

**NGC system operator price control and
incentive schemes under NETA**

Final proposals

December 2000

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Summary

Background

This document sets out Ofgem's final proposals on the role, incentives and regulation of the National Grid Company plc (NGC) as System Operator (SO) under the new electricity trading arrangements (NETA). NGC's role as SO involves operating the transmission system and ensuring that generation and demand are matched (energy balancing) and maintaining the quality and security of supplies (system balancing). In fulfilling this role, NGC incurs a range of costs that are ultimately borne by customers.

Currently, all the internal costs¹ of NGC's Transmission Business are regulated by a single price control covering both system operation and the costs of developing and maintaining the transmission system (the transmission asset owner or TO role). In addition to the price control, there are a series of incentive schemes on NGC relating to the external SO costs (e.g. contracts for balancing services²) that are incurred in balancing the electricity system. Under each of these incentive schemes on external SO costs, a target level of costs is set. If actual costs are above/below the target, NGC pays/keeps a proportion of any difference.

Both sets of incentive schemes (the price control and the external SO cost schemes) have been successful in reducing costs of system operation and transmission over time, to the benefit of customers. NGC has reduced transmission costs by 30% in real terms since 1990. NGC has also achieved reductions in the costs of balancing the system. The external costs of operating the transmission system (excluding the costs of Unscheduled Availability³ and transmission losses) have fallen in real terms from a peak of £680m in 1993/94 to £208m in 1999/00 (April 2000 prices).

However, Ofgem has expressed some concerns about the operation of the current arrangements and the extent to which they fully align NGC's incentives with customers' interests. As customers ultimately pay the full costs of system operation, it is in customers' interests that NGC has strong incentives to reduce the total costs of system

¹ For example, NGC's staff and IT system costs.

² A complete list of balancing services is included within 'NGC systems operations under NETA: transitional arrangements. A consultation document,' April 2000. Essentially they cover actions in the Balancing Mechanism (BM) and Ancillary Services (AS). (See footnote 7 for a definition of AS.)

³ Unscheduled Availability payments are similar to Capacity Payments but are made to generators who are available but not included in the day-ahead schedule.

operation. NGC faces five separate incentive schemes relating to the costs of system operation⁴ and NGC's exposure to different elements of the total costs varies under each scheme. Arguably, NGC faces the strongest incentive to reduce its own (internal) costs as it keeps all of the benefits of any cost reduction whereas NGC can only retain a proportion of any reduction in costs below the target level under the other schemes.

Ofgem has repeatedly expressed concern that this may lead to perverse incentives for NGC by encouraging NGC to arbitrage between incentive schemes. Under the current arrangements, NGC can increase the payments it receives without a corresponding reduction in the total costs customers face. Ofgem has therefore argued for some time for the introduction of a single incentive scheme for all system operator costs. Under such a scheme, NGC would have a strong incentive to reduce the total costs of system operation and would fully align its interests with those of customers.

NGC's role under NETA

With the introduction of the NETA, NGC's incentive arrangements will need to be developed since its role as SO will change. Under the current trading arrangements, NGC is responsible for forecasting system demand, scheduling generation and centrally despatching generation. Under NETA, market participants will contract bilaterally. Suppliers will contract with generators to meet their own contracted demand, will forecast their own demand and will face strong commercial incentives under the Balancing and Settlement Code to balance their own portfolio through their contracts. Generators will self-despatch to meet their contracted generation levels and will also face strong incentives to balance their actual generation to their contract position. NGC will be responsible for the residual purchasing and selling of energy to keep the system in energy balance. NGC will remain responsible for maintaining the system balance by contracting for other balancing services such as reactive power. As a result, NGC's system operator function will need to develop and acquire new skills including trading to fulfil its new role efficiently. The incentive arrangements will also need to be developed, as many of the reference prices on which the current arrangements are based will not exist under the new arrangements.

⁴ These are: the transmission price control; Transmission Services Uplift, Reactive Power Uplift, Energy Uplift and Transmission Losses incentive schemes.

In the context of these roles, NGC's forecast of the costs of operating and balancing the transmission system under NETA and having conducted an extensive consultation process, Ofgem has developed final proposals for a SO incentive scheme at the start of NETA. These proposals are designed around a single incentive scheme (on external and internal costs) in recognition of the change in NGC's role under NETA.

Form, scope and duration of SO incentive scheme

For the reasons outlined above, Ofgem is proposing that all NGC's SO costs (internal and external) are included within the umbrella of a single incentive scheme. For example, the expenditure of £10m on internal systems might allow NGC to reduce its external costs by, say, £12m to the benefit of customers through a reduction in the external costs. Thus, in setting incentives on SO internal and external costs, Ofgem is seeking to ensure that NGC tries to reduce the total costs of system operation (i.e. internal plus external costs). Taken together, the schemes should focus NGC on reducing total SO costs (both internal and external), subject to ensuring security and quality of supplies.

On the form of the incentive on SO costs, Ofgem proposes that a sliding scale form of incentive remains appropriate. The duration of the incentive on internal costs will be from NETA Go live to 31 March 2002.

Ofgem also proposes that the scope of the incentive on SO internal costs should cover all SO costs identified as part of the review of the Transmission Business price control and the incremental costs of preparing for and operating under a NETA. For the initial SO incentive scheme, separate SO internal and external incentives will operate in the period from 1 April 2001 to 31 March 2002 but the sharing factors for the two schemes will be the same. Ofgem proposes that there would be no cap or collar in relation to the incentive on SO internal costs. The duration of the incentive on SO internal costs would be initially one year. However, Ofgem has identified a five year cost stream and considerations in future consultations on SO internal costs will relate only to the form of the incentive (e.g. sharing factors) on SO internal costs and not the overall level of allowable costs.

SO external costs

Ofgem believes that NGC has been unduly pessimistic in its forecast of balancing costs under NETA and thus that its proposed target for the initial SO incentive scheme under NETA is too high. We have developed our final proposals based on NGC's response to a number of questions posed by Ofgem and further analysis where appropriate.

Ofgem views the incentive scheme target for the initial SO incentive scheme target under NETA should be £471m over the period 1 April 2001 to 31 March 2002.⁵ This represents a £71m or 13% reduction against NGC's revised forecast of balancing costs under NETA.

Ofgem recognises that there is a significant gap between our and NGC's view of possible balancing costs under NETA. In order to bridge this gap, Ofgem proposes four options for NGC's incentive arrangements under NETA. Ofgem believes that these options provide an acceptable balance between customers' and NGC's interests given the different views about the risk/reward profile that NGC would face.

Table 1 - Ofgem's final proposal on SO external costs

	Ofgem Option 1	Ofgem Option 2	Ofgem Option 3	Ofgem Option 4
Incentive Scheme Target	£471m		£485m	
Deadband	-	£471m to £517m	-	£471m to £500m
Upside Sharing Factor	50%	25%	40%	40%
Downside Sharing Factor	10%	20%	12%	12%
Cap	£60m	£30m	£45m	£45m
Collar	£12m	£25m	£15m	£15m
Duration	One Year with option for rollover of target* to second year	One year scheme	One year scheme	One year scheme

*Subject to an adjustment reflecting lower volumes of response and reserve holding.

⁵ This target will need to be increased, proportionally, for a Go live date earlier than 1 April 2001 and reduced proportionally for a Go live date after 1 April 2001.

SO internal costs

Ofgem has reviewed the following categories of SO operational expenditure:

- ◆ the pre-NETA "SO Base" costs;⁶
- ◆ the NETA set-up costs necessary to manage the implementation of NETA;
- ◆ the projected net incremental costs for the SO function as a consequence of NETA; and
- ◆ costs associated with the delay to the implementation of NETA.

A full review of NGC's proposed capital expenditure was conducted for the Transmission Business price control and consequently Ofgem's analysis of the SO capital expenditure mainly related to ensuring that the split of assets between the TO and SO functions was appropriate. In addition, Ofgem also considered the costs and justification for the additional capital expenditure⁷ resulting directly from NETA.

