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Reform of interruption arrangements on gas distribution networks - Final Impact Assessment

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Target Audience: This document is addressed to gas transporters, gas distribution networks, gas shippers, gas suppliers, large gas customers and other interested parties.

Overview:

As part of its decision about whether to accept UNC modification proposal 90, "Reform of DN interruption arrangements", Ofgem has carried out an Impact Assessment. This final impact assessment considers the costs and benefits of interruptions reform compared with continuation of the current arrangements. This final impact assessment takes into account information provided and views expressed in response to Ofgem's October 2006 consultation on its draft Impact Assessment.

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Context

UNC modification proposal 90 significantly changes the approach to purchasing and offering interruption services for transportation constraints on the GDN networks. Under the existing arrangements GDNs do not determine the volume and location of the interruption they receive and cannot influence a customer's decision to become interruptible. Customers with an Annual Quantity (AQ) greater than 200,000 therms currently decide annually whether to be interruptible on standard terms. The standard terms are 45 days of interruption each year in return for a 100% discount on exit capacity charges. Customers receive additional payments if they are interrupted for more than 15 days a year. Under modification proposal 90 GDNs will specify the volume and location of the interruption they want and customers will offer, via annual tenders, volumes of potential interruption at particular prices. Tenders will be held up to three years in advance for interruption contracts of up to five years in length. This will provide longer term and more location specific investment signals to GDNs if interruption is offered at a price that makes investment more economic.

The new arrangements proposed in modification proposal 90 have the potential to reveal better customers' costs and value of being interruptible, while giving GDNs greater control and incentives to meet their planning standard in the most efficient way possible. Modification proposal 90 will be accompanied by incentives for the GDNs to ensure efficient purchases of interruption and other network management options.

Associated Documents

- Reform of interruption arrangements on gas distribution networks - An update http://www.ofgem.gov.uk/temp/ofgem/cache/cmsattach/17265_191_06.pdf?wtfrom=/ofgem/work/index.jsp&section=/areasofwork/gasdistpol
- Initial thoughts on the reform of interruption arrangements on gas distribution networks http://www.ofgem.gov.uk/temp/ofgem/cache/cmsattach/15065_8506.pdf?wtfrom=/ofgem/work/index.jsp&section=/areasofwork/gasdistpol
- Uniform Network Code (UNC) 90: Revised DN Interruption Arrangements, Ofgem decision letter, http://www.gasgovernance.com

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Modification proposal 90

Modification proposal 90 (Mod 90) reforms the arrangements for customers offering and GDNs purchasing interruption to manage transportation constraints on the GDNs' networks. Under Mod 90 GDNs tender at least annually for interruption requirements for up to 3 gas years ahead and will select the best value tenders received from customers. As tenders will be held up to 3 years ahead for interruption contracts of up to five years in length, GDNs should be able to make more efficient trade-offs between contracting for interruption, purchasing NTS offtake capacity and investing in their own networks. Under Mod 90 customers will be able to offer to be interruptible at prices that reflect their own costs and value of being interruptible rather than receiving a standard discount for 45 days of potential interruption as happens under the current arrangements.

Mod 90 was proposed by National Grid Gas Distribution last year with the support of the other GDNs. Mod 90 was considered by a development workgroup under the UNC process during summer and early autumn 2006. Subsequently it was subject to normal modification proposal consultation processes and a final modification report was provided to Ofgem in December 2006.

Conclusions

The information and analysis contained in this Final IA has helped to inform Ofgem's decision to accept Mod 90[1] in the context of its statutory duties under the Gas Act 1986 (as amended) and its assessment of whether Mod 90 could be expected to further the achievement of the relevant objectives of the UNC.

This Final IA shows that under plausible assumptions for investment efficiencies it can be expected that the benefits of interruption reform would exceed the costs. In making its decision, Ofgem has also taken into account other potential benefits of reform, which Ofgem has outlined but not sought to quantify in the Final IA. These include potential improvements in security of supply, a more flexible market for providing interruption, improvements in the operation of the wholesale electricity market, improvements in the wider operation of the UK economy and the potential to allow comparative regulation of GDNs' purchasing of interruption. Ofgem considers that a number of the benefits it has not sought to quantify could be significant enough in themselves to justify reform of the interruption arrangements.

The Final Impact Assessment has been completed using cost information submitted by the GDNs, shippers and customers, following publication of Ofgem's draft IA in

[1] Uniform Network Code (UNC) 90: Revised DN Interruption Arrangements, Ofgem decision letter, www.gasgovernance.com

October 2006[2]. Although the estimated implementation and ongoing costs of the reformed regime have increased since the Draft IA was published, the IA continues to suggest that under plausible assumptions these would be out-weighed by moderate improvements in the efficiency of capital investment, which in Ofgem's view can reasonably be expected to follow implementation of interruption reform. As noted above, Ofgem also considers that some of the benefits it has not quantified could be significant enough in themselves to make a case for the reform of the interruption arrangements.

In this Final IA Ofgem has considered the potential quantitative benefits arising from better investment signals for the GDNs and the GDNs ability to determine the amount of interruption they purchase. Ofgem has presented a range of scenarios for potential benefits, and considers that the benefits of reform are likely to exceed the costs. Consistent with the Draft IA, we have continued to use two baseline capital expenditure forecasts and two estimates of the level of expenditure likely to be affected by interruptions reform. Since the Draft IA we have updated the GDNs capital expenditure forecasts with the data submitted for the main 2008 -2013 price control review. Based on this information we have estimated that efficency savings of between 2% and 2.6% would be enough for benefits to exceed costs.

Ofgem has adjusted information from GDNs, shippers and customers to develop an estimate of £40m - £53.6m for the costs of implementing interruptions reform and the ongoing costs of reform. This includes an estimate of the cost to customers based on 600 customers incurring £10,000 a year to participate in the new regime, but only incurring these costs on average once every 3 to 4 years due to the ability for interruptible contracts to be up to 5 years in length. These are the direct costs that customers would incur to prepare for and participate in the annual tender process. Ofgem has made a subjective judgement about the appropriate cost level due to the very limited information about costs provided by customers to inform the IA. Ofgem would also note that only customers that participate in the tender processes will incur costs and these costs will only be incurred if these customers expect to obtain benefits through interruption payments that at least exceed these costs.

In addition to the overall assessment of costs and benefits, the potential distributional effect of interruption reform on existing firm customers, including all domestic customers, has been an important factor taken into account by Ofgem in making its decision.

[2] Reform of interruption arrangements on gas distribution networks - An update, Appendix 2 - Draft IA, Ofgem, October 2006.

1. Introduction

Chapter Summary

This chapter summarises the process Ofgem has followed to develop this Impact Assessment and explains the structure of the rest of the document.

1.1. In 2005 the GDNs were given a licence obligation to use reasonable endeavours to review and develop proposals for the reform of the interruption arrangements within the distribution networks. In July 2006 National Grid, with the support of each of the other GDNs, raised UNC modification proposal 90 'Revised DN Interruption Arrangements'.

1.2. In 2005, Ofgem committed to carrying out an IA for interruption reform. After Mod 90 was raised, in October 2006 Ofgem published a draft IA which provided an initial cost/ benefit analysis of the model for reform being proposed.

1.3. Following submission of responses to our draft IA, we have met with a number of respondents to discuss the issues raised and information provided. We have had the opportunity to consider further our analysis of the costs and benefits of reform. This document sets out Ofgem's Final IA on the reform of the GDN interruption arrangements as proposed in Mod 90. The information and analysis contained in this IA has also informed Ofgem's decision on UNC Mod 90 which has also been published today[3]. Ofgem has made its decision about Mod 90 in the context of its statutory duties and the relevant objectives of the UNC.

1.4. Chapter 2 explains the approach that Ofgem has taken to preparing this IA, including the options that have been assessed. Chapter 3 summarises the responses to the draft IA and Ofgem's response to the comments. Chapter 4 sets out Ofgem's assessment of the costs of reform on the GDNs, shippers and customers. Chapter 5 sets out Ofgem's assessment of the benefits of reforms to the interruption arrangements on the GDNs, including quantitative and qualitative benefits. Chapter 6 considers a range of other potential impacts of reform, including the environmental and distributional impacts. The final chapter summarises our view of the costs and benefits of Mod 90.

[3] Uniform Network Code (UNC) 90: Revised DN Interruption Arrangements, Ofgem decision letter, www.gasgovernance.com

2. Approach

Chapter Summary

This chapter explains Ofgem's approach to developing the IA for interruptions reform.

Overview

2.1. Ofgem recognises that estimating the costs and benefits of reform of this nature is inherently difficult and requires an element of judgement, as the precise impact of reforms will only be known when they are implemented. To recognise the uncertainties in any assessment of potential costs and benefits, Ofgem has sought to develop a range of estimates based on considering a number of scenarios for the outcomes of reforms if they are introduced. Ofgem has then considered the robustness of the range of estimates for costs and benefits. Ofgem has also considered the level of benefits that would need to be achieved to exceed the costs and the plausibility of assumptions required to reach this level of benefit.

2.2. Some respondents to the draft IA criticised this approach. In particular, respondents were concerned that Ofgem had not identified the specific benefits that might be expected to arise from better investment signals for interruptions reform. A number of consumer representatives were also concerned that Ofgem had not set out the potential benefits in a way that allowed the actual level of benefits to be assessed against Ofgem's projections if modification proposal 90 is implemented. While continuing to consider that precise quantification of the costs and benefits of reform is difficult, Ofgem has sought to identify more clearly in this IA where benefits might be expected to arise, albeit still within the context of a number of scenarios and ranges for potential benefits.

2.3. In its draft IA Ofgem focused on the costs and benefits that will ultimately affect customers, consistent with Ofgem's principal statutory objective under the Gas Act 1986 (as amended) to protect the interests of gas and electricity consumers. We have discussed in the IA how potential benefits from reform might be expected to flow through to customers. In general, Ofgem does not expect that significant costs or benefits would arise that will not ultimately be incurred or received by customers.

2.4. The IA assesses the efficient forward looking costs and benefits of the proposals to reform the interruption arrangements, as costs already incurred will not be affected by the proposals for reform. Ofgem would not directly take account of costs already incurred by GDNs, shippers or customers that relate to interruption. However, Ofgem has considered the potential impact on future investment decisions of major policy changes that could adversely affect the value of past investments, to take account of the concern expressed by some customers that changes to the interruption arrangements will undermine the value of past investments, such as in back-up fuels.

2.5. Ofgem has sought to assess only the potential costs and benefits of reform of the interruption arrangements for the GDNs, and not any costs or benefits that would only arise if other changes were introduced, e.g. the introduction of enduring offtake arrangements on the NTS. However, it is difficult to assess the impact of the reform of the interruption arrangements for the GDNs without making assumptions about the arrangements for allocating NTS offtake capacity and the nature of the gas distribution price control, including the incentives on the GDNs for purchasing interruption. In the IA we have been explicit about the assumptions Ofgem has made where this could have a material impact on the assessment of the costs and benefits of reforming interruption arrangements on the GDNs.

2.6. Ofgem has presented the estimates of the costs and benefits of GDN interruptions reform as net present values, based on discount rates of 5.25%, which is the vanilla weighted average cost of capital for the one year gas distribution price control and 3.5%, which is the discount rate that the UK Government, through the Green Book, advises should be used for IAs of this type.

