ofgem, OXERA.

Again, there is insufficient data available to quantify precisely the level of costs that might be transferred from DNs to an agent when moving from a narrow to a broad agency model. For example:

- it is not clear into which category in Table 3.2 the cost of distribution charging administration falls;
- distribution charges credit and cash collection could presumably have an impact on the costs associated with bad debt in Table 3.2, but the administration costs of such activities are not separately identified;
- while activities such as metering and connections are large cost areas, most of these costs would remain with the DNs (ie, as connections provider and metering provider of last resort), since the agent will only act as a communication channel between suppliers and network owners.

Overall, however, it seems likely that a significant proportion of shipper service costs would already be within the scope of a narrow agency, and that relatively few additional costs will be transferred from DNs to the agency as a result of moving to a broader model.

3.1.6 Illustrative results for forgone DN cost savings

OXERA has employed the modelling approach described in its previous review of Ofgem's preliminary RIA on DN sales[20] to estimate the extent to which transferring OPEX from DNs to the agency may affect the level of consumer benefit from DN cost savings. The modelling results assume that consumers can benefit from DN sales through greater efficiency incentives on IDNs and through Ofgem being able to use a tighter frontier definition[21] at price reviews. However, no analysis has been undertaken to substantiate whether comparative regulation will yield these gains; if such effects do not occur in practice then the estimated consumer benefits may not materialise.

[20] OXERA (2003), 'Potential Sales of National Grid Transco's Distribution Networks: Critical Review of the Preliminary Regulatory Impact Assessment', September.
[21] If sold distribution networks are at, or close to, the efficiency frontier, the regulator may have greater confidence in its estimates of the location of the frontier. Consequently, it can set a more challenging frontier target, or a faster rate of catch-up for laggard firms.

Table 3.5 shows the results of OXERA's modelling, under a scenario in which four DNs are sold. The modelling assumes that the agency faces efficiency incentives comparable to those for a single, price-controlled utility. Under the high scenario, in which IDNs achieve 4% OPEX efficiency improvements per annum, the transfer of £20m of OPEX from DNs to the agency would reduce consumer benefits by £8.1m, whereas the transfer of £50m of OPEX would reduce benefits by £12.6m. These figures are much smaller than the shipper costs that OXERA's survey suggests would be mitigated by creating a broad agency.

Table 3.5: Reduction in consumer benefits from sale due to creation of agency

	Original result	Reduction in controllable OPEX due to creation of agency	
		£20m	£50m
Estimated consumer benefits			
4% annual OPEX efficiency assumption	141.1	133.0	128.5
3.5% annual OPEX efficiency assumption	102.2	97.2	94.9
Reduction in benefits (£m)			
4% annual OPEX efficiency assumption	–	8.1	12.6
3.5% annual OPEX efficiency assumption	–	5.0	7.3

Note: The reduction in controllable OPEX was distributed between DNs in proportion to the initial level of OPEX. Sensitivity runs, in which the same absolute OPEX reduction (ie, one-eighth of the total reduction in OPEX) was applied to each DN, showed a marginally lower reduction in benefits from the creation of an agency.
Source: OXERA modelling.

3.1.7 Scope for efficiency savings

The modelling has implicitly assumed that the scope for efficiency improvements in the OPEX associated with shipper services is comparable to that in other areas of DN costs. OXERA has briefly reviewed evidence on the extent of potential productivity improvements in the provision of shipper services to assess the validity of this assumption.

In past activity-based costing reviews,[22] Transco has reported efficiency gains in the provision of shipper services, including:

- savings from productivity and process improvements in customer portfolio management;
- savings in billing costs from reductions in the provision for liabilities and bad debts along with productivity and process improvements;
- reduction in UK link and Network Code costs due to driver refinement and economies of scale from the reorganisation of information services resources into one centralised team;
- efficiencies in handling enquiries.

Transco's documents did not give any indication of the size of any of these efficiency gains.

[22] Transco, 'Activity Based Costing Review 2000' and 'Activity Based Costing Review of 1998'.

At Transco's last price-control review, Ofgem and its consultants undertook both top-down and bottom-up modelling of the potential for efficiency savings in different cost areas. The evidence on potential cost reductions in the provision of shipper services is summarised below.

Top-down analysis

Ofgem consultants carried out nature of work comparisons, in which comparator sectors of the economy were identified for each of Transco's cost areas, allowing the potential for productivity gains in each cost area to be estimated, along with a weighted productivity trend for Transco as a whole.[23] The two comparator sectors identified for shipper services were business services and communications, and equal weight was placed on each comparator. Table 3.6 summarises the productivity figures quoted for these sectors, the implied productivity gains available in shipper services, and, for comparison purposes, the overall productivity trend estimated for Transco.

Table 3.6: Relative scope for efficiency savings in shipper services

	Comparators for shipper services[1]		Implied potential productivity gains	
	Communications	**Business services**	**Shipper services**	**Transco as a whole**
TFP growth	3.82	0.98	2.40	2.45
Labour productivity growth	5.55	2.07 [1.07][2]	3.81 [3.31]	3.58 [3.51]

Notes: [1] Total factor productivity and labour productivity growth estimated for 1973–95. [2] The figure of 1.07 was quoted as the figure for 'financial and business services' earlier in the report by Ofgem's consultants, and there appears to be no explanation for why this becomes 2.07 in their final results. The other figures in square brackets show what the numbers would have been, had the original 1.07 figure been employed.
Source: Mazars Neville Russell (2001), 'Transco Price Control Review 2002–2007: Report to Ofgem', September; OXERA calculations.

The table shows that the two comparator sectors demonstrated widely varying productivity performance; indeed, the communications sector exhibited the highest trend productivity improvement of all the comparator sectors used by Ofgem's consultants, whereas the business services sector exhibited the lowest. The implied productivity potential of shipper services (calculated as the average performance of the two comparator sectors) is very close to the figure identified by the consultants for Transco as a whole.