Following an extensive review of NGC's submission, Ofgem proposes to set NGC to recover the following targets for total operating and capital costs.⁸

Table 2 – Total SO internal cost recovery

£m (2000 prices)					
Category	01/02	02/03	03/04	04/05	05/06
Operating expenditure	58.5	49.1	47.1	44.5	45.2
Capital expenditure	21.3	23.6	25.3	25.9	26
Total costs	79.8	72.7	72.4	70.4	71.2

For 2000/01, the sharing factors for SO internal costs will be set equal to the sharing factors for whichever SO external cost option NGC chooses. Overall, Ofgem believe

⁶ These are the initial costs considered within the Price Control proposals in June 2000 (both transmission owner and system operator), and did not take into account the impact of NETA.

⁷ Both for the TO and SO businesses.

⁸ Ofgem has accepted NGC's argument that a small proportion of these costs are outside of NGC's control and therefore should not be subject to incentive arrangements. This is dealt with in more detail in the document.

that the final proposals presented in this document represent a challenging but fair incentive for NGC. We also believe they represent an appropriate balance between risk and reward for NGC. We have taken significant steps with respect to the form of the incentive arrangements to mitigate the risks and uncertainties NGC highlighted in the initial move to operating the transmission system under NETA. Our proposals provide a strong incentive upon NGC to manage costs and continue to deliver savings to customers.

If NGC does not accept Ofgem's final proposals, Ofgem would not propose modifications to the Transmission Licence to implement our proposed new incentive arrangements as contained in this document. Instead, Ofgem proposes that all of the efficiently incurred costs associated with the SO function (internal and external) be directly passed through to participants (and ultimately customers). Ofgem would regulate the SO business to ensure that costs remained at efficient levels by actively monitoring the SO's actions. Where necessary, Ofgem's could use its statutory powers to enforce licence conditions to ensure that NGC operates the transmission system in an efficient, economic and co-ordinated manner. Subject to the enactment of relevant provisions of the Utilities Act, this would include the power to impose monetary penalties in the event that NGC were found to be in breach of their licence.

1. Introduction

Purpose of this document

- 1.1 This document sets out Ofgem's decisions on the incentive arrangements for National Grid Company plc's (NGC) System Operator (SO) function under the New Electricity Trading Arrangements (NETA), in the light of responses to Ofgem's initial proposals published earlier this year. NGC as SO is responsible for operating the transmission system in England and Wales in real time to ensure an overall balance between demand and supply and to overcome transmission constraints. NGC as owner of the transmission assets is responsible for developing and maintaining the system.
- 1.2 The Transmission Business is currently subject to an RPI-X price control. Ofgem has previously argued that it would be desirable to limit the scope of the Transmission Business price control to the asset owner function, with all the SO costs (internal and external) combined within the umbrella of the SO incentives given the strong interactions between SO internal and external costs.⁹
- 1.3 Thus, this document also sets out Ofgem's final proposals for the regulation of NGC's SO internal costs from April 2001. The combined scheme is intended to provide NGC with a strong incentive to reduce total SO costs (both internal and external), subject to ensuring security and quality of supplies.

Background

Current role of NGC

- 1.4 NGC holds the sole Transmission Licence in England and Wales. In fulfilling its obligations under the Transmission Licence, NGC can be viewed as having two roles - System Operator (SO) and Transmission Asset Owner (TO). As SO, NGC buys and sells a variety of balancing services¹⁰ required to keep the electricity

⁹ The interactions between SO internal and external costs would allow NGC to spend more on internal costs if it believed that any increase would be more than offset by a reduction in external costs. For example, the expenditure of £10m on internal systems might allow NGC to reduce its external costs by, say, £12m to the benefit of customers.

¹⁰ NGC currently uses a combination of Ancillary Services¹⁰ contracts, despatching generators and demand-side bidders on the basis of the offers that they submit into the Pool and utilisation of its own specialist equipment to maintain the system in balance.

system in balance (energy balancing) and maintain the quality and security of supplies (system balancing). In its role as TO, NGC owns and maintains the transmission assets, and undertakes longer-term development of and investment in the transmission system.

Current regulation of NGC

- 1.5 Under the current arrangements, the direct costs of NGC's Transmission Business, i.e. both SO and TO costs, are regulated under a single price control which sets the maximum allowed revenue for the Transmission Business as a whole. The current price control was set for four years and expires in March 2001. Under the price control, NGC faces strong incentives to reduce its own controllable operating expenditure below the level forecast in setting the price control as it can retain the benefits for the duration of the control. NGC also faces an incentive to reduce its capital expenditure below the level forecast in setting the price control subject to continuing to meet its planning standards and meet reasonable demands for new connections.
- 1.6 NGC is also subject to four separate incentive schemes covering its SO role relating to the costs associated with transmission services, reactive power, energy uplift and transmission losses. Broadly speaking, these schemes cover the external costs (energy purchases/sales and contract costs) associated with NGC's SO role (covering energy and system balancing). Under each of the four schemes, NGC is set a target level of costs. If NGC manages to reduce the outturn costs below this target level, it keeps a proportion of the savings, subject to a cap. If the outturn costs are above the target level, NGC must pay a proportion of the extra costs subject to a collar.
- 1.7 Those schemes covering Energy Uplift (the costs of energy balancing in the Pool) and transmission losses (based upon a target volume of losses at a fixed price) are negotiated between suppliers and NGC via the electricity Pool.

- 1.8 The incentive schemes covering Transmission Services Uplift (TSU)¹¹ and Reactive Power Uplift (RPU)¹² are governed by Part 2 of the current condition 4A of NGC's Transmission Licence. For 2000/01, Ofgem and NGC agreed a target cost level for TSU of £201.2m, and for RPU of £46.5m.
- 1.9 The current TSU and RPU incentive schemes have been designed to run from April 2000 to April 2001, with part-year termination arrangements which will be used to wind-up these schemes when NETA is implemented and a new incentive scheme introduced. The Pool-based incentive schemes with NGC on Energy Uplift and transmission losses, cover a similar duration and will automatically cease when NETA is implemented. For 2000/01 NGC and suppliers agreed that the target value for Energy Uplift would be determined by looking at the value of capacity payments from 1 April 2000 to end of September 2000. This has resulted in a zero target value. The target volume of transmission losses has been agreed at 5.13 to 5.33 TWh with a reference price of £25/MWh.
- 1.10 Under the current SO incentive schemes NGC has achieved year on year reductions in the costs of balancing the system. Over the last seven years the external costs of operating the transmission system (excluding Unscheduled Availability payments and transmission losses) have fallen in real terms from a peak of £680m in 1993/94 to £208m in 1999/00 in real terms.

The role of NGC under NETA

- 1.11 Under the Pool, generators must sell their electricity into the Pool and suppliers must purchase their electricity from the Pool, subject to minimum size exceptions. NGC then centrally despatches plant against a merit order constructed from generators bids. One of the basic principles of NETA is that those wishing to buy and sell electricity should be able to enter into freely negotiated contracts. It is expected that under the new trading arrangements, the bulk of electricity will be traded either on power exchanges or through "over the counter" bilateral contracts. Those buying and selling electricity are likely to

¹¹ The TSU scheme covers the costs incurred by NGC in procuring and utilising services required to ensure security and stability of supply, including reserve, frequency response and the cost of resolving transmission constraints.