Options

2.7. Any IA must consider the costs and benefits of proposed changes compared to a counter factual. For this draft IA, Ofgem has used the continuation of the current interruption arrangements for the GDNs as the counter factual. Ofgem has used modification proposal 90 to the UNC as the proposal for reform to assess for the IA. We have summarised below the current arrangements and the main aspects of Mod 90. No other specific proposal for reforming the interruption arrangements has arisen from the discussions at the development workgroup for modification proposal 90.

2.8. Although Ofgem has not considered any other options for reform, we have considered an alternative timetable for implementing Mod 90. When Mod 90 was proposed it was intended that it would be implemented from 1 April 2007, with the first tenders for interruption taking place in June 2007 for interruption capacity from October 2010. Ofgem considers that in order for Mod 90 to be successfully implemented, the GDNs, shippers and consumer representatives will need to liaise closely with customers who qualify to participate in the tenders to ensure that they understand the new processes and what they need to do to participate. Mod 90 represents a significant change to the way customers offer interruption capacity to the GDNs. In order to ensure that there is sufficient time for this liaison to take place, Ofgem has asked the GDNs to delay the implementation of Mod 90 for one year, so that the first tenders would be in June 2008 for interruption capacity from October 2011. Ofgem has taken account of the decision to delay implementation in the IA, and the cost and benefit estimates of reform, where possible, assume an implementation date of 2008.

Status quo - Current arrangements

2.9. The current GDN interruption arrangements predate the sale by National Grid Gas (NGG) of four of its eight distribution networks, and were introduced as part of

the Network Code in March 1996, when Transco had sole responsibility for managing constraints across the transmission and distribution networks. The interruptions arrangements flow from GDNs' statutory and licence obligations, including the obligation to develop and maintain an efficient and economic pipeline system, to avoid any undue discrimination, and to develop a cost-reflective charging methodology.

2.10. Under the current arrangements security of supply is managed by granting interruptible rights on request to any customer who flows a daily metered load greater than 200,000 therms per annum. Firm customers can declare themselves interruptible by giving one year's notice and GDNs are obliged to grant this status whether they require the supply point to be interruptible or not. Interruptible customers can also indicate that they wish to become firm at one year's notice, but this is dependent on sufficient capacity being available to accommodate the request and GDNs can defer granting firm status if further capacity reinforcement would be necessary. Specific supply points likely to be required to relieve particular constraints can be deemed Network Sensitive Loads (NSL) and determined interruptible at a GDN's discretion.

2.11. Interruptible customers are currently compensated for making themselves available to be interrupted by having the capacity component of their use of system charges excluded from their bill. In return for this discount, the standard interruptible contract provides that customers cannot be interrupted for more than 45 days in any one year, but any customer interrupted for more than 15 days is also compensated by receiving fixed payments per additional day of interruption.

2.12. GDNs currently use what is referred to as the "equitability algorithm" to determine which sites have their gas supply interrupted when an interruption is required to relieve a constraint and more than one site could relieve the constraint. The equitability algorithm seeks to treat all gas consumers on an equal basis when selecting who to interrupt.

Modification proposal 90

2.13. The key features of the proposal are:

- the existing Firm Exit Capacity booking arrangements will not be changed;
- the existing arrangements for requesting a switch from Interruptible to Firm status will continue to apply outside the annual process described in the modification proposal;
- arrangements for requesting a switch from Firm to Interruptible status will only be available via the interruptible application process;
- applications for interruptible capacity and management of interruption will continue on an individual supply point basis. This means that agreements to

provide interruptible services would transfer between shippers if a supply point switched shipper;

- applications for interruptible capacity will take place each year, at least three years ahead of the applicable Gas Year. For example, June 2008 for the Gas Year starting October 2011;

- GDNs will be permitted to tender for interruptible rights in timescales shorter than three Gas Years, where, for instance, demand patterns change significantly;

- through their shipper, customers will be able to apply for interruption contracts of up to five years length;

- interruption payments made by GDNs to shippers will be based on an option and exercise scheme where the option fee will be an upfront payment for being available to be interrupted and the exercise fee will be payable for each day of interruption. The amount paid will be independent of transportation charges, and the pricing methodology used will be distinct from the transportation charging methodology. The interruption pricing methodology will either be set out as an appendix to each GDN's Transportation Charging Methodology or alternatively it will be set out as a stand alone document;

- each GDN will publish its interruption requirements on a location by location basis and offer to purchase interruptible capacity for a range of maximum interruptible days, such as 5, 15, 30 and 45 days. Prices for interruptible rights would be dependent on the permitted number of days of interruption. Each number of days of interruption will attract an option/ exercise scheme dependent on the pricing methodology of the relevant GDN;

- shippers will be able to apply for interruptible capacity in respect of all daily metered supply points;

- the GDN will be permitted to reject an application for interruptible capacity if the application was not required to maintain its required transportation capability;

- after October 2011 new supply points that want to go firm will be allowed to go firm when the capacity becomes available. Otherwise, they will be allocated the minimum number of interruptible days that the GDN believes it must have available to continue to meet its obligations to other supply points. Providing firm capacity is available, after October 2011 new supply points who want to be interruptible can only become interruptible via the interruption application process; and

- in the context of interruption reform the period between the first tender and the first gas year for which the new arrangements apply will be referred to as the transition period. New supply points that want to go firm within this period will be allowed to go firm where the capacity is available. Otherwise, they will be allocated the standard 45 day interruptible contract that other interruptible supply points will operate on until October 2010 or 2011. New supply points that request to be interruptible within the transition period will also be awarded the standard 45 day interruptible contract.

3. Summary of responses

Chapter Summary

This chapter summarises the responses to the draft IA[4] and sets out Ofgem's response to the comments.

3.1. We have summarised below the comments made by respondents to the draft IA under the questions asked in the draft IA. We have set out Ofgem's response to the comments, including indicating where the issues are addressed elsewhere in this IA.

Question 1 – Do interested parties agree with the estimate of the costs of implementing GDN interruptions reform?

Responses

3.2. Two shippers believed that it was premature for Ofgem to make comparative scalar adjustments to the GDN's costs in the draft IA without a more detailed review. One GDN considered that Ofgem's downward adjustment had taken the costs below the true costs without any detailed justification from Ofgem.

3.3. Two shippers considered it to be very difficult to estimate the costs of implementing interruptions reform, but noted that the more administrative the process the more costly it would be. One of the shippers believed that customers would not have the resources to participate in highly administrative processes. Another shipper considered that an open tender approach would be more expensive for shippers and customers than an administered price approach. One shipper believed that it was very difficult to make a robust estimate of costs in response to the draft IA given that the GDNs had only published their charging methodology proposals 9 days before the close of Ofgem's consultation. A shipper noted that Ofgem should not be overly critical about shipper and customer cost estimates given the difficulty of estimating efficiency savings.

3.4. A shipper criticised some of the assumptions for Ofgem's cost estimate including the assumption that only 7 industrial and commercial shippers would be affected, the absence of estimates of customer costs which it argued meant that overall costs were an under estimate, and the exclusion of investment costs. One shipper considered the sample of two shipper cost estimates to be insufficient to draw robust conclusions and that Ofgem did not have a basis for considering these to be at the higher end of likely costs.

[4] Reform of interruption arrangements on gas distribution networks - An update, Appendix 2 - Draft IA, Ofgem, October 2006

3.5. Another shipper considered that the current cost and potential cross-subsidy from firm to interruptible customers of about £2.50 per firm customer was a small price to pay for the security of supply benefits of the current interruptible arrangements. This shipper also believed that the three year lead times for buying interruption were inappropriate as customers would not remain with shippers for these time periods and any costs for shippers of participating would be passed through to customers, thereby reducing the benefits.

3.6. A shipper and a GDN believed that consideration should be given to the cost of making all NSLs firm as it considered this to be the most likely outcome of reform. A GDN noted that the costs of buying interruptible rights for NSL sites exercising market power could be significant. A GDN and a customer representative also considered that any additional reinforcement costs arising from reform should be included.

3.7. A shipper and a consumer representative urged Ofgem to take account in the IA of the full costs of stranded dual fuel assets. Another consumer representative estimated that there could be assets worth up to £75m that would be written off as a consequence of reform.

3.8. A shipper also noted that CHP plant would be less economic if it had to be operated as firm, and that this would lead to higher balancing mechanism prices in electricity.

3.9. A GDN believed that the discount rate used should be consistent with the cost of capital for the main price control.

Ofgem's response

3.10. Ofgem has updated the cost information to take account of the updated information received in response to the draft IA. In particular, all of the GDNs and Xoserve have submitted updated information. One GDN submitted a consultants' report estimating in some detail the costs likely to be incurred to implement reform. Ofgem considers that it is appropriate for it to adjust the overall cost estimate to take account of significant discrepancies between the costs estimated by the GDNs, while ensuring that adjustments reflect the different scale of the individual GDN networks.

3.11. Since the draft IA Ofgem has received additional information from one shipper about the potential costs of implementing the modification proposal. While Ofgem understands that there are difficulties in making estimates prior to full clarification of any changes to charging methodologies, etc. Ofgem considers that there was sufficient information by the close of the consultation on the draft IA for shippers to make an estimate of potential implementation costs. In the absence of updated information, Ofgem has used the information about shippers' costs from the draft IA. This is explained in Chapter 4.

3.12. For the Final IA Ofgem has developed an estimated range for the cost to customers of participating in the reformed interruption tender process. In developing the range we have tried to reflect a number of different possible customer responses to interruption reform, but due to the limited number of customer cost submissions the estimate is necessarily subjective. Following publication of the draft IA Ofgem received additional information about potential costs of interruptions reform from two customer sources, but the quantity of the information relative to the portfolio of potentially interruptible customers is such that it is difficult to extrapolate for all customers.

3.13. Ofgem indicated in the draft IA that it was seeking information from the GDNs about the costs of making customers (including NSLs) who chose not to seek to be interruptible under the new arrangements or are unsuccessful in a tender process, firm. For the purposes of the IA Ofgem has considered this outcome as part of an assessment of the net benefits of improved investment signals in Chapter 5.

3.14. Ofgem has considered the issue of stranded assets in Chapter 6. Ofgem continues to consider that sunk costs such as investments in dual fuel capability are not directly relevant to an assessment of the costs and benefits of reform given that they have already been incurred. Ofgem is mindful that any reform of this type that changes the nature of a regime which has informed investment decisions, can increase risks for future investments by increasing uncertainty.

3.15. As the cost of capital for the main gas distribution price control has not been decided, Ofgem has used a discount rate that reflects the level used in the one year price control.

Question 2 – Do interested parties agree that Ofgem has identified the appropriate benefits of reform of the GDN interruption arrangements?

Responses

3.16. Three shippers believed that better investment signals and a more flexible market could be benefits of reform, but only if shippers and customers participate in the tenders. A GDN also agreed that in general the types of benefits identified by Ofgem were appropriate. Another shipper noted that the benefits of better investment signals would only arise from an open tender process. Another GDN noted that investments could be delayed if some firm customers chose to be interruptible in response to interruption price signals, although the general trend in recent years has been for customers to move from interruptible to firm status.

3.17. A GDN believed that better investment signals might lead to higher levels of investment where customers saw benefits in moving to firm status. It also noted that if more customers are firm than at present, then so long as the annuitised investment cost is less than the present level of interruption discounts for customers becoming firm, the average distribution charge for customers would be lower than

would otherwise have occurred. The GDN also noted that multi-year interruption contracts reduced the risk of stranded assets.