Bottom-up analysis

Ofgem consultants also conducted a bottom-up review of Transco's cost base,[24] from which they derived estimates of efficient operating costs in the base years 1999 and 2000. Two cost reductions were identified in the area of shipper services:

- the removal of costs associated with the implementation of the ConQuest query management system and ISO 9000, due to the completion of these projects;
- the deduction of costs arising from a peak in the volume of meter readings following the phased introduction of domestic competition.

[23] Mazars Neville Russell (2001), 'Transco Price Control Review 2002–2007: Report to Ofgem', September.
[24] Ofgem/Arthur Anderson (2001), 'Report on Transco's Operating Costs for the 2002/03 to 2006/07 Price Control Period', September.

However, both these savings reflected the removal of one-off costs. No inefficiently incurred costs appear to have been identified in the area of shipper services.

As a consequence of the mixed picture presented by this evidence, OXERA is unable to draw any firm conclusions on whether there is either more or less scope for achieving efficiency savings in shipper services than in other areas of Transco's cost base. However, the evidence does suggest that efficiency improvements in the delivery of shipper services have occurred in the past, and there might therefore be scope for finding further efficiencies in the future. Hence, OXERA has not made any adjustments to the modelling assumptions in this area.

3.1.8 Economies of scale

The additional efficiency gains that Ofgem claims may arise from comparative regulation will be offset by the loss of any economies of scale previously available to Transco. This is especially pertinent when considering efficiency gains in the provision of shipper services, since it seems likely that there may be economies of scale from the provision of these services on a centralised basis. For example, providing supply point administration through an agent would prevent each DN having to duplicate systems and recruit additional staff to carry out this process. *In extremis*, if the cost of carrying out agency services consists entirely of fixed costs (eg, development of IT software) and does not vary according to factors such as the number of supply points or volume of queries, then providing these services on a centralised basis might cost one-eighth of the total cost of providing services separately for eight DNs. While economies of scale are unlikely to be this large in practice, it seems reasonable to suggest that they could be significant. Furthermore, the scope for exploiting economies of scale is likely to be somewhat greater the more functions are allocated to the agency rather than to DNs.

3.1.9 Agency incentives

One of the weaknesses of Ofgem's RIA is the lack of clarity on the ownership, funding and regulatory arrangements that will be put in place for the agent, particularly in the longer term. It is likely that the agent's incentives, and hence outcomes in terms of the quality and cost of shipper services, will be affected by the choice of regime.

While this section does not analyse the various options in detail, in terms of the agent's incentives, there are three basic categories into which the regulatory arrangements might fall.

- *Poor incentives for cost control*—some models (eg, pass-through of agent costs) would provide poor efficiency incentives for the agent. However, it seems unlikely that such a regime would be put in place; Ofgem has already stated that 'it will be important to ensure that the Agent and Governance Entity is effectively regulated with appropriate incentives to manage costs efficiently and at the same time ensure service quality is maintained.'[25]

- *Cost control incentives comparable to those faced by the NTS*—as a monopoly provider of shipper services, there appears to be no reason why the agent could not be incentivised as strongly as the NTS to achieve efficiencies. For example, Ofgem's RIA mentions the possibility that the agent and governance entity could be a profit-making organisation and

[25] Ofgem (2004), 'National Grid Transco—Potential Sale of Network Distribution Businesses: Agency and Governance Arrangements: Regulatory Impact Assessment,' April.

receive its own allowed revenue and incentives through a price control. In this case, moving functions from the NTS to the agent would have no implications for the expected level of efficiency savings in the provision of these shipper services.

- *Competitive pressure to control costs*—it is claimed that the competitive pressures under a system of comparative regulation lead to stronger efficiency incentives than might exist for a single, price-controlled company. However, there is scope for placing competitive pressure on the agency's costs without a regime of comparative regulation by appointing the agent through competitive tender. For example, such a regime might operate as follows:

  – the minimum scope and quality of service required from the agent might be determined by the regulator in advance of the tender process;
  – the allowed revenues of the agent would be determined by the winning bid, possibly with incentive rewards or penalties for service performance;
  – the competitive tendering process could be repeated periodically (with key assets and staff being transferred to the winning bidder) in order to exploit the benefits of competition on an ongoing basis.

  This model has advantages over comparative regulation since it allows economies of scale to be preserved. A potential drawback, however, is that competing approaches to the delivery of services can only be evaluated through the bidding process rather than through implementation by different companies.

3.1.10 Conclusions on DN cost savings

OXERA's analysis suggests that the majority of efficiency savings that might be achieved by IDNs are not affected by the scope of the agency. To the extent that there are any impacts on the ability of DNs to achieve savings in their wider cost base (ie, excluding shipper services), these would tend to arise from the constraints imposed by a uniform Network Code and charging methodology, rather than the number of shipper service functions allocated to the agency.

OXERA's illustrative modelling suggests that the creation of an agency might lead to forgone consumer benefits from DN cost savings of between £8.1m and £12.6m, depending on the level of OPEX transferred from DNs to the agency (and using OXERA's high efficiency assumption for IDNs). Given that the bulk of this OPEX transfer might be expected to occur for even a narrow agency, the incremental reduction in benefits moving from a broad to a narrow agency is likely to be even smaller. For example, if the OPEX transferred from DNs to the agency is £20m for a narrow agency and £50m for a broad agency, the incremental reduction in benefits from moving from the narrow to the broad model would be only £4.5m (ie, the difference between £12.6m and £8.1m). This is an order of magnitude smaller than the reduction in shipper costs from adopting a broad agency model implied by the results of the cost survey. Table 2.9 in section 2 above shows shipper cost savings of £57m associated with moving from option alpha to gamma.