¹² The RPU scheme covers the cost incurred by NGC in procuring reactive power, which is needed to ensure that the voltage of the system remains within safe limits prescribed by legislation.

include not only physical players - generators and suppliers, but also non-physical traders. The new arrangements will not dictate how electricity will be bought and sold on these exchanges or in bilateral contracts and NGC will no longer centrally despatch generating plant. NETA will however provide:

- ◆ a Balancing Mechanism to help facilitate real time energy and system balancing by NGC, as SO, to maintain security and stability of supply, and
- ◆ a settlement process to settle differences (imbalances) between the notified contractual positions and physical positions of market participants.¹³

- 1.12 The detailed rules associated with these arrangements are contained in the Balancing and Settlement Code (BSC).¹⁴
- 1.13 To fulfil its SO role under NETA, a range of options will be available to NGC, including the despatching of plant by accepting Balancing Mechanism bids and offers and by exercising contracts for balancing services from generation and demand purchased in advance. Some of the balancing services purchased under contract will be similar to the current Ancillary Services purchased by NGC. In purchasing a range of balancing services,¹⁵ NGC will be obliged under a new licence condition to operate the electricity transmission system in an efficient, economical and co-ordinated manner (licence condition 7B(1)).¹⁶
- 1.14 In the consultation document on NETA published in July 1999,¹⁷ Ofgem presented some initial thinking on the role of, and incentives on, NGC as SO and the development of new transmission access and losses arrangements under NETA. The NETA conclusions document¹⁸ discussed respondents' views on the

¹³ Non-physical players can be out of balance if they do not close out their positions since they are deemed to have a zero physical position.

¹⁴ The final draft of the BSC was published on 31 July 2000. Details can be found on the Ofgem NETA website. On 14 August 2000, the designated 'Go Active' date, existing licencees, Pool members and other companies who want to participate in NETA signed the BSC, licence changes to take effect at Go Active and on the introduction of NETA and the Implementation Scheme.

¹⁵ The term "balancing services" is used to cover both services purchased in the Balancing Mechanism and services contracted outside the Balancing Mechanism.

¹⁶ See 'The New Electricity Trading Arrangements, Proposed Licence Conditions', Ofgem/DTI Conclusions Paper, June 2000.

¹⁷ 'The new electricity trading arrangements, Volume 1', Ofgem, July 1999.

¹⁸ 'The new electricity trading arrangements, Ofgem/DTI Conclusions Document', October 1999.

thinking outlined in the July 1999 NETA document but left a detailed discussion of transmission access and pricing and SO incentive related issues to separate consultation processes to be conducted by Ofgem. After initial consultation, Ofgem is expecting to put a further document out in January 2001 on new transmission access and losses arrangements.

Impact of NETA on NGC's SO incentives

1.15 With the introduction of NETA, due to be implemented late in March 2001, the current SO incentive arrangements will need to be revised. The introduction of NETA will see a change in the role of NGC's SO function. As outlined above, NETA will see a move away from a system based on central despatch of generation managed by NGC to a bilaterally traded environment with self-despatch of generation. As a result, the scope of NGC's system operator function will change. NGC is developing a range of new IT systems to allow it to balance the system under the new arrangements. NGC is also building its own trading capability to allow it to continue to manage and reduce the costs of energy and system balancing under NETA. These changes will affect NGC's own costs and need to be reflected in the price control covering the SO internal costs.

1.16 Similarly, the incentive arrangements covering the external SO costs will need to change. The current incentive arrangements are set on the basis of a range of reference prices that are calculated under the current arrangements. With the introduction of NETA, many of these reference prices will cease to exist.

Process to date

The December consultation

1.17 In December 1999, Ofgem issued a consultation document (the 'December Consultation')¹⁹ setting out our further thinking on a number of areas related to the roles of, and incentives on, NGC as SO and TO under NETA. It highlighted that a clearer understanding and separation of the respective roles of the SO and

¹⁹ 'NGC System Operator Incentives, Transmission Access and Losses under NETA, A Consultation Document', Ofgem, December 1999.

TO from a business, operational and regulatory perspective would be desirable.²⁰

- 1.18 Ofgem suggested that NGC should be given discretion in both the procurement and utilisation of balancing services, subject to an appropriate incentive scheme being in place. A further safeguard would be provided by obliging NGC to prepare statements on its Procurement Guidelines and Balancing Principles covering the purchase and use of balancing services. Ofgem argued that, in general, the process of procuring and utilising balancing services should be both transparent and competitive.
- 1.19 Ofgem proposed that there should be a single SO incentive scheme covering both the energy balancing and system balancing costs incurred by NGC in operating the system. We set out our initial view that the scheme should continue to be of a sliding scale or profit sharing form, and that consideration should be given to the costs being based on a target volume of services purchased at a reference price emerging from forward markets. Ofgem considered that this approach would allow NGC, as SO, to take appropriate balancing actions across all of its activities.

April 2000 consultation

- 1.20 In April 2000, Ofgem issued a further consultation document (the 'April Consultation')²¹ that set out, amongst other things, Ofgem's views on the role and activities of NGC under NETA, including our initial thoughts on incentives for NGC as SO and the basis on which NGC should recover the costs of balancing the system under NETA through a Balancing Services Use of System (BSUoS) charge.
- 1.21 The April Consultation expanded on the reasons why Ofgem believes that NGC, as SO, should be allowed discretion in the way in which it balances the system under NETA, so that it can control and reduce the costs of system operation, subject to:

²⁰ It indicated that, at this stage, it was not Ofgem's intention to separately licence the SO and TO functions.

²¹ 'NGC System Operations under NETA: transitional arrangements, A Consultation document', Ofgem, April 2000.

- ◆ the publication of Procurement Guidelines and Balancing Principles;
- ◆ a new SO incentive scheme under NETA; and
- ◆ a new licence obligation on NGC, to operate the transmission system in an efficient, economic and co-ordinated manner (licence condition 7B(1)).

1.22 Ofgem's views on the form, scope and duration of a new incentive scheme for NGC under NETA were also set out in the April Consultation. The document outlined a proposal for including in energy imbalance prices the balancing services contract costs incurred by NGC in balancing the system.²² Ofgem also argued that it would not be reasonable to impose system balancing costs, associated with overcoming transmission constraints, on those who were out of energy balance and a simple method for removing system balancing costs from imbalance cash-out charges was proposed. Finally, Ofgem confirmed its view that costs incurred by NGC in balancing the system should be borne equally by generators and suppliers.²³

The NGC Transmission Business price control review

1.23 In March 2000, Ofgem published a document²⁴ that set out the form, scope and duration of the next NGC price control, which will take effect from 1 April 2001. This provided information on NGC's forecasts of its future operating and capital expenditure requirements. The document also set out Ofgem's initial analysis of NGC's costs over the period of the next control, including its cost of capital. In June 2000, Ofgem published its initial proposals for the NGC Transmission Business price control.²⁵

1.24 Although the initial proposals for NGC's price control covered both SO and TO internal costs, Ofgem had already indicated that, given the strong interactions between SO internal and SO external costs, there would be merit in introducing

²² Although energy balancing contract costs are included in imbalance charges the net revenues (or costs) from imbalance payments are smeared back across all participants.

²³ This was first suggested in the July 1999 NETA document and reiterated in the October 1999 NETA documents.

²⁴ 'The transmission price control review of the National Grid Company from 2001, Initial thoughts consultation document, Ofgem', March 2000.

²⁵ 'The transmission price control review of the National Grid company from 2001, Draft proposals, Ofgem', June 2000.

a split between the regulation of SO and TO costs. This split would enable all SO costs (both internal and external) to be subject to a single incentive scheme. Ofgem also indicated that there would be strong merit in introducing this split for the next price control to begin from 1 April 2001. The 'TO final proposals document'²⁶ published in September 2000 established that the new Transmission Business price control would apply to the revenues of the TO function only.

- 1.25 The proposed TO price control covered a period of 5 years from April 2001 and was based on the RPI-X formula, with X set at 1.5. The allowed TO revenues for 2001/02 are £758m (in 1999/00 prices) which is broadly equivalent to allowing revenues of £800m (in 1999/00 prices) for the Transmission Business as a whole (i.e. including pre-NETA SO internal costs). NGC has agreed to Ofgem's proposals and they will take effect from 1 April 2001.
- 1.26 NGC's SO internal costs were reviewed as part of a separate SO Price Control Review and initial proposals relating to this were also published in September 2000²⁷ (the 'September SO Initial Proposals document'). NGC estimated that, following the implementation of NETA, it will need £226m to cover its SO internal costs for the period 1 April 2001 to 31 March 2006. Ofgem proposed that the target for these costs should be reduced to between £216m and £223m. It was proposed that the SO price control should take effect from April 2001, simultaneously with the new TO price control.