3.18. A consumer representative did not believe that reform would lead to better investment signals as it believed that the current arrangements provided sufficient investment signals because of the limited switching of sites between interruptible and firm status which had historically taken place.

3.19. A shipper did not agree with the potential benefits of reform identified by Ofgem, and believed there was little evidence that the current regime does not operate in an effective manner. Another shipper did not believe that the benefits identified by Ofgem would be achieved. Another shipper believed that the benefits had been overstated, while a GDN did not agree with the benefits identified by Ofgem.

3.20. Some shippers and consumer representatives did not believe that reform would improve security of supply. They argued that while remaining interruptible customers would be better prepared for interruption, customers that became firm would be less prepared and might cease to maintain dual fuel capability. They also considered that there was a greater risk of moving to stage 2 or 3 of a gas emergency quicker because of less interruptible load being available, particularly if customers were reluctant to participate in a more complex process. A GDN believed that current planning and operation delivered a very high level of security of supply that was unlikely to be improved by reform. A consumer representative was also concerned that reform could endanger security of supply by leading to stage 2 and 3 emergencies more quickly, although it noted that the impact might arise because less transportation interruption was available to relieve supply shortfalls.

3.21. A shipper believed that the benefits of increased flexibility under the new regime could be achieved through incremental reform. A GDN agreed that reform should lead to greater flexibility in offering and purchasing interruptible services. It noted that customers could invest in dual fuel equipment with more certainty if they had multi-year contracts. A consumer representative noted that extra flexibility was not always beneficial if it led to extra complexity.

3.22. Shippers and consumer representatives did not believe that the reforms would improve the operation of the wholesale electricity market because few CCGT's are connected to GDNs and they would be more likely to interrupt for wholesale price rather than capacity reasons. A shipper also believed that the three year lead time for interruption would make it difficult for CCGT's to offer appropriate option prices.

3.23. A shipper did not believe that any wider economic benefits of reform had been proven.

3.24. A consumer representative was concerned that the potential benefits lacked specificity, and there was insufficient clarity about how the benefits would be passed on to customers.

3.25. A shipper agreed that any regime that is consistently applied to all the GDNs would generate some benefits from comparative regulation. Another shipper questioned whether any benefits of comparative regulation would arise if customer participation in new arrangements was low. A GDN did not believe that reform would generate benefits through comparative regulation as the amount of interruption purchased will depend on GDNs specific network characteristics. A consumer representative believed that GDNs would have to over contract for interruption to meet their planning requirements.

Ofgem's response

3.26. Ofgem remains concerned that there are significant elements of the current regime that do not promote efficient investment; in particular, the ability of customers to switch between firm and interruptible status at less than a year's notice when investments have much longer lead times.

3.27. Ofgem continues to consider that modification proposal 90 has the potential to deliver efficiencies through better investment signals. However, Ofgem accepts that it needs to be more clear about the ways in which more efficient investment will arise. Ofgem noted in the May 2006 consultation that while it considers that reform of the interruption arrangements will lead to investment efficiencies and lower transportation charges for existing firm customers, there is the potential for some additional investment to be required if customers decide to go firm or offer interruption at a price that makes investment a more economic option.

3.28. Ofgem understands the concerns of some respondents about the potential impact on arrangements for gas supply emergencies from changes to interruption requirements for gas transportation purposes. This is primarily an issue for the GDNs and the HSE, who will need to approve any changes to the GDN's safety cases arising from modification proposal 90. A one year delay in the implementation of Mod 90 would give the HSE more time to consider requests from GDNs to change their safety cases.

3.29. Ofgem accepts that the relatively small number of generators connected to GDNs means that the impact on the wholesale electricity market will be limited. However, while it is not in Ofgem's view possible to quantify these potential benefits, we consider that in some circumstances of supply demand tightness the benefits could be quite significant, particularly as CCGTs are perhaps more likely than other sites to value being interruptible, as they might not need to invest in back-up fuels to support being interruptible.

3.30. Ofgem agrees that it should seek to provide greater clarity about how benefits from reform might be expected to arise, and how customers would see the benefits. Chapter 5 sets out how the benefits might arise and how they might accrue to customers.

3.31. Ofgem continues to consider that some benefits of comparative regulation can be expected to be realised from interruption reform. While it will be important to

take account of the specific network characteristics when making comparisons between GDNs, this will not fully remove the opportunities for comparisons, e.g. in GDNs' approaches to defining locations for investment, option/ exercise ratios, etc.

Question 3 – Do interested parties agree with Ofgem's estimate of the range of potential quantitative benefits of GDN interruptions reform?

Responses

3.32. A shipper recognised that estimating efficiency savings from investment efficiencies was difficult, but agreed that using the historical average of GDNs' capex was the appropriate baseline. A GDN also believed that the capex baselines were a reasonable basis from which to assess potential benefits, and that new connections and Pressure Reduction System (PRS) investments should be included in the baseline. A consumer representative noted that it is inherently difficult and a degree of judgement will be required to estimate the costs and benefits of reform. A consumer representative argued that this was partly because the impact of reform will depend on the uncertain actions of customers and shippers rather than the regulated GDNs.

3.33. A shipper saw no reason why efficiency savings would have increased since DN sales, so considered 3% to be a reasonable assumption. A shipper and a consumer representative considered that Ofgem's estimate of potential benefits was arbitrary and an assessment of actual benefits from DN sales should be made. A GDN did not believe that Ofgem's estimate of efficiencies had been justified. Another consumer representative asked for more clarity about how investment efficiencies would feed through to customer charges.

3.34. Two GDNs did not agree with Ofgem's approach to assessing investment efficiencies. Another GDN noted that investment is largely undertaken to meet demand growth and most if not all of this will continue to be required. Another GDN noted that the level of investment will depend on the price of interruption compared to investment options and that as GDNs currently plan on the basis of all interruptible load being available for interruption at the peak, any reduction in interruptible load will increase investment requirements. The GDN also believed that the low level of interruption in recent winters was only a function of mild weather and not an excess of interruptible capacity. It also noted that if the interruption tenders signalled the need for significant additional investment then the costs would increase as there was a limited supply of labour to carry out the projects.

3.35. A shipper wanted Ofgem to consider the costs of investing to remove NSLs alongside the efficiency savings, to understand the net consequences of reform. Another shipper believed that the full potential costs of investment should be considered as a scenario. A consumer representative noted that there are a range of possible outcomes of reform and asked Ofgem to consider a range of scenarios for volume and price to show which would lead to lower costs as a result of reform.

Another consumer representative was concerned that lower customer participation in the new arrangements could lead to large reinforcement costs.

3.36. Another consumer representative stated that to generate savings from reform, the ongoing costs of interruption would have to be lower than the current foregone charges of £18million per annum, which it believed would be a marginal case given one off and ongoing costs of reform.

3.37. A GDN believed that the price of interruption might increase if customers expect to be interrupted more often, and therefore choose to invest in dual fuel supplies that they had not previously invested in.

Ofgem responses

3.38. Ofgem welcomes the comments in support of the suggested baselines from which to assess potential investment efficiencies. In the absence of alternative suggestions, Ofgem will use the two baselines in the draft IA as the counter-factual for this IA.

3.39. Ofgem considers that its approach in the draft IA of considering what percentage of efficiency savings would be required for benefits to exceed costs, and considering whether this was a plausible outcome, is a reasonable approach. However, Ofgem has sought to supplement this analysis by considering the specific circumstances in which investment efficiencies might arise and whether reform of interruption arrangements might trigger additional investment in some circumstances, e.g. if NSLs sought to go firm.

3.40. While some investment to cope with demand growth might be required in the future, interruption reform should provide greater clarity to the GDNs about the cost of measures that could defer the need for investment to meet demand growth. Within the incentive framework it will be for the GDNs to find the most efficient balance of NTS offtake capacity, interruption and investment to meet its 1 in 20 planning standard.

4. Costs

Chapter Summary

This chapter explains Ofgem's assessment of the potential costs of introducing Mod 90 to reform interruption arrangements on the GDNs. In assessing the costs Ofgem has assumed an implementation date for Mod 90 of April 2008.

Introduction

4.1. Ofgem has attempted to quantify all of the potential costs, both implementation and ongoing, of reform. Ofgem has only sought to estimate the costs that will be directly incurred as a result of interruption reform. Ofgem has sought to separately estimate the potential costs incurred by GDNs, shippers and customers based on information provided by these stakeholders in response to questions in Ofgem's May 2006 Initial Thoughts consultation and the draft IA that was consulted on in October 2006.

4.2. Consistent with the approach adopted in estimating the potential benefits, Ofgem has estimated a range for the potential costs of reform. The range of potential costs is derived from assessing a number of plausible scenarios for each of the costs outlined. This approach is intended to recognise that there is uncertainty and an element of judgement in estimating the potential costs. Ofgem has received some indication from the GDNs that their estimates of implementation costs have become more robust since the information submitted for the draft IA as the detailed business rules for Mod 90 have been further developed and additional internal scoping work has taken place.

4.3. The implementation cost estimates used have assumed implementation of Mod 90 in April 2008, in time for a first interruptible capacity tender in June 2008. This is one year later than the timetable envisaged when the Mod 90 proposal was raised in July 2006, but the reasons for Ofgem's decision to delay are set out in full in our decision letter on Mod 90.

GDN costs

4.4. Ofgem has considered the potential costs incurred by GDNs as costs associated with the implementation and ongoing operation of new arrangements for interruption, and costs incurred by GDNs as a consequence of additional investment. The net impact on GDNs investment levels are discussed in Chapter 5, where Ofgem has quantified potential benefits from reform. Although any additional investment arising from interruptions reform, e.g. network reinforcement to make a site firm, is an additional cost arising from interruptions reform, Ofgem considers it best to

assess potential additional investment of this type within the overall assessment of the net impact on investment of interruptions reform. This analysis is presented in Chapter 5.

4.5. In the May 2006 Initial Thoughts consultation document and the October 2006 draft IA, Ofgem invited GDNs to identify any implementation and ongoing costs that they would expect to incur as a result of reform of the interruption arrangements on their networks. Ofgem asked GDNs to submit information on IT system costs, staff costs, including additional Full Time Employees (FTEs) and cost per FTE, and any other costs related to implementation which would not otherwise have been incurred. For the responses to the October 2006 consultation, Ofgem asked the GDNs to assume that Mod 90 would be implemented when making cost estimates.

4.6. All GDNs provided cost estimates and Xoserve provided an estimate of its costs for implementing the reform. The GDNs liaised with Xoserve to ensure that there was no duplication between the costs included in the Xoserve and GDN submissions. The updated cost information provided by the GDNs and Xoserve was for implementation costs of £5.6m and ongoing costs of £1.3m a year. This compares to the cost information provided for the draft IA which estimated implementation costs of just under £2.3m and ongoing costs of just under £900,000 per year.