Two additional considerations suggest that even this analysis may overestimate the forgone benefits from DN cost savings:

- separate provision of shipper services by each IDN might lead to a loss of scale economies;

- it may be possible to capture some of the advantages of competition in the provision of shipper services, without forgoing any economies of scale, by appointing the agent through competitive tender (perhaps on a periodic basis).

Table 3.7 summarises the conclusions in relation to DN efficiency gains and the potential loss of scale economies.

Table 3.7: Summary of findings on DN cost savings

	Gamma	Beta	Alpha	Full fragmentation
Lost scale economies in provision of shipper services	Low	Low	Low	High
Potential reduction in consumer benefits from DN cost savings (£m)	8.1–12.6	8.1–12.6	8.1–12.6	0

Source: OXERA.

4. The Impact on Supply Competition

The proposed agency options have implications for the development of competition in the metering, connections and retail areas of the gas sector. This section focuses on the impact on retail competition, where potential effects may arise from:

- increased problems with the customer-transfer process, deterring some customers from switching and obtaining the benefits of retail competition;
- segmentation of the gas supply market into regional markets with only a few actively competing suppliers in each region, thus increasing market power and potentially raising supply margins to the detriment of consumers.

It is difficult to carry out any robust analysis of this second effect, and hence the following discussion focuses on potential problems with the customer-transfer process.

4.1 Customer-transfer process

4.1.1 Energy sector customer transfers

While there are many similarities between the customer-transfer processes in the gas and electricity sectors, there are still significant differences. The major differences between the two industries are:

- there is, at present, a large degree of centralisation of the supply point administration within the gas sector: Transco is responsible for 20.5m of the nearly 21m metering points; the remainder being the responsibility of independent gas transporters (IGTs). In contrast, the responsibility for supply point registration within the electricity sector lies with each of the 14 distribution network operators, and hence is much more fragmented; and

- competition among metering services agents (meter operators, data collectors and data aggregators) in the electricity industry adds complexity to the process of transferring electricity customers that does not exist within the gas sector.

Two reports within the last year have looked at customer switching in the energy sector, arriving at similar conclusions. A report by Gemserv[26] in 2003 highlighted four key findings:

- processes are overly complex;
- many data values are inaccurate;
- data values in different participant databases are inconsistent;
- there is a lack of timely provision of business critical data during changeover of supplier.

In a similar vein, a report from the Customer Transfer Programme[27] in 2004 grouped the findings of its Expert Groups under five headings:

[26] Gemserv (2003), 'Gas and Electricity Customer Switching: Understanding the Problems, Finding the Solutions', May.
[27] Customer Transfer Programme (2004), 'End Stage Report—Stage 1', April, available at www.energy-retail.org.uk.

- data quality;
- data availability;
- design complexity;
- multiple points of failure;
- compliance.

The common themes from these reports are poor data quality and complex processes. The Gemserv report highlighted an industry view that the more complex procedures in the electricity sector meant that it was more likely to fail, resulting in a higher rate of complaints to energywatch (2.15 per 1,000 switches for electricity versus 1.37 per 1,000 switches for gas). However, it then went on to state that the process for electricity is as robust as for gas, but the large number of process interactions made it difficult to track the cause of failure when problems did arise, resulting in poorer resolution of problems.

The Customer Transfer Programme report also looked at the complexity of the electricity and gas transfer processes. It concluded that, although the electricity process was more complex, every step was needed, and the added complexity was the result of agent competition and settlement requirements. The report also highlighted that the lack of an 'industry-owned' design for the gas sector caused confusion among shippers and suppliers: there is no industry data or process standards governing both Transco and the independent gas transporters (IGTs). Furthermore, it is generally perceived that the costs of dealing with IGTs are higher than those of dealing with Transco. A full fragmentation scenario represents an extreme of the complexity/cost spectrum with the break-up of Transco's systems. Such cost increases would be mitigated by agency arrangements, with the extent of the reduction dependent upon the choice between a broad or narrow agency model.

Difficulties in the electricity sector that have arisen through metering agency competition may, however, materialise in the gas sector irrespective of the agency structure due to the implementation of the Review of Gas Metering Arrangements in July 2004.

4.1.2 Implications of agency options

From the above discussions, and the information presented in the recent reports, a number of implications for the customer-transfer process in the gas market can be drawn against the agency scenarios under consideration.

Option gamma

Under this option, it would be reasonable to expect the least difficulties to arise in the customer-transfer processes, with processes being broadly similar to current arrangements.

Option beta

This would not represent any barrier to customer switching. However, differing credit and cash collection arrangements among DNs could dissuade a supplier from marketing within an area it considered to be problematic, although this is likely to be a minor effect.

Option alpha

The loss of synchronisation between Network Codes could see the development of several different interfaces for data transfer between the individual DNs and the suppliers. In this case, there is likely to be an increase in the complexities of processes required, resulting in both higher direct costs (due to greater resource requirements), and the potential for increased costs due to possible higher levels of customer complaints.

Full fragmentation

Under full fragmentation, the costs to shippers and suppliers of dealing with the DNs could become significant. For example, the need might arise for multiple interfaces to interact with divergent DN systems, and increased staffing costs to manage the relationships and regulatory affairs of the various DNs. In addition, the number of customer complaints is likely to rise, placing an ongoing burden on suppliers in dealing with these.

By way of summary, Table 4.1 indicates which of the major themes identified in the Customer Transfer Programme report are likely to be affected by the agency options, and the magnitude of the effect.

Table 4.1: Impact of agency options on problem themes identified in the Customer Transfer Programme report

Option	Data quality	Data availability	Design complexity	Multiple points of failure	Compliance
Gamma	Low	Low	Low	Low	Low
Beta	Low/medium	Low/medium	Low/medium	Low/medium	Low/medium
Alpha	Low/medium	Low/medium	Low/medium	Low/medium	Low/medium
Full fragmentation	High	High	High	High	High

Note: A high impact will result in more difficulties in the customer-transfer process.
Source: OXERA.