Balancing Services Use of System (BSUoS) charge

- 1.27 Under the current arrangements, most of the SO external costs, including the costs of Ancillary Service contracts, are recovered from suppliers through a Transmission Services Use of System (TSUoS) charge. Under NETA, the BSUoS charge, levied on all BSC parties with metered volumes, will allow NGC to recover its balancing costs and will replace the current TSUoS arrangements.

²⁶ The transmission price control review of the National Grid Company from 2001: TO Final Proposals, September 2000.

²⁷ 'The Transmission Price Control review of the National Grid Company from 2001; System Operation, Initial Proposals', September 2000.

- 1.28 In July 2000, Ofgem/DTI issued a conclusions document²⁸ ('the July 2000 BSUoS document') on the necessary licence modifications to implement the BSUoS charge.
- 1.29 The proposed modifications to NGC's Transmission Licence relating to the BSUoS charge will be implemented under the powers granted to the Secretary of State under the Utilities Act 2000 (the NETA power). Thus, the designated licence condition modification will take effect at NETA Go live, presently scheduled for 27 March 2001. Ofgem/DTI have considered the responses to the July 2000 BSUoS document and have subsequently finalised the licence modifications to be implemented under the NETA power.²⁹ These modifications are presented in Appendix 3 together with the proposed licence changes required to implement the new incentives on SO internal and external costs.
- 1.30 The consequential changes³⁰ to the Master Connection and Use of System Agreement (MCUSA) and its Supplemental Agreements (including the proposed statement of charges for use of the Transmission System in anticipation of NETA) form part of the NETA Implementation Scheme.³¹
- 1.31 NGC has an obligation under Appendix E of the Supplemental Agreements to the MCUSA, to notify users of the transmission system of any changes to its use of system charges in the next financial year. To do this, NGC is required to notify customers by 31 October in the preceding financial year of the intended basis of calculation to be used in the following financial year. NGC is required to confirm this basis of calculation by 30 November in the preceding financial year. The major change in charges for next year has been the removal of SO internal costs from the Transmission Business price control. The current statement of charges has reflected these changes.

²⁸ 'Balancing services use of system under NETA, Proposed modifications to the National Grid Company's licence, Ofgem/DTI conclusions document', July 2000.

²⁹ These further modifications to NGC's Transmission Licence reflecting respondents' views to the July 2000 BSUoS document will now be implemented under Section 11 of the Electricity Act (1989).

³⁰ These amendments have been the subject of consultation between NGC and each of the relevant transmission users. The NETA Implementation Scheme will give effect to the relevant changes to the MCUSA and Supplemental Agreements as from the NETA Go live date.

³¹ The Implementation Scheme provides an implementation plan setting out the key documents that will need to be processed to ensure that participants' liabilities resulting from the NETA implementation process are limited and that industry documentation and data are assessed in readiness for the implementation of NETA.

Ofgem's initial proposals for NGC's SO incentive scheme under NETA

- 1.32 In August 2000, Ofgem published a further consultation document (the 'August 2000 Initial Proposals' consultation')³² that presented conclusions on the form, scope and duration of the initial post-NETA SO incentive scheme, proposals for the target value and other parameters for this scheme, and the proposed draft licence modifications required to implement the new incentive arrangements.
- 1.33 Ofgem proposed that the initial incentive scheme should cover all energy and system balancing costs including reactive power and transmission losses, subject to reducing NGC's exposure to the net imbalance volume at a reference price. We suggested that there should be one bundled incentive scheme whose target would be based on an ex-ante forecast of incentivised balancing costs and confirmed that the initial scheme should continue to take a sliding scale form. We proposed that the initial scheme should last from the introduction of NETA to 31 March 2002.
- 1.34 The August 2000 Initial Proposals document also presented initial proposals for the parameters of the SO external incentive scheme under NETA, based on the then projected Go live date of 21 November 2000. NGC had proposed an incentive scheme target of £774m per year (including an incentive on transmission losses) whereas Ofgem suggested that the target could be lower than NGC's proposal by between 11% and 30% at £545m to £692m (corresponding to a 10-23% reduction for the period from 21 November 2000 to 31 March 2001 and a 11-32% reduction thereafter).
- 1.35 Ofgem argued that further consideration needed to be given to the precise level of the sharing factors for the initial SO incentive scheme under NETA. Ofgem believed that it might be appropriate to halve the exposure faced by NGC under its current licence based incentive schemes and proposed that a sharing factor of between 10% and 30% should be considered. Ofgem continued to believe that symmetric sharing factors and symmetric caps and collars were appropriate. Ofgem proposed that a cap/collar of between £25m and £50m (on an

³² 'Initial proposals for NGC's system operator incentive scheme under NETA, A consultation document and proposed licence modifications', Ofgem, August 2000.

annualised basis) for incentive scheme payments should be considered for the initial SO incentive scheme under NETA.

Respondents' views

- 1.36 For the past nine months, Ofgem has been consulting on new SO incentives to operate under NETA to replace the four separate incentive schemes on NGC as SO under the current trading arrangements. We have published five separate consultation documents and have received and assessed over 20 responses to each document.

SO external costs

- 1.37 Most respondents to Ofgem's initial proposals on the target and parameters for the incentive on SO external costs argued that NGC had been overly pessimistic with respects to its forecast of balancing costs under NETA and had overestimated the uncertainties involved in the move to NETA. Nevertheless, many respondents' recognised the difficulties involved in forecasting balancing costs and that NGC would face some uncertainty at the start of NETA.
- 1.38 NGC believed that Ofgem had not taken sufficient account of the uncertainties it faces in the move to NETA and believed that its forecast of balancing costs was robust to a range of possible assumptions. NGC also argued that there were a number of more pessimistic market outcomes it had not allowed for and that, therefore, its forecast could be an underestimate of possible balancing costs under NETA.

SO internal costs

- 1.39 Most respondents to Ofgem's initial proposals for the target and parameters for the price control on SO internal costs suggested that it was not clear that NGC required the size of trading function that it was proposing, given it was not proposing to undertake significant volumes of trading overall. To the extent that respondents' expressed an opinion, respondents favoured a target towards the low end of Ofgem's initial proposals.
- 1.40 NGC believed that Ofgem had misunderstood the complexity and nature of its new trading function and that therefore it had underestimated the resources

required. In addition, NGC made a number of detailed comments on Ofgem's adjustments to its forecast of operating costs.

Ofgem's final proposals

1.41 We have carefully considered the views of both NGC and other respondents in formulating our final proposals which are set out below.

SO external costs

1.42 Ofgem recognises that there is a significant gap between our view and NGC's view of possible balancing costs under NETA. In order to bridge this gap, Ofgem is proposing four options that seek to meet NGC's concerns and Ofgem's objective of an effective incentive on NGC to manage costs on customers' behalf. Ofgem has given NGC a choice between these options.

Table 1.1 - Ofgem's final proposal on SO external costs

	Ofgem Option 1	Ofgem Option 2	Ofgem Option 3	Ofgem Option 4
Incentive Scheme Target	£471m		£485m	
Deadband	-	£471m to £517m	-	£471m to £500m
Upside Sharing Factor	50%	25%	40%	40%
Downside Sharing Factor	10%	20%	12%	12%
Cap	£60m	£30m	£45m	£45m
Collar	£12m	£25m	£15m	£15m
Duration	One Year with option for rollover of target* to second year	One year scheme	One year scheme	One year scheme
Expected return against NGC's distribution	£2.0m	£-3.7m	£1.4m	£0.6m
Expected return against Ofgem's distribution	£12.8m	£3.6m	£11.3m	£9.5m

*Subject to an adjustment reflecting lower volumes of response and reserve holding.