4.7. Since the information was submitted for the draft IA, greater clarity about the business rules for Mod 90 have become available and therefore it is reasonable to expect some changes in the GDNs cost estimates to reflect a better understanding of IT and staff cost requirements. However, the updated cost information submitted by the GDNs includes wide variations in the cost estimates. For implementation costs the highest estimate is over four times the lowest estimate. For ongoing costs the highest estimate is over twice the lowest estimate. Ofgem would expect differences in the size of cost estimates reflecting the different scales and characteristics of the GDNs. However, particularly for ongoing costs, the relative level of cost estimates is not consistent with the relative size of the GDNs.[5]

4.8. Some respondents to Ofgem's draft IA criticised the adjustments Ofgem made to the GDN's initial estimates of the costs of interruptions reform. However, Ofgem continues to consider that it is appropriate to adjust the GDNs' estimates where there are significant differences between the estimates that are unlikely to be as a result of differences in the scale and characteristics of GDNs' networks. In making the adjustments, Ofgem has taken particular account of the detailed information submitted by one of the GDNs in the form of a consultants' report estimating the costs of implementing interruptions reform.

4.9. As indicated in our Mod 90 decision letter, since receipt of the Final Modification Report on Mod 90, we have had cause to review the implementation timetable for the proposal. As a result we have directed that Mod 90 be implemented to take effect from April 2008 and for the purpose of the IA we have reviewed the GDNs

[5] There are a range of ways in which the relative scale of the GDNs could be assessed. For the purposes of developing a broad ranking of the scale of the GDNs for this IA, Ofgem has considered the relative throughput, number of customers and network length of the GDNs.

implementation costs on this basis. When the GDNs made their cost estimates it was expected that Mod 90 would be implemented in 2007 with the first tenders in June 2007 for interruptible capacity from October 2010. The GDN that submitted a consultancy report to Ofgem indicated that its implementation costs where higher by just over £250,000 as a result of the need to put in place short term IT solutions for 2007 because there was insufficient time to implement a longer term solution until 2008.

4.10. Ofgem is aware that the tightness of the 2007 implementation timescale was a concern of more than one GDN. To take account of the potential benefits in lower implementation costs of the revised timescale, we have adjusted the other GDNs' (excluding National Grid's)[6] implementation costs by a similar percentage to the estimate of costs saved by the GDN that submitted a consultants report estimating the costs of implementation. We have also adjusted Xoserve's implementation cost estimate to reflect the saving they have indicated not having to implement a manual tender process for implementation in 2007 would entail. Overall this has reduced the estimate of GDN implementation costs from £5.6m to £4.9m.

4.11. Although Ofgem has some concerns about the cost information submitted for GDN implementation costs, other than the adjustments taking account of the changed implementation timescale, Ofgem has decided not to adjust these estimates further, as the relative size of the estimates broadly reflects the relative size of the GDNs' networks. However, for ongoing costs, Ofgem has reduced the highest two estimates to bring them into line with the third highest estimate, which Ofgem considers better reflects the relative scale of the GDNs. Ofgem has not reviewed in any detail the reasonableness of the estimate for Xoserve's costs, although these have reduced slightly since the information submitted for the draft IA. Following Ofgem's adjustments the ongoing costs for the four GDNs and Xoserve are estimated as £1.175m a year .

Table 4.1 below shows the net present value of the GDNs' costs for interruptions reform over 20 years using the two discount rates explained above. The table shows the GDNs' estimate and the estimate after the adjustments Ofgem has made to estimates of ongoing costs.

Table 4.1 - Estimates of the costs to the GDNs and Xoserve of interruptions reform

Discount rate	Net present value of GDNs costs of interruptions reform	
	GDN estimate	Ofgem adjustments
5.25%	£20.3m	£18.1m
3.5%	£23.9m	£21.3m

4.12. Ofgem has not reviewed in detail the GDNs' estimates of costs for implementing interruptions reform. The adjustments that Ofgem has made to the GDNs' estimates principally reflect an attempt to ensure that the relative costs estimated by the GDNs are consistent with the relative scale of their operations,

[6] National Grid contacted Ofgem to advise that they would not anticipate a systems implementation cost saving if the proposal was directed for implementation in 2008.

allowing for some costs being invariant to the size of the GDN. Ofgem has not sought to align all the GDNs' cost estimates with the lowest estimate provided. Given the lack of a thorough review of the GDNs and Xoserve's estimates, and the decision not to reduce all estimates to the lowest provided by the GDNs, Ofgem considers that the estimates in table 4.1 are likely to be at the higher end of a reasonable range.

Shipper costs

4.13. In the May 2006 Initial Thoughts consultation document and the October 2006 draft IA, Ofgem asked shippers to identify any implementation and ongoing costs that they would expect to incur as a result of reform of the interruption arrangements on their networks. Ofgem asked shippers to provide information on IT system costs, staff costs, including additional FTEs and cost per FTE, and any other costs related to implementation which would not otherwise have been incurred.

4.14. Ofgem received two responses to the Initial Thoughts consultation that contained cost estimates from shippers and were marked confidential. These two shippers were relatively large shippers in the Industrial and Commercial (I and C) market. In the responses to our October 2006 draft IA, Ofgem received new cost information from one additional shipper.

4.15. The new cost information received as part of the October consultation came from a shipper with a larger portfolio of interruptible customers than the two shippers who submitted cost data in response to our Initial Thoughts consultation. This has allowed Ofgem to make a more robust estimate of shippers costs in the Final IA. Nevertheless, Ofgem is still disappointed that not all I&C shippers were able to submit a cost estimate. Some of the shippers responding to the October draft IA considered it difficult to make cost estimates because some aspects of the interruption reform proposals had not been clarified. Ofgem accepts that some aspects of the regime were still being developed, but considers that there was sufficient detail for shippers to make initial estimates of the costs of implementing the reforms.

4.16. The additional shipper cost submission Ofgem received in response to the draft IA estimated implementation costs of reform at about £640,000 and the ongoing costs at around £102,000 per annum. The implementation cost estimate is significantly higher than the two shipper implementation cost estimates considered in the draft IA. We have some concerns about the accuracy of this cost estimate, but on the basis that the differential is broadly proportionate to the number of interruptible customers the shipper has, we have elected not to adjust the estimate in the IA. Based on the three cost submissions received Ofgem has estimated the implementation cost of reform at around £280,000 per shipper and the ongoing cost of reform at just under £80,000 per year per shipper. This effectively takes an average of the three shippers' estimates. Working on the basis of seven large shippers operating in the I and C market, Ofgem has estimated total costs for shippers of implementing GDN interruptions reform as seven times this estimate.

The final cost estimate is presented in the table below for both of the discount rates used for the IA.

Table 4.2 - Estimates of the costs for shippers of interruptions reform

Discount rate	Net present value of shippers' costs of interruptions reform
5.25%	£8.3m
3.5%	£9.8m

4.17. Having only received three responses to the request for cost estimates from shippers, Ofgem recognises that its estimate of shippers' costs of interruptions reform is based on limited information. Since the cost information we have received encompasses a wider sample of shippers than in the draft IA we consider that the shipper cost estimates are more robust than before, but since we have not attempted to analyse the costs beyond considering their proportionality, we consider that the costs in Table 4.2 are likely to be at the higher end of a reasonable range. It is worth noting that as the supply market for I and C customers is competitive, customers will only have to pay the efficient costs of implementing interruptions reform.

Customer costs

4.18. Ofgem requested similar information from customers as it requested from GDNs and shippers about the potential costs of interruptions reform, but in the responses to the draft IA Ofgem received only limited cost information from two customer sources. It is very difficult from this information to extrapolate a more general estimate of the costs of implementing interruptions reform for customers. Given the number of daily metered customers consuming more than 200,000 therms per annum that could be affected by interruptions reform, it is difficult to develop a robust estimate of the total costs to customers for reform on the basis of two estimates.

4.19. Nonetheless, despite the inherent difficulty in doing so, Ofgem considers that it is appropriate to try to quantify a range of potential customer costs. We recognise that responding to the implementation of interruption reform will have an upfront and ongoing cost for some interruptible customers, and as a qualified estimate we have used the annual cost of £10,000 per customer that was used in the NTS enduring offtake reform draft IA[7], and multiplied this by 600 interruptible sites. Under the Mod 90 proposal customers will have the ability to agree contracts of up to five years in length, so on average we do not consider that customers will incur participation costs in each year. We have adjusted the estimate of customer costs to reflect what we consider will be a preference for relative contractual stability, and discounted over a twenty year period we have assumed customers will contract for interruption for between three and four years on average, participating in interruption tenders a total of six times each. The number of interruptible sites we have assumed will participate is approximately equal to the number of daily metered

[7] Transmission Price Control Review Initial Proposals: Draft Enduring Offtake Impact Assessment, Ofgem, June 2006

interruptible sites flowing over 1,000,000 therms per annum and is about half the total number of currently interruptible customers.

4.20. Ofgem is not qualified to comment on what the GDNs would consider to be a satisfactory customer response to the tender for interruptible capacity, but we do note that if all sites with AQs over 1,000,000 therms per annum participate in an interruption tender the GDNs are likely to have access to a large proportion of the interruptible capacity available under the existing arrangements. We would consider, that while this might lead to total customer costs being towards the higher end of a reasonable estimate, in our view a response of this proportion would be more likely to lead to higher percentage capital expenditure efficiency savings (as discussed in Chapter 5).

4.21. To provide a comparative cost scenario to the one outlined above, Ofgem has considered two alternative cost scenarios. The cost assumption outlined above could be varied by reducing the cost per customer to £5,000 per year to recognise that the process might be expected to be less costly than for enduring offtake reform, or reducing the number of customers expected to participate to 300. We would expect that lower aggregate customer costs would generally be consistent with less customer participation which might be offset by a reduced level of benefits, but both of these options for varying the range have the effect of reducing the costs by 50%.

4.22. Table 4.3 shows Ofgem's estimate of customer costs using the two discount rates for each of the scenarios.

Table 4.3 - Estimates of the costs for customers of interruptions reform

Discount rate	**Net present value of customers' costs of interruptions reform**	
	£10,000/bid 600 customers	**50% reduction in costs from the main scenario**
5.25%	£27.2m	£13.6m
3.5%	£31.8m	£15.9m

4.23. The usefulness of the estimated cost to customers of NTS offtake reform in estimating the cost to customers of GDN interruption reform is relatively subjective. Ofgem considers there are good reasons to suggest that in general the processes required of customers to participate in interruptions reform will be less costly than for enduring offtake reform, but we are aware that in the Final Impact Assessment for offtake reform the estimate of customer costs has increased significantly.

4.24. Ofgem notes that at an aggregate level it is reasonable to consider that the overall cost to customers is likely to be positively correlated to the level of customer participation in the new interruptible application process. If the interest in the interruption tender yields a large volume of interruptible capacity for the GDNs, then the additional customer costs are more likely to be offset by investment efficiencies. As the reformed interruptible arrangements become established this relationship

between costs and benefits is likely to be equally apparent at an individual customer level. Customers for whom purchasing interruptible capacity is an attractive economic option will have to evaluate the benefit of the interruptible payment relative to the cost of participating. Customers who decide not to make this trade off will not participate, so no enduring cost is likely to be incurred without a corresponding benefit.

Summary

4.25. In this chapter Ofgem has set out its analysis of the costs for GDNs, shippers and customers to implement interruptions reform through Mod 90. Table 4.4 shows the estimate of GDNs and shippers costs.

Table 4.4 - Ofgem's estimates of the costs for GDNs, shippers and customers of interruptions reform

Discount rate	Net present value of GDNs, shippers' and customers costs of interruptions reform
5.25%	£40m - £53.6m
3.5%	£47m - £62.9m

4.26. The table shows that for a discount rate of 5.25%, Ofgem has estimated the costs to the GDNs, shippers and customers for implementing interruptions reform at between £40m and £53.6m depending on the level of customer participation in the reform process.