The table shows that the broad agency option (option gamma) imposes the lowest impact on supply competition. In contrast, a fully fragmented system will have a significant impact, leading to potential market segmentation and switching difficulties. For either option alpha or option beta there are intermediary issues, with little distinction between the options.

4.1.3 Forgone consumer benefits from fragmentation in gas

As the complexity of switching gas supplier increases, particularly from the introduction of electricity-type agency competition, it would not be unreasonable to expect the rate of complaints to reach those seen in the electricity sector (2.15 per 1,000 transfers). There is a potential consumer loss if more complex arrangements lead to a reduction in switching rates due to actual or perceived difficulties with the transfer process. A framework for quantifying any such loss would be to gather evidence on the number of customers deterred from switching supplier as a result of increased problems with the transfer process and to multiply this by the potential savings available on bills.

In June 2003, Ofgem stated that 'making switching easier for customers is one of Ofgem's top priorities for 2003–2004.'[28] However, in its most recent review of domestic competition, a survey of customer switching behaviour found that:

> Where customers have not switched supplier, this appears to be because they do not want to, rather than because they are concerned about the transfer process or they are unaware of the opportunities to change supplier and save money.[29]

[28] Ofgem (2003), 'Vigorous competition for domestic customers, but Ofgem remains vigilant', press release, June 16th.

Therefore, it is difficult to quantify any potential disbenefit from difficulties in the switching process. However, from Ofgem's review of domestic competition, there are savings of £92 per annum available for the average standard credit customer as a result of switching.

While problems with the transfer process may not directly affect customers' decisions about whether to switch, they will impose costs on the industry which will have to deal with complaints and difficulties. The results of the shipper cost survey covered in section 2 should include shipper costs associated these problems.

In summary, fragmentation could make the customer-switching process more complex and increase the level of problems experience by customers switching supplier. This is particularly a risk under the full fragmentation scenario, when supply point administration services would be provided separately by each DN rather than through a central agency.

4.2 Competitiveness of the supply market

The survey results reported in section 2 show that shippers perceive that they will face cost increases serving customers in IDN regions under the full fragmentation scenario. While the creation of an agency would mitigate these cost increases, a narrow agent is still perceived to give rise to greater cost increases than would occur under a broad agency.

In a perfectly competitive market, an increase in the marginal cost of serving consumers in a specific region would lead to retail price increases in that region. However, the freedom that suppliers would have to enter the regional market would ensure that no firm would be able to exercise market power and increase prices above cost.

One factor that can inhibit competition is the existence of economies of scale. If unit costs are lower for larger players serving greater numbers of consumers, then new entrants (which will begin with a small market share and hence higher unit costs) will find it difficult to compete. In this way, economies of scale can act as a barrier to entry and lead to a market dominated by a small number of large players.

OXERA has not attempted to quantify the size of any economies of scale that might exist in retail energy supply. However, fragmentation of shipper-facing systems as a result of DN sales could lead to a change in the way in which economies of scale occur. Instead of being able to achieve economies of scale at a national level, suppliers may require significant market share in a specific region in order to spread the fixed costs associated with setting up systems specific to that DN and thus generate lower unit costs. However, because each regional market is smaller than the national market, under these circumstances it will not be possible for as many suppliers to reach the minimum efficient scale required to compete effectively in the market. Hence, system fragmentation, combined with scale economies, may tend to segment the retail supply

[29] Ofgem (2004), 'Domestic Competitive Market Review', April.

market, with a smaller number of suppliers actively competing in each region and thus greater scope for the exercise of market power.

It is difficult to quantify the size of such potential effects. However, regional segmentation of the supply market would appear to be a risk under the full fragmentation scenario, in which each DN is separately responsible for supply point administration on its network.

5. Governance Issues

The benefits and costs of alternative agency options depend not just on the initial arrangements in place at the time of a DN sale, but also on whether further fragmentation occurs through time. Three respondents to OXERA's questionnaire expressed concern that there would be a tendency for this to be the case.

OXERA's analysis confirms that, in the absence of appropriate governance arrangements, the incentives on new DN owners are such that there may be inefficient fragmentation. This is because DN owners are incentivised to make reductions in their own costs without taking account of any effects on the costs borne by shippers. In economics terminology, there is a potential 'market failure' because shipper costs resulting from IDN decisions are an external cost. Examples of inefficient outcomes that might occur in the absence of regulatory safeguards include:

- *withdrawal from agency*—an IDN might decide to pull out of the agency arrangements and provide shipper services itself if it perceives scope for cost reductions, even though the cost savings for the IDN may be outweighed by the additional costs faced by shippers;[30]

- *short-form Network Codes*—an IDN might make cost savings through the introduction of new procedures into a short-form Network Code, even though these procedures lead to larger offsetting cost increases for the shipping community.

Potential solutions to this problem include the following.

- *National regime*—the regime for DN sales could lock into place a uniform national regime, thereby preventing any inefficient fragmentation from occurring through time. The disadvantage of this approach is that any proposals for regional differentiation that might yield net benefits would also be ruled out.

- *Compensation to shippers*—if IDNs were required to provide compensation for any actions that raised the costs incurred by shippers interacting with the network, then shipper costs would be internalised in the IDN's decision-making process. The level of compensation could be determined in at least two ways.

  – *Negotiated compensation*—for this model to work, the shipping community would need to have a veto on any proposal to change the way in which shipper services were provided, but would be able to waive this veto in return for compensation. Provided that any proposed change yielded net benefits, in theory it should be possible for the IDN and shippers to agree a level of compensation which would satisfy both parties and allow the proposed change to be implemented. In order to make this approach work in practice, it might be necessary to appoint a single body to negotiate on behalf of all shippers, and to

[30] If there are economies of scale in the provision of shipper services on a centralised basis, then such an outcome is less likely because an IDN would tend to face higher unit costs if it provided shipper services unilaterally.

agree a standard process for dividing compensation payments between shipping companies.