1.43 Given the initial uncertainty regarding external SO costs under NETA, Ofgem believes that a single SO incentive scheme covering both external and internal costs could reduce the incentive to control SO internal costs since any savings could be lost by movements in external costs. Therefore, Ofgem proposes that initially under NETA, NGC face separate incentives relating to its SO internal and external costs. However, Ofgem proposes that the incentives between the two schemes should be aligned through the use of identical sharing factors.

SO internal costs

1.44 Following a review of NGC's submission on future SO internal operating and capital expenditure, Ofgem proposes to allow NGC the following controllable operating costs and capital cost recovery. Some of the costs will be directly passed on to transmission system users (pass through costs) and some will be included within an incentive scheme (incentivised costs). Pass through costs are those that either NGC has no control over, for example business rates, or those that have arisen as NGC prepared for NETA and thus to a large extent it has already incurred. Hence, it would not be appropriate to make these costs subject to the incentive scheme.

Table 1.2 - SO Internal cost recovery: incentivised and non-incentivised

£m 2000 prices	Table ref.					
Category		01/02	02/03	03/04	04/05	05/06
Pass through – rates and participants' costs	Table 6.12a	5.2	1.0	0.9	0.9	0.9
Non-incentivised capex	Table 7.5	20.6	19.7	18.8	18.0	17.1
Total projected non-incentivised costs		25.8	20.7	19.7	18.9	18.0
Incentivised opex	Table 6.12b	53.3	48.1	46.2	43.6	44.3
Incentivised capex	Table 7.5	0.7	3.9	6.5	7.9	8.9
Total incentivised costs		54.0	52.0	52.7	51.5	53.2

1.45 Overall, Ofgem believe that the final proposals presented in this document provide an appropriate balance between risk and reward for NGC. We believe that our proposals provide a strong incentive upon NGC to manage costs and deliver savings to the ultimate benefit of customers.

Outline of this document

- 1.46 Part One of this document presents the regulatory and legal background (Chapter 2) and Ofgem's final proposals on the form, content and duration of the incentives on SO internal and external costs (Chapter 3). Part Two of this document (Chapter 4 and Chapter 5) considers the parameters for the incentive scheme on SO external costs. Chapter 4 discusses Ofgem's view of the appropriate target for the SO incentive on external costs whilst Chapter 5 outlines Ofgem's conclusions on the other parameters of the scheme and the four options we have given NGC. Part Three of this document (Chapter 6 and Chapter 7) considers the parameters of the incentive on SO internal costs. Chapter 6 presents Ofgem's final proposals on the allowance for SO operational expenditure, whilst Chapter 7 presents Ofgem's final proposals on the allowance for SO capital expenditure. Finally, Chapter 8 summarises the incentive arrangements for SO internal and external costs under NETA.
- 1.47 Appendices 1 and 2 contain background material on the current definitions of balancing services and the current procurement of balancing services respectively. Appendix 3 describes the drivers of the volume and price of balancing services under NETA and a description of the modelling undertaken by NGC to forecast balancing costs under NETA.

Related issues

Consultation on NETA licence conditions

- 1.48 Building on the proposals outlined in the July 1999 and October 1999 NETA Documents, in December 1999 Ofgem published a consultation document³³ containing proposals on the licence changes necessary for NETA in England and Wales and related transmission issues. A further consultation document was published in February 2000,³⁴ which contained draft licence conditions in the light of the views of respondents to the previous consultation. A final

³³ 'The New Electricity Trading Arrangements and Related Transmission Issues – Proposals on licence changes, Ofgem/DTI Consultation Document', December 1999.

³⁴ 'The New Electricity Trading Arrangements, Proposed Licence Conditions, Ofgem/DTI Consultation Document', February 2000.

Ofgem/DTI conclusions document was published in June 2000 (June 2000 NETA document).³⁵

- 1.49 The Secretary of State exercised his power in August to impose the NETA licence conditions. Thus, conditions relating to the implementation of NETA including NGC's obligation to operate the transmission system in an efficient, economic and co-ordinated manner are now in the Transmission Licence.³⁶

Connection and use of system code

- 1.50 The December Consultation highlighted some problems with the existing contractual arrangements governing connection to, and use of, NGC's transmission system. In particular, Ofgem expressed concern that the procedures for modifying the MCUSA and its Supplemental Agreements were slow and cumbersome and could delay much needed reform and development of the arrangements. A second problem we highlighted was the lack of clarity in relation to the resolution of disputes under the MCUSA.
- 1.51 Ofgem therefore proposed that the MCUSA be replaced with a new Connection and Use of System Code (CUSC). The CUSC would incorporate more flexible governance procedures and hence facilitate the operation of NETA by making the governance of the transmission arrangements more consistent with the BSC. This will allow the transmission arrangements to develop with the wider trading arrangements in the light of experience of the new arrangements and should ensure that the full benefits of NETA are realised.
- 1.52 Ofgem proposed that the CUSC should cover most transmission-related issues (connections, transmission access and use of system obligations and charges³⁷) and perhaps some elements of the incentive schemes on NGC as SO. In addition, the CUSC would contain the generic elements of the current Supplemental Agreements in relation to connection. Site specific data and charges would form individual bilateral agreements to be agreed between NGC and the relevant party.

³⁵ 'The New Electricity Trading Arrangements: Proposed Licence Conditions. Ofgem/DTI Conclusions Paper', June 2000.

³⁶ With effect from 14 August 2000, these and related conditions were placed into the Transmission licence by the Secretary of State for Trade and Industry.

³⁷ It might also potentially cover transmission losses.

- 1.53 In March 2000, Ofgem/DTI published a consultation document³⁸ which set out initial views on the content and scope of a CUSC, and the proposed changes to licence conditions that would be required to implement it. This was followed by another consultation document in June 2000,³⁹ which set the detailed legal drafting of the changes to licence conditions 10, 10A, 10B and 10C of NGC's licence, which contain provisions relating to connection and use of system.
- 1.54 In August 2000, Ofgem/DTI published a further document⁴⁰ that summarised the responses to the March and June documents in relation to the proposed modifications to NGC's licence conditions. It set out Ofgem/DTI's proposals for the content and scope of the CUSC and the necessary changes to NGC's licence and the proposed new licence conditions for generators, Public Electricity Suppliers (PESs) and second tier suppliers. It was proposed that the CUSC licence conditions would also apply to all relevant distributors, when distribution licences are introduced in April 2001.

NGC consultation

- 1.55 Following the publication of the August CUSC document, NGC has begun a consultation process on the detailed drafting of the CUSC. NGC published a consultation document on the CUSC and an initial draft of the CUSC in September 2000. This document invited nominations for working group attendees. Working group sessions involving industry participants have been held to look at sections of the CUSC and updated information has been made available on NGC's website.⁴¹
- 1.56 NGC is very shortly to provide Ofgem/DTI with its proposals on the detailed drafting of the CUSC and its draft initial version of NGC's charging methodologies and charging statements to close the consultation process.
- 1.57 Ofgem/DTI will be publishing a consultation document in January 2001 on the detailed drafting of CUSC and associated documentation and the licence

³⁸ 'NGC's Connection and Use of System Code. An Ofgem/DTI consultation on the scope and content of the Connection and Use of System Code', March 2000.

³⁹ 'Connection and use of System Code. Proposed changes to the National Grid Companies licence. A consultation document', June 2000.

⁴⁰ 'NGC's Connection and Use of System Code; Scope, content and licece changes, An Ofgem/DTI Final Proposals document', August 2000.