5. Benefits

Chapter Summary

This chapter explains Ofgem's assessment of the potential benefits from introducing Mod 90 to reform interruption arrangements on the GDNs. In assessing the benefits Ofgem has assumed an implementation date for Mod 90 of April 2008.

Introduction

5.1. For the draft IA, Ofgem identified the following potential benefits of the reform of interruption arrangements on the GDNs:

- better investment signals for the GDNs to allow better trade-offs to be made between purchasing interruption, NTS offtake capacity and investing in their networks;
- improved security of supply through greater certainty about the availability of interruption;
- a more flexible market for the offering and purchasing of interruption services;
- more efficient operation of the wholesale electricity market;
- wider economic benefits from GDNs selecting sites to interrupt based on the relative value those customers place on being interrupted; and
- control for the GDNs of the amount of interruption purchased will reveal which GDNs are the most efficient, allowing benefits to be passed back to customers in future price control incentives.

5.2. Ofgem sought to quantify the first potential benefit, but considered that the other benefits, although potentially very significant benefits (and at least as significant as the quantified benefit), could not be accurately quantified.

5.3. The range of potential quantitative benefits is derived from assessing a number of scenarios for the quantitative benefits. This approach recognises that there is uncertainty and an element of judgement in estimating the potential quantitative benefits of reform of the interruption arrangements on the GDNs. Ofgem has considered the potential robustness of each of the scenarios that it has assessed. At the end of this chapter, Ofgem has considered the assumptions that would need to be made for interruption reform to have a positive benefit.

Better investment signals

5.4. When the GDNs make decisions about the need for capital investment or the purchasing of NTS offtake capacity, they do not know whether a particular site or sites will remain interruptible or firm beyond the end of the current gas year. Therefore, it is possible that the GDN would undertake an investment project on the assumption that certain customers remained firm, only for them to nominate to become interruptible after the project has been completed, such that had they been interruptible the GDN would not have undertaken the project. The project would not have been undertaken because the level of expected future firm demand on the network would not have been sufficient to justify the investment at that time. In this case the generality of customers would pay for an asset that was not, in hindsight, required. Although the number of sites switching between firm and interruptible status each year is relatively limited, any particular investment can potentially be undermined by one site deciding to switch from firm to interruptible status in a particular year. The larger the site the greater the extent to which the investment would be undermined.

5.5. In addition to the lack of certainty about the status of daily metered sites beyond a gas year, the current uniform price discount for interruption means that the GDNs do not receive any site specific price signal to compare the cost of interruption with making additional investment on their network. Therefore, the GDN might make an investment in circumstances where a number of sites that could be interrupted as an alternative to the investment would have been prepared to be interruptible for a lower price than the full exit capacity discount.

5.6. Mod 90 would give GDNs longer term information about the status of sites, and about the specific value that daily metered sites place on being interruptible, to make a comparison with the cost of additional investment to remove a particular constraint. The reform proposals do not remove the risk that investments will be made that in hindsight were not cost effective, but they significantly reduce the risk, by providing GDNs with information at least 3 years (and up to 8 years where GDNs offer 5 year interruption contracts) ahead about the cost of purchasing interruption services at specific locations, which can be compared to the cost of investments or purchases of NTS offtake capacity.

5.7. The nature of investment efficiencies that might arise from interruption reform are likely principally to be in the form of interruption being used to delay investment that would otherwise be required. For example, the guaranteed availability of interruption at certain sites might be sufficient to delay the need for reinforcement of a GDN even though other firm sites (including domestic customers) continue to experience demand growth. Interruption could be used in a similar way to avoid the need for the GDN to purchase NTS offtake capacity and potentially reinforce its own network to accommodate additional flows from the NTS.

5.8. In addition to potential efficiencies through reduced or delayed needs for investment, respondents to the October 2006 consultation noted that Mod 90 could in some circumstances trigger the need for additional investment if a customer

chooses to go firm who is currently interruptible, no other substitute customer wishes to be interruptible and there is insufficient capacity in the network to accommodate the customer being firm. Such investment might be most likely to occur where a customer that is currently an NSL customer chooses to go firm. Additional investments of this type would have to be offset against any investment efficiencies achieved as a result of interruptions reform, but a fuller discussion of NSLs in relation to investment decisions follows below.

Baseline capital investment

5.9. In order to estimate the potential savings in avoided or delayed investments from interruption reform on the GDNs, we have to assume a level of investment that would have been incurred without reform. This is difficult to do given that the GDNs have been aware since GDN sales of the licence obligation to introduce reformed interruption arrangements, and have been developing the model for interruption reform. Therefore, in developing forecasts for the GDPCR they have been aware of the likelihood that interruption reforms will be implemented. For the BPQ for the main price control, which GDNs responded to in October 2006, estimates of capital expenditure assuming interruptions reform were requested, but the GDNs stated that they had submitted responses on the basis of the existing interruption arrangements continuing.

5.10. Ofgem considered two options for developing an estimate of baseline capital expenditure for the draft IA. The first used the GDNs' forecasts in their BPQ returns for the one year price control, and rolled forward the estimates beyond 2012/13. The second used an average of historical actual spend from 2002 to 2005 to generate a forecast of future spend. For the Final IA we have updated the BPQ data from the one year price control with the returns from late 2006 for the main 2008 to 2013 GDN price controls. Although it could be argued that continuing to use the one year price control information reduced the risk that the forecasts included any estimate of the impact of interruptions reform, Ofgem decided that this concern was outweighed by the benefits of using more up-to-date information, particularly as GDNs stated that the forecasts did not take account of interruptions reform. We have retained our forecast using historical actual spend. Although the past is not always a good predictor of the future, this expenditure took place during a period when the existing interruption arrangements have been in place. We have updated the estimates to reflect the new implementation timetable.

5.11. Ofgem has used these approaches to generate four baselines for capital expenditure without interruption reform. For all the estimates Ofgem has focused on investments that could be affected by reform of the interruption arrangements, so for example, mains replacement expenditure would not be included, while pipeline reinforcement, new LTS storage and NTS offtake enhancements would be. Ofgem has developed a more conservative (adjusted) estimate that excludes NTS offtake and Pressure Reduction Station (PRS) investments as these might be expected to be less directly affected by signals about the cost of interruption.

Table 5.1 - Baseline assumptions for capital expenditure by the GDNs for 20 years unadjusted capital expenditure to 2027

	Net present value total (£m) using 5.25% discount rate	Net present value total (£m) using 3.5% discount rate
GDN's BPQ for 2008-13 GDPCR (£m)	2080	2451
Actual expenditure from 2002/3 to 2005/6 (£m)	907	1071

Table 5.2 - Baseline assumptions for capital expenditure by the GDNs for 20 years adjusted capital expenditure to 2027

	Net present value total (£m) using 5.25% discount rate	Net present value total (£m) using 3.5% discount rate
GDN's BPQ for 2008-13 GDPCR (£m)	1314	1549
Actual expenditure from 2002/3 to 2005/6 (£m)	720	849

5.12. As can be seen from tables 5.1 and 5.2, there is a large difference between the total expenditure for the two scenarios with the GDNs' forecast expenditure being much higher than the estimate based on historical expenditure.

5.13. Of those respondents who commented on this issue in response to the October 2006 Initial Thoughts consultation there was some support for Ofgem's choice of a baseline capital expenditure. One respondent suggested that including NTS offtake and PRS investments would be reasonable.

5.14. It is difficult to measure robustly ex post the actual benefits achieved by customers from potential investment efficiencies because it is difficult on an ongoing basis to know the amount of capital expenditure that would have occurred without reform of the interruption arrangements. Actual capital expenditure will be influenced by a range of factors including demand growth, which would happen without interruptions reform. In addition while some customers might decide to seek a change to their status following reform it is difficult to assess how many might have sought such a change without reform given that there has been a consistent, but small, number of customers moving from interruptible to firm status in recent years.

Potential benefits

5.15. Ofgem has considered two scenarios to estimate the potential benefits from interruptions reform through better investment signals:

- assessing what percentage efficiency saving might be available as a result of reform. When Ofgem carried out an IA of interruptions reform at the time of GDN sales it used an estimate of 3%. In the draft IA for NTS enduring offtake reform that Ofgem published for consultation in June 2006[8], it used an estimate of 6.5%, with a high case of 8% and a low case of 5%; and

- assuming that GDNs whose networks are unconstrained will not need to invest other than to meet demand growth. It is difficult to make robust estimates of the amount of capital expenditure consistent with these assumptions as it is difficult to identify solely demand growth related investment in this way. A relatively extreme assumption would be to assume that GDN's that do not have any NSL's would not need to invest.

5.16. Respondents to the October draft IA were concerned that the use of percentage estimates was arbitrary. To the extent that Ofgem used percentages respondents considered that an estimate of 3% a year was appropriate given that it had been used at the time of GDN sales and there was nothing that had happened subsequently to suggest the number should be changed. Once an estimate of costs as a result of reform has been made it is also possible to calculate the percentage of efficiency savings that would be necessary for reform to be net present value positive and consider whether this level of savings is plausible.

5.17. It is difficult to say that a GDN is constrained or unconstrained, as a GDN's ability to transport a particular quantity of gas will depend on the flow patterns for that gas at any particular time. However, Ofgem considers that the relatively low level of interruption since 1996, and particularly in recent years, together with the reducing number of NSLs, suggests that many of the GDNs are for many flows patterns, relatively unconstrained. The GDNs ability to accommodate a large number of interruptible loads as effectively firm, i.e. without interrupting them, in recent years also suggests that their networks are not overly constrained. Having said this, some GDNs have, and would still have in 2011 (if the current arrangements for interruptions had continued), a significant number of NSLs, which indicate that for certain demand levels and flow patterns these networks have locational constraints. Also, the weather in recent winters has been relatively mild, so the ability of GDN networks to accommodate some higher demand flow patterns might not have been fully tested. GDNs have also indicated that they would need to undertake significant investment to accommodate all loads becoming firm, albeit that a substantial portion of the cost of this investment relates to NSLs. Therefore, Ofgem considers the relatively extreme scenario in the draft IA of no investment on networks without NSLs to be unrealistic.

5.18. Table 5.3 summarises Ofgem's estimates of the benefits that might be available from interruptions reform for different percentages of efficiency using the baseline capital expenditure unadjusted.

[8] "Transmission Price Control Review: Initial Proposals, Appendices, Appendix 17 - Draft enduring offtake IA", Ofgem, June 2006.

Table 5.3 - Estimates of investment efficiencies from GDN interruptions reform with unadjusted baseline capital expenditure

Baseline cost	Scenario	Discount rate	
		5.25%	3.5%
GDN forecasts	3% efficiency	£62.5m	£73.5m
	6.5% efficiency	£135m	£159m
Historical expenditure	3% efficiency	£27m	£32m
	6.5% efficiency	£59m	£70m

5.19. Table 5.4 summarises Ofgem's estimates of the benefits that might be available from interruptions reform for different percentages of efficiency with baseline capital expenditure adjusted for items such as investment in PRS, which might not be affected by interruptions reform.