- *Regulated compensation*—the regulator could independently assess the likely cost implications for shippers and set an appropriate level of compensation. This assessment would need to be made on a case-by-case basis, given that the cost impact on shippers might vary significantly between proposals.

- *Regulatory control*—the regulator could be required to approve any proposals by IDNs to change the way in which shipper services are provided. Under this model, the regulator would be required to undertake an impact assessment on any proposal to ascertain whether the cost saving achieved by the IDN would outweigh any increase in shipper costs and any adverse impact on supply competition. Only where the proposed change was found to yield net benefits would the regulator approve its implementation. As compensation would not be provided, there might be distributional implications associated with approved changes (eg, within the period of the DN price control, DN shareholders might benefit at the expense of shipper shareholders or customers).

6. Conclusions

This report has examined the potential costs and benefits associated with different agency options. The key components of cost and benefit investigated under this framework were:

- shipper costs;
- DN cost savings (gross consumer benefits);
- the impact on supply competition.

6.1 Shipper costs

As shown in Table 6.1, it is estimated that moving from a broader agency arrangement will lead to increases in the costs that shippers incur in the market and hence may result in higher customer prices. These costs are driven largely by additional IT system requirements and extra staffing costs to deal with expected increases in the complexity of arrangements, data quality issues and customer enquiries. The average NPV of the costs incurred by the respondents to the survey rose from £32.5m under option gamma to £74.5m under option alpha, with a substantive increase of £550.3m associated with the removal of the agency.

Aggregating the results to provide an indicative industry cost under each agency option suggests total costs to the shipping community of between £43.0m and £98.8m with a central agency. It also confirms the view that full fragmentation would raise total industry costs to such an extent that even the maximum benefits produced from some of the prior RIAs would not be sufficient to deliver net benefits to consumers.

6.2 DN cost savings

In terms of benefits derived from DN cost savings, this study has not attempted to re-quantify the magnitude of potential savings; rather it considers whether these may be materially affected by the agency arrangements established.

Having considered the likely broad drivers for cost savings, the study suggests that the risk to DN cost savings from the creation of a broad agency would appear to be low. This is because the agency arrangements would not be expected to constrain the activities that a DN may undertake to achieve major OPEX and capital expenditure efficiencies under a comparative regulatory regime. Most of the problematic incentive issues for cost reduction are linked to the shipper services that the agent would be responsible for providing. However, these appear to be small, and appropriate regulatory incentives may be available to alleviate this concern. Furthermore, additional efficiency savings may be considered to be constrained if DNs are bound to a uniform national Network Code and charging methodology, although evidence from other sectors suggests that the ability to implement many types of efficiency savings would not be affected.

6.3 Supply competition

In dealing with supply competition issues, the analysis has focused on the customer-transfer process. As fragmentation increases, the complexity of the customer-transfer process will also increase, with potential effects on the level of problems experienced with the switching process. Some of these additional costs may already have been monetised through the additional resource

requirements that shippers have identified as necessary under different agency options. However, it may also be the case that there is a relationship between the number of complaints and the rate of customer switching (although Ofgem does not believe this and there is no evidence to prove or disprove the claim).

6.4 Summary

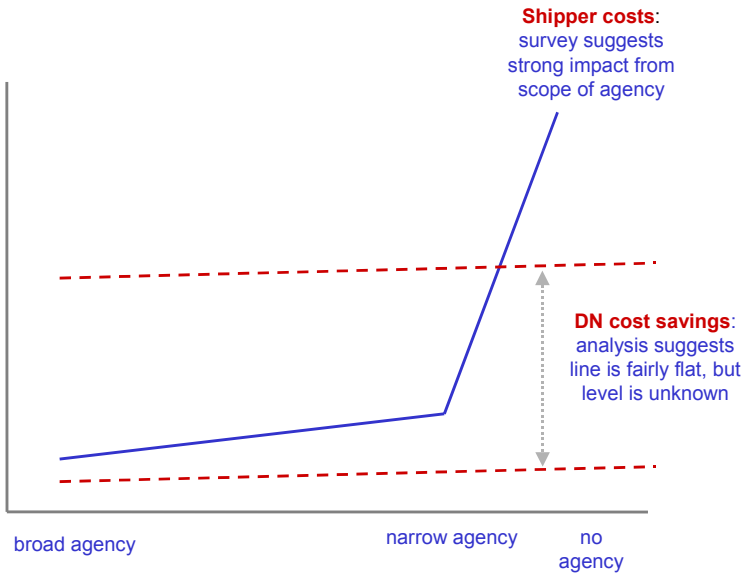
Table 6.1 summarises these findings. Overall, the results suggest that a broad agency would be most effective at mitigating shipper cost increases and exploiting economies of scale in the provision of shipper services, while having little impact on the ability of DNs to achieve wider cost reductions. This is illustrated in Figure 6.1.

Table 6.1: Summary of findings

	Gamma	Beta	Alpha	Full fragmentation
Shipper costs (£m)	43.0	87.9	98.8	729.5
Risks to supply competition	Low	Low/medium	Low/medium	High
Lost scale economies in provision of shipper services	Low	Low	Low	High
Potential reduction in consumer benefits from DN cost savings (£m)	8.1–12.6	8.1–12.6	8.1–12.6	0

Source: OXERA.

Figure 6.1: Impact of agency options on shipper costs and DN cost savings



Source: OXERA.