⁴¹ www.nationalgrid.com

conditions necessary for implementing the CUSC. Following receipt and consideration of responses to this document, Ofgem/DTI will then publish their conclusions. It is intended that the CUSC and the licence conditions will be designated by the Secretary of State using the NETA power in time for the CUSC to take effect with or soon after the implementation of the rest of NETA.

Procurement Guidelines, Balancing Principles, BSAD methodology and information provision under NETA

- 1.58 The December Consultation consulted on the introduction of Procurement Guidelines and Balancing Principles statements and the type of information that they might contain.
- 1.59 In June 2000⁴² Ofgem/DTI published a conclusions document on the licence changes required for the introduction of NETA (the 'June 2000 NETA Licence Changes document'). In this document, Ofgem/DTI argued that a methodology for including the costs of energy balancing costs in energy imbalances prices - the Balancing Services Adjustment Data (BSAD) methodology - needed to be established. Ofgem/DTI stated that NGC would be responsible for producing and updating this methodology. A new condition in NGC's Transmission Licence (Condition 7B (6)), was proposed that established the production, publication and governance of the BSAD methodology.
- 1.60 In August 2000, Ofgem issued its initial proposals (the 'August 2000 Initial Proposals' document)⁴³ on the initial SO Incentive Scheme under NETA. This document contained the July drafts of the Procurement Guidelines, Balancing Principles and BSAD Methodology for further consultation.
- 1.61 In November 2000, Ofgem published a further consultation document⁴⁴ covering developments in:

⁴² The New Electricity Trading Arrangements: Proposed Licence Conditions. Ofgem/DTI Conclusions Paper, June 2000.

⁴³ 'Initial Proposals for NGC's System Operator Incentive Scheme under NETA, A Consultation Document and Proposed Licence Modifications', Ofgem, August 2000.

⁴⁴ 'Procurement Guidelines, Balancing Principles, BSAD Methodology and Information Provision NETA, A further consultation', November 2000.

- ◆ NGC's Procurement Guidelines(including the information that NGC will provide on balancing services that it procures outside the Balancing Mechanism);
- ◆ NGC's Balancing Principles; and
- ◆ the form and content of NGC's statement relating to the BSAD Methodology.

1.62 NGC is required under its licence to produce and publish statements of its Procurement Guidelines, Balancing Principles Statement and a BSAD Methodology to be approved by Ofgem prior to the first period of trading under NETA. In the light of responses received to this statement, NGC will continue to develop these statements and will produce revised guidelines and statements as necessary, to submit to Ofgem for approval. Once approved, final versions of all three statements will be available from NGC and will be published by Ofgem and NGC on their respective web-sites.⁴⁵ With regard to the information on balancing services to be provided by NGC at the start of NETA, Ofgem will carefully consider responses to this document before finalising with NGC the information to be provided.

Transmission access and pricing and the longer term treatment of losses

1.63 In the December Consultation, Ofgem argued that new transmission access and losses arrangements are required in England and Wales to ensure that the full benefits of NETA are realised. Ofgem suggested that new transmission access and losses arrangements should be based around markets in firm rights for access to the transmission system. Under such arrangements, participants would require entry rights in order to be able to inject electricity into the transmission system and exit rights to withdraw electricity from it. They would face access imbalance charges for mismatches between their metered volumes and access rights. NGC would buy-back and/or sell additional transmission access rights in order to resolve transmission constraints.

1.64 Since December 1999, Ofgem has given further thought to the details of how a transmission access regime based on firm entry and exit rights might work in

⁴⁵ www.ofgem.gov.uk and www.nationalgrid.com

practice. These issues have also been discussed in seminars at the Charging Principles Forum of the Transmission Users Group (TUG-CPF) in February 2000 and June 2000 and were discussed further at the NETA Seminar in June 2000.

- 1.65 Ofgem held an industry workshop in August 2000 that focused on two key issues concerning the proposed transmission access arrangements: the core design issues related to choosing definitions for firm entry and exit rights and the trade-offs involved; and the systems requirements for the proposed transmission access regime. Ofgem has considered responses received to the August Workshop and NGC has undertaken further analysis in light of the issues raised.
- 1.66 Ofgem expects to publish a further consultation document on the new transmission access arrangements in January 2001. This document will set out, for consultation, developments in Ofgem's thinking related to developments in transmission access and pricing arrangements and enduring arrangements for the treatment of transmission. Soon after this document is published, an industry wide consultation will begin, to develop detailed proposals for new transmission access and pricing arrangements.
- 1.67 The CUSC will be the main vehicle through which new transmission access and pricing arrangements will be implemented. As details of the new transmission access and pricing arrangements become clear, we will also be in a position to consult on the form, scope and duration (and parameters) of a longer term SO incentive scheme under NETA, that will encompass the new transmission access and losses arrangements.

British Electricity Trading and Transmission Arrangements (BETTA)

- 1.68 Ofgem published in August 2000 a document outlining interim proposals for the reform of electricity trading arrangements in Scotland.⁴⁶ Ofgem summarised the main factors inhibiting the development of competition in the electricity market in Scotland and proposed that:

⁴⁶ 'Interim proposals for the reform of Scottish Trading Arrangements: British Electricity Trading and Transmission Arrangements (BETTA)', Ofgem, August 2000.

- ◆ enduring energy trading arrangements for Scotland should be part of a single electricity market for Great Britain (GB);
- ◆ enduring electricity transmission access and charging arrangements for Scotland should be part of a GB set of arrangements;
- ◆ British electricity transmission and trading arrangements should be developed and implemented by April 2002; and
- ◆ there should be interim arrangements to achieve more competition in Scotland and provide a smooth transition to enduring arrangements.

1.69 Ofgem's proposals for harmonising arrangements in Scotland with England and Wales involve the development of a single Balancing and Settlement Code for GB, a single CUSC for GB, a single market for settlement purposes, common principles for setting transmission charges and changes to the role of the three transmission companies in GB.

Transco price control review and long term signals and incentives for investment in transmission capacity on Transco's NTS

1.70 It is important that, over time, the incentives on the transmission owners and system operators in the gas and electricity markets are consistent, to ensure efficient interactions between the two markets, as they increasingly converge. For example in relation to the gas system, the proportion of total National Transmission System (NTS) demand associated with gas fired power stations is now around 40% whilst the percentage of total installed capacity on the electricity transmission system that is gas fired is 32% this year.

1.71 With the recent lifting of the Government's stricter consents policy, there is the prospect of further new entry by gas fired plant. It will therefore be important to ensure that arrangements for pricing access to the gas and electricity transmission networks are consistent and signal the relative value/cost of transmission capacity at different locations on the two networks. This will enable companies to take decisions on the location of new gas-fired generation based on signals of the relative value of capacity at different points on the networks and should encourage efficient new investment.

- 1.72 In December 2000, Ofgem published its conclusions on the framework for the way forward for improving signals and incentives for investment in Transco's NTS.⁴⁷ We proposed extending the use of capacity auctions to cover longer term capacity rights based on capacity output measures agreed as part of the next price control review. Under this framework, Transco's allowed revenue under the price control will be set to finance the efficient capital and operating expenditure associated with delivering these output measures. Transco will then sell the agreed output measures through a series of auctions (five/three/one yearly and daily). If Transco is unable to deliver the capacity that it has sold it will have to buy back rights at market-determined prices and will be fully exposed to the costs of these buy backs. Ofgem expects to publish more detailed proposals in February 2001.
- 1.73 The proposed new arrangements for the allocation of longer term capacity rights will be implemented in parallel with the next Transco price control, which will start in April 2002. Ofgem is planning to publish an initial consultation document on the price control in February 2001 and a draft proposals document in June 2001 with the final proposals being made in September 2001. Further information on the Transco price control process can be obtained from the May 2000 Ofgem consultation document⁴⁸ and the November update paper.⁴⁹

Way forward

- 1.74 Prior to 1 April 2001, Ofgem will be looking to implement four sets of licence modifications relating to:
- ◆ the new Transmission Asset Owner price control;
 - ◆ the System Operator incentive schemes on internal and external costs;
 - ◆ financial ring fencing conditions; and
 - ◆ standard licence conditions under the Utility Act 2000.