Table 5.4 - Estimates of investment efficiencies from GDN interruptions reform with adjusted baseline capital expenditure

Baseline cost	Scenario	Discount rate	
		5.25%	3.5%
GDN forecasts	3% efficiency	£39.5m	£46.5m
	6.5% efficiency	£85.5m	£101m
Historical expenditure	3% efficiency	£21.5m	£25.5m
	6.5% efficiency	£47m	£55m

5.20. Using the investment projections taken from the GDNs forecasts, the benefits from investment efficiencies could be expected to exceed the costs for each of the scenarios other than for the 3% efficiency saving using the adjusted baseline capital expenditure forecasts in table 5.4. For the capital expenditure forecasts created using historical expenditure patterns, depending on the cost assumptions made, efficiency savings would have to be closer to 6.5% for benefits to exceed costs.

5.21. Assuming a 5.25% discount rate, we have calculated that an efficiency saving of 2% on the GDNs unadjusted baseline capital expenditure forecast could be expected to lead to benefits exceeding costs at the lower end of the estimate for total costs. An efficiency saving of 2.6% on the same unadjusted baseline capital expenditure forecasts could be expected to lead to benefits exceeding costs at the higher end of the estimate for total costs.

5.22. For the unadjusted historical expenditure forecasts, we would anticipate that an efficiency saving of 4.5% would be required for benefits to exceed costs at the lower end of the cost estimate, while a saving of just below 6% would lead to benefits exceeding costs at the higher end. As outlined in Chapter 4 we think it is reasonable to consider that total costs will be positively correlated to the level of customer participation, and so we consider that it is reasonable to think that higher overall customer costs would be consistent with higher overall capital expenditure efficiency savings.

5.23. Ofgem considers that there will be a positive relationship between reform of the interruption arrangements and better investment signals for the GDNs, and so we consider that it is credible to expect that efficiency savings can be achieved. We acknowledge that there is inherent difficulty in estimating the size of the efficiency savings, but we are careful to emphasise that we do not consider that the interruption arrangements should be reformed solely on the basis of the quantitative benefits analysis. Ofgem considers that there are significant qualitative benefits from reform which of themselves could provide sufficient justification for implementing Mod 90.

Locational market power

5.24. In the October consultation document Ofgem highlighted that under the reformed interruptions arrangements the price that GDNs are likely to pay for interruption will depend on the level of competition for providing interruptible capacity in certain locations. We noted that for locations where only one or two sites can relieve a locational network constraint there is a risk that customers may seek interruption payments in excess of their marginal cost of being interrupted. Where customers at specific locational constraints seek excessively high interruption payments (i.e. higher than the discounted cost of reinforcing the pipeline) or indicate an unwillingness to continue being an interruptible supply point (i.e. through not participating in the interruptible application process) in a very few cases the GDN may decide to invest.

5.25. Following publication of the October consultation document Ofgem met with each of the GDNs to understand the issues associated with locational market power in more detail. In particular we wanted to understand the potential substitutability of supply points currently nominated Network Sensitive Loads (NSLs) within locational constraints. From our findings we are aware that there are currently in the region of 100 NSL supply points across approximately 28 locational constraints in the GB distribution networks, and consistent with our initial understanding, the precise characteristics of these constraints varies significantly.

5.26. In some locations there are a range of supply points that could to varying degrees, provide some interruptible capacity to manage the constraint, such that the potential for one supply point alone to wield market power would be significantly constrained. We would not conclude that the GDNs could necessarily do without some of the existing interruptible supply points at these constraints, but we do consider that there might be the potential to substitute some interruptible capacity between some customers, and that the GDNs would not necessarily have to contract for the last available unit of interruptible capacity from each interruptible supply point in these areas. At other constraints the options for the GDNs in terms of alternative interruptible customers seem to be more limited. This could be mitigated to an extent by the existence of other firm loads at some constraints who, dependent on the price of interruptible capacity, could potentially be attracted to participate in the reformed interruption regime, but in a limited number of areas, due to the isolated position of the constraint, there are no other supply points of a comparable size and so this would not be an option.

5.27. Ofgem does not consider that it will necessarily be in the economic interests of sites known as NSLs, including those likely to have a degree of market power, to seek to exploit that power, or indeed to refuse to participate in the interruption tender process. Under the existing interruption arrangements NSL supply points are more likely to be interrupted than other interruptible supply points. Consequently we would expect that they would be among the most prepared to be interrupted and, as a result of the necessary alternative fuel arrangements that they already have in place, relative to other customers will have a lower marginal cost of being interrupted. For a customer in this position, the benefits of a firm connection are unlikely to outweigh the cost of paying firm transportation charges and no longer receiving any interruption compensation. Against this background we consider that it would be difficult to conclude that significant investment will be required at locational constraints as a direct result of interruption reform. We acknowledge that this may be a relatively subjective judgement, but due to the difficulty in meaningfully quantifying any additional investment costs, we are of the view that to the extent that additional investment costs may occur, they should be considered as part of the qualitative costs section of the IA.

Locational constraints and the Economic Test

5.28. The ET is a financial assessment tool that is designed to ensure that GDNs meet their Gas Act obligations to develop and maintain an efficient and economical pipeline system for the conveyance of gas (Gas Act, section 9(1)(a)). Under the existing arrangements the economic test is applied to any new load over 2,500 therms/ annum. If the GDN identifies the need to reinforce immediately the existing pipeline system in respect of the new load, the new applicant will be required to make a financial contribution towards the firm connection. The majority of new loads are not required to make a contribution under the ET, but some existing interruptible customers, including some currently designated NSLs, would be required to make a contribution towards the reinforcement cost of going firm.

5.29. Ofgem is aware that the GDNs are reviewing the way that the ET is applied. The Mod 90 proposal states that interruptible supply points not designated as interruptible through the tender process will be re-designated as firm. This means that any supply point who chooses not to participate in the tender process, or who participates but is not needed by the GDN to be interruptible, will be granted firm status three years hence, regardless of whether they were previously interruptible or not. Since a number of existing interruptible customers may have connected to the network on the assumption that they could remain interruptible indefinitely, the GDNs consider that it would be unfair to apply the ET to these supply points if any are deemed firm as consequence of interruption reform. The GDNs outlined their proposal to suspend application of the ET to existing interruptible customers in an information note circulated via the Joint Office of Gas Transporters in January[9]. The note also set out that the GDNs propose to continue to apply the ET to new applications for capacity following the implementation of interruption reform.

[9] 'Note on Interaction between the Economic Test and DN Interruption Reform', Joint Office of Gas Transporters, January 2007.

5.30. Ofgem acknowledges that the GDNs' proposals have the aim of treating all customers deemed firm as a consequence of interruption reform equally, while safeguarding the licence obligation to develop and maintain an efficient and economical pipeline system for the conveyance of gas (Gas Act, section 9(1)(a)), However in our view, full consideration will need to be given to a number of issues relating to the ET, including whether or not the GDNs proposal unduly discriminates between new and existing customers. We do not consider that the GDNs consultation on the ET requires resolution in conjunction with the decision on Mod 90, but we do acknowledge that following the decision to approve Mod 90 there may be a separate need to review the future role of the ET in advance of the first interruption tender in 2008. We consider that the delayed implementation timescale will provide enough time to conclude this process.

Other benefits

5.31. Although Ofgem has not sought to quantify the following benefits, Ofgem considers that these benefits could be sufficient on their own to justify the reform of interruption arrangements, given their potential significance.

Security of supply

5.32. Ofgem is concerned that the current arrangements for interruption on the GDNs might create the impression that more interruption is available than would be available in practice if required. The very low level of actual interruption in recent years might mean that many customers are not expecting to be interrupted, and so might not be prepared if they were actually interrupted. Ofgem recognises that many customers will have made appropriate arrangements to cope with interruption, e.g. installing and maintaining back-up fuel supplies, particularly given the extensive use of commercial interruption in recent years. However, as GDNs use the amount of interruptible capacity declared by customers as an input to their planning processes, it is very important for security of supply that the GDNs can be confident this interruption will actually be available.

5.33. Under the proposals in Mod 90, the customers from which GDNs purchase interruption services will have a specific contract, so will have a more individual and certain arrangement than the current standard contracts. The individual nature of the new arrangements should increase the preparedness of sites for being interrupted. In addition, if GDNs purchase less interruption in the future than is currently available, customers might consider that they have a greater likelihood of being interrupted and they will have a stronger incentive to make appropriate arrangements to cope with being interrupted. This will give the GDNs greater certainty about the interruption capacity that will be available, thereby improving security of supply.

5.34. Respondents to the October 2006 follow-up consultation were concerned that the reforms to the interruption arrangements could reduce security of supply when there is a gas supply emergency. Although the GDNs purchase interruption capacity to address transportation constraints on their network, the interruption capacity can

also be used in the first stage of a gas supply emergency prior to firm load shedding being required. Respondents to the consultation were concerned that any reduction in interruption capacity purchased by the GDNs under Mod 90 would increase the risk of moving to firm load shedding more quickly, and that because less sites are interruptible, they would be less able to participate in load shedding.

5.35. Under the current arrangements there is, as far as Ofgem understands, no specific requirement under their safety cases for the GDNs to contract for a minimum amount of interruption to cover gas supply emergencies, but the amount of interruption available to the GDNs for transportation purposes has been considered sufficient to cover gas supply emergencies, even though the amount varies from year to year as sites change from interruptible to firm status. The HSE must ultimately be satisfied that under new arrangements the GDNs continue to be able to submit a safety case that the HSE is content with. Among the advantages of a one year delay in implementing Mod 90 is that the GDNs and the HSE will have longer to consider any implications for the safety cases arising from Mod 90.

5.36. The impact of changes to commercial arrangements on security of supply are very difficult to quantify directly, and will ultimately only be tested under very severe weather conditions. Ofgem considers that reform to the interruption arrangements for the GDNs can improve security of supply by providing greater certainty about the availability of interruption for constraints on the GDN network. It is for the HSE to consider whether any specific measures should accompany the reforms to address the availability of interruption capacity for gas supply emergencies.

A more flexible market for the offering and purchasing of interruption services

5.37. Under the current arrangements GDNs have to accept the amount of interruption that daily metered customers choose to make available, subject to GDNs ability to declare a site to be an NSL. Therefore, GDNs have virtually no control over the implicit cost of interruption for other customers through exit capacity discounts. Under the current arrangements customers can only sign up for a standard 45 day interruption product, although the GDNs can declare an interruptible site to be a (Transporter Nominated Interruptible) TNI, which entitles the GDN to interrupt the site for more than 45 days a year.

5.38. Ofgem expects that customers will benefit, when Mod 90 is implemented, from GDNs offering a wider range of interruption products, including contracts for more than one year and different total numbers of days of potential interruption. As customers have a range of different business models, a wider range of options will allow customers to offer interruption services that better fit with their business model than a standard 45 day contract.

5.39. In the discussions at the development workgroup for Mod 90 some customer representatives argued that customers would be reluctant to enter into contracts for interruption at least three years ahead because of the uncertainty about their business operations that far ahead. This will only be a risk for customers who might

want to become firm in the future, as customers who reduced their offtake or ceased to offtake within the three years would not be in breach of an interruptible contract with the GDN.

Operation of the wholesale electricity market

5.40. Some sites that are currently interruptible on the GDNs are gas fired power stations (CCGTs). Whether a CCGT would prefer to keep generating or have its gas supply interrupted will depend on the spread between its purchase price for gas and the price it can obtain for selling electricity, taking account of its other costs. Where the price of electricity compared to the cost of wholesale gas is such that generating is more profitable than being interrupted, it would prefer to continue generating, and vice versa. Unlike many industrial sites, CCGT's will choose to be interruptible even without back-up fuel supplies, although the availability of back-up fuel supplies can increase their options for interruption.