Appendix 1: Guidance Notes Provided with OXERA Cost Questionnaire

OXERA has been commissioned by The Gas Forum to investigate the implications for shipper costs of the proposed sales of National Grid Transco's (NGT) gas distribution businesses. As part of this study, OXERA is undertaking a survey of shippers to ascertain the range of cost impacts and the key drivers of these costs, under several specified scenarios relating to the potential operating and governance regimes that may emerge post-sale.

This note describes the main assumptions against which the attached proforma should be completed and returned, in confidence, by **4pm on Tuesday May 4th**:

- the roles of the agent, NGT and DNs in the post-sales regime;
- the cost categorisations applied.

In addition, it provides extra detail on the nature of information OXERA is interested in with regard to the drivers of identified cost changes.

Fragmentation scenario definitions

The fragmentation scenarios to be investigated are presented in Table 1 below. These broadly correspond to the options currently being discussed in the Agency Working Group (ie, options alpha, beta and gamma). In addition, scenario 4 is intended to represent a situation where the agency function is redundant.

In interpreting the scenarios, OXERA would want respondents to assume that the obligations/responsibilities for the core network activities remain with the stated party (NGT, the agent or the DN) as described in Table 1 below. There is a specific question within the proforma that addresses the risks that may lead to options alpha, beta and gamma being unsustainable in the longer term.

Table 1: Fragmentation scenarios

Activity	Scenario 1 Option gamma	Scenario 2 Option beta	Scenario 3 Option alpha	Scenario 4 Full fragmentation
Key characteristics of each scenario when fully implemented	Broad agency role	Narrow agency role	Narrow agency role	No central agency
	National governance of codes and charging methodology	National governance of codes and charging methodology	Regional governance of codes and charging methodology	Regional governance of codes and charging methodology
	Single sites and meters database	Single sites and meters database	Single sites and meters database	Multiple sites and meters database
	Some DN contracting for local interruption	Some DN contracting for local interruption	Some DN contracting for local interruption	DNs contracting for local interruption
Emergency 0800 No.	NGT	NGT	NGT	NGT
Demand derivation	NGT/DN	NGT/DN	NGT/DN	NGT/DN
Network Code development	NGT	NGT	NGT	NGT
Transmission charge development	NGT	NGT	NGT	NGT
Distribution charge development	DN	DN	DN	DN
Metering of last resort	DN	DN	DN	DN
Site works	Agency	DN	DN	DN
Connections	Agency	DN	DN	DN
Energy balancing, nominations and trading	Agency	NGT	NGT	NGT
NTS capacity auctions and trading	Agency	NGT	NGT	NGT
Network Code(s) governance and administration	Agency	Agency	NGT/DN	NGT/DN
Charging methods of governance and administration	Agency	Agency	NGT/DN	NGT/DN
Supply point administration	Agency	Agency	Agency	DN
Recording and calculation of transportation volumes	Agency	Agency	Agency	DN
Transportation charge invoicing	Agency	Agency	Agency	DN
Distribution charge invoicing	Agency	Agency	Agency	DN
Other code obligations	Agency	Agency	Agency	DN
Transportation charge credit and cash collection	Agency	NGT	NGT	NGT
Distribution charge credit and cash collection	Agency	DN	DN	DN
Demand estimation	Agency	Agency	NGT	NGT

Cost categorisation

For the purposes of the data request, the cost categories will correspond to the main shipper/supplier cost categories, as illustrated in Table 2.

Table 2: List of cost categories for comment

Cost category	Additional description
Customer service	Including functions such as registration of new customers, account management, customer billing, and cash collection and credit management
Sales	Costs incurred promoting brand and recruiting new customers, including preparation of tenders and transportation pricing for quotation purposes and introduction of regional pricing schemes (where necessary)
Transportation invoicing	Payment of NTS and DN charges, including invoice receipt and verification
Credit cover	Compliance with credit requirements of Transco and any independent DNs
Energy balancing	Cash-out payments under the daily balancing regime
Connection and site works	Organisation of connection works for new customers without existing gas supply and any increases in connection capacity for existing customers
Metering	Metering of last resort, assuming that reform of gas metering arrangements goes ahead
Overheads	General company overhead costs, regulatory and legal affairs, DN owner account management

For both customer service and transportation invoicing, there are two sub-categories of cost. For each scenario, cost estimates (point estimates or ranges) will be required for one-off, or implementation costs, and ongoing costs.

The one-off costs are those that will be required to set up the systems and processes that would represent the optimal configuration of the specified scenario. It is not just day-one costs—if systems will be introduced and developed over time, then these are still implementation costs, although some indication of the phasing of expenditure on these items would be required to ensure appropriate current money valuations.

In each case, **cost ranges for up to four independent DNs will be required** (if there are incremental costs dependent on the number of DNs).

Furthermore, the impact of potential changes in non-codified activities should be considered as part of the analysis.

Cost drivers

The questionnaire requests details of the reasons behind any projected cost increases, covering the three elements in Table 3.

Table 3: Requested details for projected cost increases

	Explanation	Examples
Cost driver	What causes costs to change?	Additional concerns about data integrity
		Expectation of multiple data interfaces with no requirement for standardisation
Impact on resources	What will be required in terms of new systems or personnel?	X full-time equivalent (FTE) staff members
		New IT system to…
Cost of resources	How much would the additional resources cost?	Additional staff costs = X * cost per FTE
		Estimates of IT system costs
		Use of comparator information from experience with other market segments (eg, IGTs or electricity)

Where possible, shippers are requested to complete these sections, as they are important for ensuring a consistent and robust assessment of the relative impact of the post-sales regimes.