⁴⁷ 'Long term signals and incentives for investment in transmission capacity on Transco's National Transmission System. Conclusions on the Framework, December 2000'.

⁴⁸ 'Review of Transco's price control from 2002: Initial Consultation Document, Ofgem', May 2000.

⁴⁹ 'Review of Transco's price control from 2002 - Update paper, Ofgem' November 2000.

- 1.75 In order to proceed with the first two sets of licence modifications (covering the TO price control from April 2001 and the schemes covering SO internal and external costs), NGC will need to consent to Ofgem's final proposals as set out in this document (NGC has already agreed to the proposed new TO price control). NGC has until 10 January 2001 to decide whether to consent to the proposals set out in this document.
- 1.76 If NGC consents, the incentive scheme on SO external costs will come into effect at NETA Go live, which is currently targeted for 27 March 2001. The scheme on SO internal costs will come into effect on 1 April 2001. Ofgem will come forward with proposed licence modifications to implement the two new SO schemes and, subject to any representations made, will issue a statutory notice of licence modifications under Section 11 of the Electricity Act 1989 in January 2001.
- 1.77 If NGC does not accept Ofgem's final proposals, Ofgem would not propose modifications to the Transmission Licence to implement our proposed new incentive arrangements as contained in this document. If NGC fails to accept any of the options proposed in this document, then Ofgem proposes that all of the efficiently incurred costs associated with the SO function (internal and external) be directly passed through to participants (and ultimately customers). Ofgem would regulate the SO business to ensure that costs remained at efficient levels by actively monitoring the SO's actions. Where necessary, Ofgem's could use its statutory powers to enforce licence conditions to ensure that NGC operates the transmission system in an efficient, economic and co-ordinated manner (licence Condition 7B(1)). Subject to the enactment of relevant provisions of the Utilities Act, this would include the power to impose monetary penalties in the event that NGC were found to be in breach of their licence.

2. The Regulatory and Legal Framework

Introduction

- 2.1 This chapter outlines both the current and future legal and regulatory framework of the electricity industry. It summarises the current legislative, licensing and regulatory regimes and describes the relationship between the Electricity Act 1989, licences and industry agreements and Utilities Act 2000.
- 2.2 Further details on the developments in the licensing and regulatory regime can be found in the June 2000 NETA document and the August CUSC document. The June 2000 NETA document outlined Ofgem/DTI's conclusions on the licence conditions to introduce NETA whilst the August CUSC document outlined the proposed licence conditions required to introduce the CUSC.

The regulatory and legal framework

The legislative framework

The Electricity Act 1989

- 2.3 The Electricity Act provided the framework for the functions of the Director General of Electricity Supply (the Director General), of the consumers' committees, and for the licensing to enable the supply, generation and transmission of electricity.

The Utilities Act 2000

- 2.4 The Utilities Act 2000 (the Utilities Act), which received Royal Assent on 28 July 2000, contains a section allowing the Secretary of State to modify licences granted under the Electricity Act 1989, where he considers it to be necessary or expedient for the purposes of implementing or facilitating the operation of NETA. This power is exercisable only within two years from the date of enactment. The Secretary of State exercised this power in August to impose the NETA licence conditions, and will exercise this power again in order to introduce the licence conditions required for the implementation of the CUSC, as a necessary part of NETA.

- 2.5 The Utilities Act introduced other reforms to the gas and electricity markets and the regulation of these markets, which are expected to take effect over the next few months.
- 2.6 The most important of these changes that has occurred to date is the replacement of the Director General of Electricity Supply and the Director General of Gas Supply with the Gas and Electricity Markets Authority (the Authority) to cover both the gas and electricity industries. The Authority was created on 20 December 2000. Hence, from this date, the functions of the Director General of Electricity Supply and the Director General of Gas Supply have been transferred to, and in the future will be exercisable by, the Authority.
- 2.7 The Authority's Chairman and Chief Executive is the former Director General, Callum McCarthy. In addition, the Authority will also contain four executive members and six non-executive members.
- 2.8 The new principal objective (primary duty) on the Authority is to protect the interests of consumers in relation to electricity conveyed by distribution systems, wherever appropriate by promoting effective competition between persons engaged in, or in commercial activities connected with, the generation, transmission, distribution or supply of electricity.
- 2.9 Subsequent changes to be enacted include:
- ◆ the introduction of standard licence conditions for each type of electricity licence granted under the Electricity Act and provisions for making modifications to standard licence conditions;
 - ◆ the separation of the licensing of electricity supply and distribution; and
 - ◆ the creation of an additional power to enable the Authority to impose financial penalties on companies found to be in breach of their relevant licence under the Electricity Act 1989.

The Competition Act 1998

- 2.10 The Authority has concurrent powers with the Director General of Fair Trading under the Competition Act 1998 (which came into effect on 1 March 2000). Chapter I of the Competition Act prohibits anti-competitive agreements and

Chapter II prohibits the abuse of a dominant position. Under the Competition Act, the Authority has powers of investigation, powers to give directions and power to impose financial penalties of up to 10% of turnover of the undertaking concerned on companies infringing the prohibitions under the new Act.

Licensing and regulatory duties

The duties of the Authority

- 2.11 The duties of the Authority are set out in the new sections 3A-C of the Electricity Act 1989 comprising the new primary objective and range of other duties.
- 2.12 Under section 11 of the Electricity Act, the Authority can modify a licence with the licensee's consent (and after consultation). If the licensee does not consent to the modification, the Authority may refer a question relating to the modification to the Competition Commission under section 12 of the Electricity Act 1989. The Authority may, depending on the findings of the Competition Commission, modify the licence following such a reference without the consent of the licensee.
- 2.13 The Authority will also be able to amend standard licence conditions. Under section 11 the Authority can only modify standard licence conditions if:
- ◆ the total number of licence holders objecting to the modification is less than a percentage to be prescribed of the total relevant licence holders and the market share of the objecting licensees is also less than a percentage to be prescribed; or⁵⁰
 - ◆ no relevant licence holder objects to the modification.
- 2.14 The Authority will also be able to make references to the Competition Commission in respect of modifications to standard conditions.

The Transmission Licence

- 2.15 Under section 9(2) of the Electricity Act 1989, NGC is obliged to develop and maintain an efficient, co-ordinated and economical system of electricity

⁵⁰ The prescribed percentages will be set out in a statutory instrument which will be laid down by the Secretary of State before Parliament. Ofgem is currently awaiting confirmation as to when the different provisions contained in the Utilities Act will take effect.

transmission and to facilitate competition in the supply and generation of electricity.

2.16 NGC is the sole possessor of a transmission licence in England and Wales. It owns and operates the national grid, which transports electricity at high voltage from the generators to the Public Electricity Suppliers' (PESs') local distribution networks and to customers connected directly to the transmission system. In addition to its EA act obligations, it has a licence duty to operate an efficient, co-ordinated and economical system of electricity transmission. It has a further duty not to discriminate in connection to, and use of, the transmission system and interconnectors with Scotland and France.

2.17 NGC's transmission licence imposes a number of other obligations including duties to:

- ◆ publish a statement in a form approved by the Authority, setting out the basis upon which charges for connection and use of system will be made⁵¹ (licence Condition 10(1));
- ◆ offer terms for connection and use of system (licence Condition 10B);
- ◆ plan and to operate the system to standards defined in the licence (licence Condition 12) and the Grid Code; and
- ◆ implement and comply with a Grid Code, which sets out the detailed technical aspects of connection to and the operation and use of the licensee's transmission system.

2.18 The Authority can settle any dispute where there has been a failure to enter into terms for connection and use of system, or at the request of NGC or any other party, where a dispute arises following a proposal by NGC to vary the existing terms for connection and use of system.