5.41. Under the current arrangements for interruption a CCGT has no mechanism to signal the value it places on being interrupted compared to generating, beyond the decision to have the standard 45 day interruptible contract at the price of avoiding the exit capacity charge. Therefore, when a GDN chooses which site to interrupt it might inadvertently choose a CCGT who would place a higher value on continuing to generate compared to another CCGT. In effect this allows a less "efficient" CCGT to continue to generate, while the more "efficient" CCGT would be interrupted. The knock-on effect of this decision is that prices in the wholesale electricity market will be higher than they would have been if the more "efficient" generator had continued to generate.

5.42. Under Mod 90, all customers who wanted to offer interruptible services, including CCGTs, would be able to signal the value they placed on being interruptible. This will allow those CCGT's who value being allowed to continue to generate the most to signal this in their offers to be interrupted. If the GDNs choose to purchase interruption from CCGTs they will then interrupt them in a price order that better reflects the relative value to these CCGTs of being able to continue generating. The knock on effect of GDNs choosing to interrupt CCGTs in price order will be that wholesale electricity prices are cheaper than would otherwise be the case because more "efficient" CCGTs are continuing to generate.

5.43. Due to the three year lag between the tenders for interruption and the year for which interruption contracts will apply, there will still be differences between the relative cost and value to CCGTs of being interrupted and the order in which they are chosen to be interruptible. However, unlike the current arrangements, Mod 90 provides an opportunity for CCGTs to signal three years out their best estimate of their relative value of being interruptible. Therefore, Mod 90 can be expected to improve the operation of the wholesale electricity market.

5.44. Ofgem has classified this as a qualitative benefit because it is very difficult to compare the potential benefits for the operation of the wholesale electricity market before and after reform of the GDN interruption arrangements. Assumptions would

have to be made about how often a choice would arise for a GDN about whether to interrupt a CCGT and the potential difference in the wholesale electricity price if a less "efficient" generator continued to generate.

5.45. Respondents to Ofgem's October 2006 draft IA considered that Ofgem had overstated the likely benefit from interactions with the wholesale electricity market, principally because there are a relatively small number of CCGTs connected to GDNs, and concern that CCGTs might consider the risks of contracting for interruption up to 3 years ahead to be too great, and not participate in the new arrangements. Ofgem accepts that there are relatively few CCGTs connected to the GDNs which limits the potential size of this benefit. However, Ofgem considers that CCGTs might be more likely than industrial sites to want to participate in new arrangements because their participation does not necessarily require back-up fuel supplies to be available.

5.46. Although the benefit is difficult to quantify, Ofgem's considers that in some circumstances, particularly where supply and demand in wholesale electricity markets were relatively tight, the effect could be quite significant (although limited by the number of CCGTs connected to GDNs), as additional generation capacity would set the spot price for wholesale electricity.

Wider economic benefits

5.47. The same effect as is discussed above for generators will also be potentially present across the wider economy. A site might be chosen to be interrupted by the GDN when another site would place less value on being interrupted. This will cause "inefficiency" and higher costs through the higher costs paid for back-up fuel by the site chosen to be interrupted or/ and the reduced output of the site interrupted, which will increase the price for the products produced by the site, in whichever industry it is operating. If a site places a higher value on being interrupted than another site then interrupting the site that has the higher value will create knock on "inefficiencies" and higher costs.

5.48. As with the potential interactions with the electricity market, Mod 90 would allow sites to signal the relative value they placed on being interrupted. If GDNs have incentives to minimise the costs of interruption as part of efficiently meeting their planning standard and maintaining security of supply, they will have an incentive to accept the lowest priced offers to be interrupted. This will have knock-on efficiency benefits throughout the economy. As with the more efficient operation of the wholesale electricity market, the three year lead time for interruption contracts will mean that this benefit will not remove some "inefficiencies" in the order in which sites are chosen to be interruptible, but will improve the choices relative to the current arrangements where customers cannot signal their relative cost and value of being interrupted.

5.49. As with the potential interactions with the wholesale electricity market, Ofgem has classified this as a qualitative benefit. This reflects the difficulty in estimating the potential impact across the economy of the different order of interrupting sites under the current arrangements, compared to Mod 90. Although the impact is

difficult to quantify it could be quite significant where a company's production processes require a relatively large amount of gas.

Comparative competition between GDNs

5.50. Under Mod 90, GDNs would decide how much interruption capacity to purchase, and would be able, through the design of tenders for interruption, to influence the price per unit of interruption. Therefore, in principle it will be possible to compare over time GDNs performance in purchasing interruption, and more generally in efficiently meeting their planning standards. Respondents to the October 2006 draft IA had mixed views about the opportunities for applying comparative competition to the GDN's purchases of interruption capacity. Some of the GDNs noted that the different characteristics of the networks would make robust comparisons very difficult. Ofgem accepts that while any comparisons would have to take account of the specific circumstances of each GDN, it should be possible for Ofgem to compare GDNs relative performance in purchasing interruption, such as the per unit price paid.

5.51. Ofgem would be able to use this comparative information to secure benefits for customers through future incentives for GDNs to achieve and exceed the performance of the most efficient GDNs in purchasing interruption. It is very difficult to estimate in advance the value of these benefits, particularly as they are unlikely to start being realised until the price control that is put in place in 2013.

Summary

5.52. Ofgem considers that there are plausible scenarios involving investment cost savings that could lead to the quantitative benefits of interruption reform exceeding the costs estimated in Chapter 4. In addition, Ofgem has identified five benefits of interruption reform that have not been quantified, but which Ofgem considers could also lead to significant benefits for customers. Overall Ofgem considers that there is a reasonable case that the benefits of interruption reform could be expected to exceed the costs.

6. Environmental and Social Impact

Chapter Summary

This chapter considers the environmental and social impacts of implementing modification proposal 90 to reform interruption arrangements.

Introduction

6.1. In this section we consider the potential environmental and social impact of the proposals for GDNs interruption reform under the following headings:

- environmental impact;
- health and safety;
- distributional effect;
- impact upon small businesses; and
- risks and unintended consequences.

6.2. Ofgem did not receive many comments on these aspects of the draft IA. To the extent comments were received they mainly related to security of supply issues associated with health and safety, the distributional impact on customer charges of changes to the interruption arrangements and the risk of customers who have dual fuel capability facing a write down in the value of their assets.

Environmental impact

6.3. Ofgem does not expect the reform of the interruptions arrangements on the GDNs to lead to any direct adverse impact on the environment. It is hoped that to the extent that reform of the interruption arrangements promotes more efficient capital expenditure, any environmental impact will be positive. The size of this impact will depend on the circumstances of specific projects, e.g. whether network reinforcement is required in national parks or greenfield sites, but can reasonably be assumed to be a function of any predicted capital expenditure savings.

Health and safety

6.4. We have discussed in Chapter 4 the potential impact on security of supply and emergency arrangements of the reforms. Respondents to the draft IA raised concerns that as a result of reform less interruption would be available at the early stages of a gas supply emergency, so stage 3 of emergency arrangements (firm load shedding) would be reached sooner.

6.5. GDNs are purchasing interruption capacity for managing their transportation networks, whereas shippers have primary responsibility for ensuring that sufficient gas is made available to meet their customers' demands. Under the current arrangements and Mod 90, the GDNs do not have any responsibility for purchasing interruption for gas supply emergencies. Under the current arrangements the interruption available for transportation constraints has also been considered to be available for gas supply emergencies, although no specified level of interruption for gas supply emergencies has been set, as far as Ofgem is aware. The HSE will need to be satisfied that under new arrangements it is able to approve any amendments to the GDN's safety cases and the safety case of the National Emergency Co-ordinator, including in relation to gas supply emergencies.

6.6. Ofgem does not consider that the reform proposals will have any other effect on health and safety. If the HSE has any concerns about the impact of Mod 90 on the GDNs safety case then further modification proposals could be considered to address these concerns.

Distributional effects

6.7. As payment for assuming the risk of being interrupted, interruptible customers currently do not pay exit capacity charges on the NTS or the distribution networks. This discount results in firm customers currently paying a higher proportion of overall transportation charges and a higher average transportation charge per customer than interruptible customers do. Under the current arrangements customers nominate themselves to be interruptible and there is no limit to the number of interruptible customers that the GDNs can accept. This allocation of interruptible rights means that the distributional effect on transportation revenue between firm and interruptible customers is potentially unbounded.

6.8. Ofgem acknowledges that the amount the GDNs will have to pay for interruptible capacity under the reformed arrangements will effectively continue to be a reallocation of allowed revenue between firm and interruptible customers. However, we consider the fact that the GDNs currently have no ability or incentive to minimise this effect, to be a major shortcoming of the existing arrangements. By forcing GDNs to review the volume of interruption they need to contract for, and by developing arrangements where only customers that the GDN requires to be interruptible receive interruption payments, implementing Mod 90 should have the effect of making the distributional impact of contracting for interruptible services more cost reflective.

6.9. The precise impact of any change in charges as a result of interruption reform will depend on specific proposals to change charges. However, if interruption reform results in the total amount paid for interruption being less than the total value of the current interruptible discount, this will amount to a reduction in the reallocation of revenue derived between firm and interruptible customers. It is likely that this would result in existing firm customers, including all domestic and small business customers being slightly better off, while existing interruptible customers who were not contracted for interruption under the new arrangements would be worse off.

Impact on small businesses

6.10. Under the existing regime and under the reform proposals, only customers flowing daily metered loads greater than 200,000 therms/ annum will be able to purchase interruption contracts. Ofgem would not expect a small business to have a daily metered gas supply, so Ofgem does not foresee that interruption reform will have any direct impact on small businesses. There could be a small indirect benefit if, as discussed above, firm transportation charges fall slightly because of a reduction in the effective payments for interruption.

Risks and unintended consequences

6.11. It is has been argued that customers who invested in back-up fuel arrangements under the current regime, in the knowledge that they could determine their own interruptible status and therefore be assured of avoiding the exit capacity charge, will be faced with "stranded assets" if they fail to win interruption contracts under the reform proposals. A number of respondents raised this concern in response to the draft IA. A consumer representative estimated that the write down in value of the assets could be up to £75m.

6.12. Ofgem only takes account of forward looking efficient costs when developing IAs, so costs already incurred for previous investments would not be considered as these costs will not directly affect future decisions. To that extent any reduction in the value of back-up fuel capability assets as a result of reform of the interruption arrangements is not directly relevant to the IA.

6.13. Although costs already incurred are not directly considered in the IA, Ofgem does not consider that changes to the interruption arrangements for GDNs would necessarily undermine the case for investment in back-up fuels. Under mod 90 customers who are chosen to be interruptible will have certainty about the contractual arrangements up to 3 years in advance and contracts can run for up to 5 years beyond this. As customers who are chosen to be interruptible will receive a price arising from an open tender, the payment will also better reflect their costs and value of being interruptible than the current standard administered price.

6.14. While investments in back-up fuel capability will be important for many customers who are deemed interruptible by the GDN, customers' decisions to invest in back-up fuel capability are also likely to be affected by their intention to self or commercially interrupt (through contracts with shippers) at times of relatively high wholesale gas prices. Some customers will also need back-up fuel capability because of the costs they would incur from any unplanned supply interruption. Therefore, while all revenue flows would have significance for investment decisions of this nature, it is not clear that reforms of the GDN interruption arrangements would necessarily undermine the case for investment in back-up fuel capability by customers, or render existing investments in back up facilities stranded assets.