General business characteristics

The survey responses will be analysed anonymously. However, in order to understand fully the cost drivers, the survey requests some basic information on the nature and scale of the business. This information includes:

- number of domestic supply points served—ie, supply points with annual consumption of less than 2,500 therms per annum;
- number of non-domestic supply points served—this is differentiated between 'small' non-domestic (ie, 2,500–50,000 therms per annum) and 'large' (ie, greater than 50,000 therms per annum), following the broad categorisations used by Ofgem in the July 2003 publication, 'Review of Competition in the Non-domestic Gas and Electricity Supply Sectors: Initial Findings';
- proportion of business which is multi-site; and
- number of DN regions where shipper is active/or has a presence.

If information on domestic/non-domestic supply points is not available in the requested format, there is additional space for an indicative figure of daily-metered and non-daily metered supply points.

Return of forms

Forms should be sent by email, by **4pm on TUESDAY MAY 4TH** at the latest, to:

Gareth_Davies@oxera.co.uk; and
Stephen_Topping@oxera.co.uk.

All responses will be treated in the strictest confidence.

Any queries in relation to the questionnaire should be directed to Stephen Topping on (01865) 253070.

Appendix 2: Questionnaire Proforma

PLEASE COMPLETE AND RETURN BY TUESDAY MAY 4TH

General Business Characteristics

Number of domestic supply points	Note: <2,500 therms pa
Number of small non-domestic supply points	Note: 2,500 to 50,000 therms pa
Number of large non-domestic supply points	Note: >50,000 therms pa
Number of DM supply points	
Number of non-DM supply points	
Multi-site activity (as proportion of total supply points)	
Number of DN regions where shipper has presence/activities	

OPTION GAMMA

		Option Gamma	Cost Assumptions				
Shipper/Supplier Cost Category		**One-off Costs (£'000's)**	**Ongoing Costs (£'000's per annum)**	**Key Drivers of Cost Changes**	**Additional Resources Required**	**Cost per unit of Resource**	**Additional Comments/Assumptions**
Customer service							
	SPA						
	SPA Reporting						
Sales							
Transportation invoicing							
	Invoice receipt and verification						
	Invoice payment						
Credit cover							
Energy balancing							
Connection and site works							
Metering							
Overheads							

OPTION BETA

		Option Beta			Cost Assumptions		
Shipper/Supplier Cost Category		One-off Costs (£'000's)	Ongoing Costs (£'000's per annum)	Key Drivers of Cost Changes	Additional Resources Required	Cost per unit of Resource	Additional Comments/Assumptions
Customer service							
	SPA						
	SPA Reporting						
Sales							
Transportation invoicing							
	Invoice receipt and verification						
	Invoice payment						
Credit cover							
Energy balancing							
Connection and site works							
Metering							
Overheads							

OPTION ALPHA

		Option Alpha			Cost Assumptions		
Shipper/Supplier Cost Category		One-off Costs (£'000's)	Ongoing Costs (£'000's per annum)	Key Drivers of Cost Changes	Additional Resources Required	Cost per unit of Resource	Additional Comments/Assumptions
Customer service							
	SPA						
	SPA Reporting						
Sales							
Transportation invoicing							
	Invoice receipt and verification						
	Invoice payment						
Credit cover							
Energy balancing							
Connection and site works							
Metering							
Overheads							

FULL FRAGMENTATION

		Full Fragmentation			Cost Assumptions		
Shipper/Supplier Cost Category		One-off Costs (£'000's)	Ongoing Costs (£'000's per annum)	Key Drivers of Cost Changes	Additional Resources Required	Cost per unit of Resource	Additional Comments/Assumptions
Customer service							
	SPA						
	SPA Reporting						
Sales							
Transportation invoicing							
	Invoice receipt and verification						
	Invoice payment						
Credit cover							
Energy balancing							
Connection and site works							
Metering							
Overheads							
ADDITIONAL QUESTION							
How sustainable are options alpha, beta or gamma under the current regulatory and governance regime?							

OXERA Contact Information

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Stephen Topping	01865 253070	stephen_topping@oxera.co.uk

Appendix 3: Summary of Cost Savings in the Electricity Distribution Sector

Cost savings achieved in the electricity distribution sector over first three years of the third distribution price-control period for sample of DNOs

Company	Underspend (%) on OPEX and CAPEX allowances[1]	OPEX efficiencies	CAPEX efficiencies[2]
Aquila Networks plc	6.1	• process improvements and new IT systems have reduced headcount and the number of depots/facilities • the move to a condition-based maintenance system increased intervals between maintenance • a reduction to one control centre • improvements in procurement and logistics • further process and efficiency improvements in other core service providers, such as transport and IT&T • savings in cost of metering activities (provided by affiliate) from reductions in headcount, volumes, overheads and internal profit • fall in insurance costs due to unacceptable cost of purchasing storm cover • elimination of duplicated overhead functions expected to deliver savings after 2002/03 Note: overall headcount (FTE basis) has fallen by nearly 10%. Severance costs have been borne by Midlands Electricity Group rather than the distribution business.	• new asset management systems have contributed to extending asset lives • reduction in overheads associated with capital activities • procurement and outsourcing savings
East Midlands Electricity Distribution plc	2.6	• significant reduction in staff costs resulting from restructuring, balanced by major outsourcing programme • lower overhead and staff costs from centralising management of business • reduction in IT costs—significant costs were incurred in earlier years to implement these efficiencies • improvements to procurement process • more efficient utilisation of field staff; provision of computer devices to field staff to improve efficiency	• transfer of asset data to central SAP system, work programme planning and e-commerce • management of suppliers and external service providers • field staff productivity improvements • focusing of work programme on immediate need • reduction in overheads
EDF Energy Networks (EPN) plc		• internal costs were replaced with lower contractual costs following creation of joint-venture service provider (24seven) to manage the operation of the networks of EPN and LPN • the main efficiencies occurred within 24seven, and included: ➢ consolidation of control and call-centre activities	• synergies between load and non-load-related projects • network redesign and re-scoping of original investment proposal • increased asset utilisation made possible by improved modelling techniques