6.15. While there has been no absolute certainty in advance of Ofgem's decision about Mod 90 that reform of interruption arrangements could take place, customers will have been aware that reform of interruption arrangements has been actively considered by Ofgem and gas transporters since the late 1990's. Therefore, while the precise nature of any reform has been uncertain, customers would have been aware of the possibility of reform when making investment decisions for back-up fuels.

7. Summary of costs and benefits

7.1. Table 7.1 below summarises the costs and benefits of reform that Ofgem has estimated for a discount rate of 5.25%. For each of the benefits that have not been quantified we have given an initial indication of how significant Ofgem's considers they might be.

Table 7.1 - Summary of the costs and benefits of interruptions reform

Categories	Costs	Benefits
Costs		
▪ GDNs and Xoserve	£18.1m	
▪ Shippers	£8.3m	
▪ Customers	£13.6m - 27.2m	
▪ Potential pipeline reinforcement	///	
Benefits		
▪ Investment efficiencies		£27m- £135m
▪ Security of supply		
▪ More flexible contracting		///
▪ Wholesale electricity market efficiencies		//
▪ Economy wide dynamic benefits		//
▪ Comparative competition		//
Total	£40m - £53.6m	£27m- £135m

7.2. Ofgem has not quantified some of the benefits of reform, but many of these might be sufficient on their own to justify interruptions reform. For example, under tight supply demand conditions the benefits of more efficient operation of the wholesale electricity market through lower prices, could be very considerable.

7.3. Although it is not considered to be a direct benefit of interruption reform because it does not affect the GDNs total allowed revenue (paragraphs 6.7-6.9), Ofgem considers the potential distributional effect on transportation charges to be an important impact of reform, which if the GDNs are incentivised to minimise the cost of paying for interruption, will have the potential to benefit the majority of gas customers, including all domestic customers.

Appendices

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Appendix 1 - Consultation Questions

1.1. In its draft IA on Interruption Reform, published in Appendix 2 of its consultation document (Reform of interruption arrangements on gas distribution networks - An update 191/06), Ofgem sought the views of respondents about a number of questions as set out below:

Question1: Do interested parties agree with the estimate of the costs of implementing GDN interruptions reform?

Question2: Do interested parties agree that Ofgem has identified the appropriate benefits of reform of the GDN interruption arrangements?

Question3: Do interested parties agree with Ofgem's estimate of the range of potential quantitative benefits of GDN interruptions reform?

List of Respondees

List	Name
1	Association of Electricity Producers
2	Chemical Industries Association
3	E.ON UK
4	EDF Energy
5	energywatch
6	INEOS Chlor
7	Major Energy Users' Council
8	National Grid Gas Distribution
9	National Grid Transmission
10	Northern Gas Networks
11	RWE npower
12	Scotia Gas Networks
13	Statoil UK
14	Total Gas and Power Ltd
15	Wales and West Utilities
16	Xoserve

Summary of Responses

Responses received by Ofgem which were not marked as being confidential have been published on Ofgem's website www.ofgem.gov.uk. Copies of non-confidential responses are also available from Ofgem's library.

A full summary of responses to Ofgem's draft IA on interruption reform can be found in Chapter 3 of this document.

Appendix 2 – The Authority's Powers and Duties

1.1. Ofgem is the Office of Gas and Electricity Markets which supports the Gas and Electricity Markets Authority ("the Authority"), the regulator of the gas and electricity industries in Great Britain. This Appendix summarises the primary powers and duties of the Authority. It is not comprehensive and is not a substitute to reference to the relevant legal instruments (including, but not limited to, those referred to below).

1.2. The Authority's powers and duties are largely provided for in statute, principally the Gas Act 1986, the Electricity Act 1989, the Utilities Act 2000, the Competition Act 1998, the Enterprise Act 2002 and the Energy Act 2004, as well as arising from directly effective European Community legislation. References to the Gas Act and the Electricity Act in this Appendix are to Part 1 of each of those Acts.[10]

1.3. Duties and functions relating to gas are set out in the Gas Act and those relating to electricity are set out in the Electricity Act. This Appendix must be read accordingly[11].

1.4. The Authority's principal objective when carrying out certain of its functions under each of the Gas Act and the Electricity Act is to protect the interests of consumers, present and future, wherever appropriate by promoting effective competition between persons engaged in, or in commercial activities connected with, the shipping, transportation or supply of gas conveyed through pipes, and the generation, transmission, distribution or supply of electricity or the provision or use of electricity interconnectors.

1.5. The Authority must when carrying out those functions have regard to:

- The need to secure that, so far as it is economical to meet them, all reasonable demands in Great Britain for gas conveyed through pipes are met;
- The need to secure that all reasonable demands for electricity are met;
- The need to secure that licence holders are able to finance the activities which are the subject of obligations on them[12]; and
- The interests of individuals who are disabled or chronically sick, of pensionable age, with low incomes, or residing in rural areas.[13]

1.6. Subject to the above, the Authority is required to carry out the functions referred to in the manner which it considers is best calculated to:

[10] entitled "Gas Supply" and "Electricity Supply" respectively.
[11] However, in exercising a function under the Electricity Act the Authority may have regard to the interests of consumers in relation to gas conveyed through pipes and vice versa in the case of it exercising a function under the Gas Act.
[12] under the Gas Act and the Utilities Act, in the case of Gas Act functions, or the Electricity Act, the Utilities Act and certain parts of the Energy Act in the case of Electricity Act functions.
[13] The Authority may have regard to other descriptions of consumers.

- Promote efficiency and economy on the part of those licensed[14] under the relevant Act and the efficient use of gas conveyed through pipes and electricity conveyed by distribution systems or transmission systems;
- Protect the public from dangers arising from the conveyance of gas through pipes or the use of gas conveyed through pipes and from the generation, transmission, distribution or supply of electricity;
- Contribute to the achievement of sustainable development; and
- Secure a diverse and viable long-term energy supply.

1.7. In carrying out the functions referred to, the Authority must also have regard, to:

- The effect on the environment of activities connected with the conveyance of gas through pipes or with the generation, transmission, distribution or supply of electricity;
- The principles under which regulatory activities should be transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed and any other principles that appear to it to represent the best regulatory practice; and
- Certain statutory guidance on social and environmental matters issued by the Secretary of State.

1.8. The Authority has powers under the Competition Act to investigate suspected anti-competitive activity and take action for breaches of the prohibitions in the legislation in respect of the gas and electricity sectors in Great Britain and is a designated National Competition Authority under the EC Modernisation Regulation[15] and therefore part of the European Competition Network. The Authority also has concurrent powers with the Office of Fair Trading in respect of market investigation references to the Competition Commission.

[14] or persons authorised by exemptions to carry on any activity.
[15] Council Regulation (EC) 1/2003

Appendix 3 - Glossary

B

Business Planning Questionnaire (BPQ)

Expenditure and output information requested by Ofgem from the GDNs to inform decisions about setting the price control.

C

Capacity charges

These charges account for 50 percent of the revenue recovered by GDNs from distribution use of system charges. Capacity charges are applied to the peak-day demand (in pence per peak day KWh per day).

Capital expenditure

Expenditure on investment in long lived distribution assets, such as gas pipelines.

Commodity charges

These charges account for 50 percent of the revenue recovered by GDNs from distribution use of system charges. Commodity charges are applied to the annual demand (in pence per kWh).

D

Daily Metered (DM)

Supply points with meters which read volumes of gas consumed either on a continuous or on a daily basis.

Distribution Use of System (UoS) Charges

Distribution use of system charges are levied by GDNs to gas shippers for the use of the distribution system to transport gas to the end user. They comprise capacity and commodity charges. Approximately 50 percent of the revenue recovered from use of system charges comes from capacity charges and 50 percent from commodity charges.

E

Economic Test (ET)

The ET is a financial assessment tool which was introduced by NGG in 1998 to identify whether a new load should pay a contribution towards the reinforcement

required for its connection. It compares the incremental cost of connecting a customer to the gas distribution network with the expected revenue from distribution charges associated with that customer, using NPV calculations.

G

Gas Distribution Network (GDN)

GDNs transport gas from the NTS to final consumers and to connected system exit points. There are currently eight GDNs in Great Britain which comprise twelve LDZs.

Gas Distribution Price Control Review (GDPCR)

The review of the price control applying to gas distribution networks. The review will extend the existing price control for the year 2007/8 and reset the control for the period commencing 1 April 2008.

I

Independent Gas Transporter (IGT)

IGTs own and operate small local gas networks and levy distribution transportation charges on shippers.

L

Local Distribution Zones (LDZs)

LDZs are low pressure pipeline systems which deliver gas to final users and Independent Gas Transporters. There are twelve LDZs which take gas from the high pressure transmission system for onward distribution at lower pressures.

N

National Grid Gas (NGG NTS)

The licensed gas transporter responsible for the gas transmission system, and four of the regional gas distribution companies.

National Transmission System (NTS)

National Grid's high pressure gas transmission system. It consists of more than 6,400 km of pipe carrying gas at pressures of up to 85 bar (85 times normal atmospheric pressure).

Network Sensitive Load (NSL)

GDNs can designate an offtake point as an NSL if certain pressure levels would be triggered in the network if the offtake at the site was not interrupted. GDNs can interrupt NSLs more than the 45 days of interruption allowed under the UNC for other interruptible sites.

NTS Offtake Capacity

Built to ensure sufficient pipeline capacity is available to convey gas from the NTS to the GDNs and NTS direct connects at the required rate and quantities.

O

One in Twenty Obligation

A licence obligation imposed by Standard Special Condition A9 (Pipeline System Security Standards) upon both NGG NTS and the GDNs.

Operating Expenditure (Opex)

Costs such as the staff costs, repair costs, maintenance expenditures, and overheads associated with the day to day operation of the network.

R

RPI-X

The form of control currently applied to network monopolies. Each company is given a revenue allowance in the first year of each control period. The price control then specifies that in each subsequent year the allowance will move by 'X' per cent in real terms.

T

Transmission Price Control Review (TPCR)

The TPCR will establish the price controls for the transmission licensees which will take effect in April 2007 for a 5 year period. The review applies to the three electricity transmission licensees, National Grid Electricity Transmission, Scottish Power Transmission Limited, Scottish Hydro-Electric Transmission Limited and to the licensed gas transporter responsible for the gas transmission system, National Grid Gas.

U

Uniform Network Code (UNC)

As of 1 May 2005 the UNC replaced National Grid Gas' Network Code as the contractual framework for the NTS, GDNs and system users.

Appendix 4 - Feedback Questionnaire

1.1. Ofgem considers that consultation is at the heart of good policy development. We are keen to consider any comments or complaints about the manner in which this consultation has been conducted. In any case we would be keen to get your answers to the following questions:

- Does the report adequately reflect your views? If not, why not?
- Does the report offer a clear explanation as to why not all the views offered had been taken forward?
- Did the report offer a clear explanation and justification for the decision? If not, how could this information have been better presented?
- Do you have any comments about the overall tone and content of the report?
- Was the report easy to read and understand, could it have been better written?
- Please add any further comments?

1.2. Please send your comments to:

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