Company	Underspend (%) on OPEX and CAPEX allowances[1]	OPEX efficiencies	CAPEX efficiencies[2]
		➢ implementation of new IT systems ➢ more effective management of field staff ➢ improved commercial incentives for delivering on work plans ➢ savings in transport costs from reduced staff numbers ➢ procurement savings due to combined purchasing power of integrated provider	• better forecasting techniques for load-related expenditure • improved project management skills • savings in overhead line programme due to decision move from wholesale replacement to prioritised refurbishment • introduction of automation to produce lower-cost improvements to quality of supply • reductions in metering costs • improved procurement practices
EDF Energy Networks (LPN) plc	18.9	• internal costs were replaced with lower contractual costs following creation of joint-venture service provider (24seven) to manage the operation of the networks of EPN and LPN • the main efficiencies occurred within 24seven, and included: ➢ consolidation of control and call-centre activities ➢ implementation of new IT systems ➢ more effective management of field staff ➢ improved commercial incentives for delivering on work plans ➢ savings in transport costs from reduced staff numbers ➢ procurement savings due to combined purchasing power of integrated provider	• synergies between load and non-load-related projects • network redesign and re-scoping of original investment proposal • increased asset utilisation made possible by improved modelling techniques • better forecasting techniques for load-related expenditure • improved project management skills • condition-based assessment has certain replacement activity to be deferred or replaced with refurbishment work • introduction of automation to produce improvements to quality of supply • improved procurement practices
EDF Energy Networks (SPN) plc	-0.8	• simplification of internal market • introduction of new technology for automated call handling • strategic outsourcing • reductions in layers of management to lower overheads • better management of staff welfare, leading to reduction in accidents and short-term absence • introduction of new technology encompassing network, asset location and fault management Note: These efficiencies were offset by rising cost pressures.	• adoption of alternative design options and project re-scoping • improvements in condition assessment; deferral of work where safe and efficient • improved project management skills • enhanced supplier choice through revision of technical specification • standardisation of design and specification of plant and equipment enabling framework contracts to be let supporting common design approaches
United Utilities Electricity plc	14.0	• creation of service delivery organisation, bringing together the licensed businesses of electricity distribution and water; subsequent rationalisation of this organisation • adoption of best practices and combining operational and support services across electricity and water • rationalisation and replacement of legacy systems and development of new IT systems • rationalisation of telecommunications provision	• the adoption of condition-based maintenance has allowed less frequent inspections and increased maintenance intervals for some assets • procurement savings • more efficient design

Company	Underspend (%) on OPEX and CAPEX allowances[1]	OPEX efficiencies	CAPEX efficiencies[2]
		• reduction in transport fleet, outsourcing of some vehicle maintenance and increase in maintenance intervals • procurement savings by joining with ScottishPower and Northern Electric to increase purchasing power • changes in working practices • outsourcing of civil maintenance, some fault repair work, inspections and vegetation management • stimulation of positive organisation culture change	
Northern Electric Distribution Limited	16.8	• cost savings from merger with YEDL, due to elimination of duplication, adoption of best practices and utilisation of economies of scale • joint procurement venture with other DNOs to achieve greater purchasing power • outsourcing of services, including metering • reduction in infrastructure costs and depot closures from reduction in operating regions and move from geographic to functional model • flexible working arrangements for craft staff • improvements in staff productivity from implementation of performance-related pay, targeting staff exits, tightening management control of absences and introduction of flexible working arrangements for craft staff • reduction in staff numbers • introduction of reliability-centred maintenance and reduction in maintenance volumes and frequency • reduction in indirect overheads	• asset life extension • reinforcement expenditure contained by adoption of risk assessment approach • cost savings from more effective operational management of faults • capacity-demand management • design and application engineering • procurement initiatives • productivity gains • reductions in overheads
Yorkshire Electricity Distribution Limited	12.5	• cost savings from merger with NEDL, due to elimination of duplication, adoption of best practices and utilisation of economies of scale • outsourcing of services, including metering, transport services and IT • joint procurement venture with other DNOs to achieve greater purchasing power • reduction in number of operating regions, facilitating the rationalisation of duplicated management structures, support services and physical infrastructures • shift to functional operating model resulted in further rationalisation of operational management	• asset life extension • re-profiling of CAPEX to latter years of price control • lower metering investment due to cancellation of smart metering project • capacity-demand management • design and application engineering • procurement initiatives • productivity gains • reductions in overheads

Company	Underspend (%) on OPEX and CAPEX allowances[1]	OPEX efficiencies	CAPEX efficiencies[2]
Western Power Distribution South Wales	0.4	• increase in staff productivity from multi-skilling, flexible working initiatives and tightening management control of absences • reduction in staff costs through targeted staff exits and migrating to market rate for pay • introduction of reliability-centred maintenance and reduction in maintenance volumes and frequency • reduction in indirect overheads • synergies from merger with WPD South West • adoption across the group of best practices from each distribution business • in-house provision of a customer contact centre • implementation of team structure leading to reduction in middle management and increased productivity • higher output from craft staff arising from flexible and innovative working practices and multi-skilling • procurement savings • maintenance of vehicles outside normal operational hours • adoption of common IT systems • higher investment on circuits prone to faults, allowing an increasing number of faults to be restored centrally from control centre	• maximisation of asset lives from improved diagnostic and inspection techniques • procurement efficiencies • design efficiencies

Note: It is not always clear whether reported savings relate to OPEX or CAPEX, and hence the above division may not be accurate in all cases. [1] Cumulative underspend in total OPEX and CAPEX allowances in the years 2000/01 to 2002/03, as a percentage of allowance. [2] CAPEX savings due to lower than forecast load growth have not been listed.
Source: Ofgem (2003), 'Electricity Distribution Price Control Review: Second Consultation—Data and Cost Commentary Appendix', December.