2.19 Condition 4A of NGC's licence sets restrictions on the revenues that NGC is allowed to earn. For these purposes, NGC's activities are split between its Transmission Network Services (TNS) and its Transmission Services Activity

⁵¹ Section 14.7 of the MCUSA enables any question as to whether NGC has charged in accordance with this statement to be referred to the Authority.

(TSA). The TNS activities of NGC are defined as including all its authorised business in the planning, development, construction and maintenance of the transmission system excluding the TSA and excluded services. The TSA is currently defined in the transmission licence as activities “undertaken by the licensee as part of the Transmission Business in the development and operation of the licensee’s transmission system for the purpose of optimising the costs arising from the operation of that system”.⁵²

- 2.20 Part 1 of licence condition 4A provides for a price control to be set by the Authority on all revenue obtained from NGC’s TNS. The present price control on the TNS expires on 31 March 2001 and the final consultation paper on the level of the next price control has been issued by Ofgem.⁵³ As noted in Chapter 1, NGC has consented to these proposals.
- 2.21 Part 2 of licence condition 4A currently provides for two profit sharing incentive schemes in relation to the TSA - TSU and RPU. For NETA, Ofgem intends to modify this condition in line with the proposals contained in this document.

Other related documents

The Pooling and Settlement Agreement (P&SA)

- 2.22 Generators, suppliers and transmission companies are required by their licences to be party to the P&SA. This multilateral agreement contains the rules and arrangements for the current market in wholesale electricity (the England and Wales Pool). With the introduction of NETA, there will be a Run-Off period for the P&SA, the rules regarding which are set out in the BSC. The BSC was made effective on 14 August 2000 when existing licensees, Pool members and other companies intending to participate in NETA signed the BSC framework agreement. Until the provisions relating to Run-Off as set out in the P&SA become effective, all electricity licensees will be required to continue to be party to the P&SA. Under NETA, the existing incentive schemes covered by the Pool, namely Energy Uplift and Transmission Losses, will no longer be applicable.

⁵²Under NETA the definition of Transmission Services Activity has been modified as follows: Balancing Services Activity means the activity as part of the Transmission Business, of procuring and using Balancing Services for the purpose of balancing the licensee’s transmission system.

⁵³ ‘The Transmission Price Control Review of the National Grid Company from 2001, Final Proposals’, September 2000.

The Master Connection and Use of System Agreement (MCUSA)

- 2.23 The MCUSA is a multi-party agreement between NGC, the PESSs, second-tier suppliers, licensed generators and some non-licensed generators and a small number of customers who are directly connected to the transmission system. There are presently over 100 parties to the MCUSA.
- 2.24 The MCUSA, and its Supplemental Agreements, set out terms and conditions for connection to, and use of, the transmission system. These include payment methods, metering, modifications to the transmission system, variations to the MCUSA, compliance with the Grid Code and dispute resolution. The Authority is not a party to the MCUSA or the Supplemental Agreements. It has limited powers for resolving disputes relating to the MCUSA and its supplemental agreements and can only make such determinations in relation to specific types of disputes. In respect of variations to the MCUSA, the Authority has power to determine disputes in relation to proposed variations to the MCUSA, if proposed by NGC. The MCUSA makes provision for an arbitrator to settle any disputes which relate to the interpretation of provisions contained within the MCUSA and its supplemental agreements.

Supplemental Agreements

- 2.25 Parties to the MCUSA are also required to sign appropriate Supplemental Agreements. A separate Supplemental Agreement is in place between NGC and each party connected to or using the Transmission network. There are presently more than 400 such agreements in place. The Supplemental Agreements specify the equipment at each connection site and the basis for charging for that equipment.
- 2.26 Appendix E of the Supplemental Agreements sets out some of the charging rules for both connection to and use of the transmission system. It includes the provisions whereby NGC revises its charges annually. To do this, NGC is required to notify customers by 31 October in the preceding financial year of the intended basis of calculation to be used in the following financial year. NGC is required to confirm this basis of calculation by 30 November in the preceding financial year.

2.27 Through a schedule to the MCUSA, the Transmission Users Group (TUG) was set up to discuss changes to NGC's Transmission Business, which impact on the MCUSA and its Supplemental Agreements.

The Balancing and Settlement Code

2.28 The BSC has been published and its scope is defined in general terms in the Transmission, Generation and Supply licences. The BSC is a code maintained by NGC (under a new condition in NGC's transmission licence) which sets out the rules for the balancing mechanism and settlement process under NETA. It covers arrangements for:

- ◆ making, accepting and settling offers and bids to increase or decrease electricity delivered to, or taken off, the total system (NGC's transmission system and the distribution systems) to assist NGC in balancing the system; and
- ◆ determining and settling imbalances and certain other costs associated with operating and balancing the transmission system.

2.29 A panel has been charged with overseeing the management, modification and implementation of the BSC rules. The Panel Chairman was appointed by the Director General. The panel has representatives from the industry, consumers and NGC as well as independent members. The Chairman of the BSC Panel is also the Chairman of the Balancing and Settlement Code Company (ELEXON).⁵⁴ The primary purpose of ELEXON will be to provide or procure a range of operational and administrative services, both directly and through contracts with service providers, to implement the provisions of the BSC and modifications to it.

2.30 The details of the modification procedures are contained in Section F of the BSC. The modification procedures are designed to ensure that the process is as efficient as possible whilst ensuring that as many parties as possible can propose modifications and have the opportunity to comment on modification proposals.

⁵⁴ The BSCCo was named Elexon Limited on 7 June 2000.

Framework for incentives under NETA

- 2.31 As part of developing new incentive schemes for the SO under NETA it will be necessary to consider where the new schemes should be incorporated. Under the existing arrangements, two of the incentive schemes are in NGC's licence and a further two schemes are arranged through the Pool.
- 2.32 Ofgem's initial view was that parts of the SO external incentive scheme under NETA could be incorporated in the proposed CUSC or the Transmission Licence or both. Given the current timetable for implementing the new incentive scheme on NGC, Ofgem believes that the initial incentives on NGC under NETA should sit within its Transmission Licence. Ofgem will continue to keep under review whether all or part of the incentive scheme should be moved from the licence into one of the relevant industry codes (BSC and/or CUSC).

3. Form, scope and duration of SO incentive schemes under NETA

Introduction

3.1 This chapter summaries Ofgem’s decision on the form, scope and duration of the initial incentives on SO external and SO internal costs.

SO external costs: form, scope and duration of incentives

Background

Incentive schemes on NGC under the current arrangements

3.2 Table 3.1 presents the details of the current incentive schemes on NGC covering TSU, RPU,⁵⁵ EU and transmission losses, that apply from 1 April 2000 to the introduction of NETA.

Table 3.1 - Incentive Schemes on NGC from 1 April 2000

	Target value	Upside sharing factor	Downside sharing factor	Cap on revenues to NGC	Collar on payments by NGC	Operational expenditure allowance
Transmission Services Uplift	£201.2m	50%	50%	£21m	£21m	£0.54m
Reactive Power Uplift	£46.5m	50%	50%	£2.5m	£2.5m	
Energy Uplift	£0m	12%	5%	£3m	£2m	
Transmission losses	5.13 to 5.33 TWh at a price of £25/MWh	50%	25%	£4m	£2m	

Principles for a SO incentive scheme

3.3 In previous consultations on SO incentives, Ofgem has highlighted a number of principles which we believe should guide the design of incentives on the SO under NETA. These are that the scheme(s) should:

⁵⁵ See ‘NGC Incentive Schemes from April 2000, Transmission Services Uplift and reactive power Uplift Schemes. A decision document’, February 2000.

- ◆ ensure that the total costs of system operation are at an efficient level, not just individual elements;
- ◆ recognise the interactions between NGC's roles as system balancer and energy balancer; and
- ◆ recognise and take account of the interactions between the roles of SO and TO performed by NGC.

3.4 Ofgem has accepted that it is not practicable to implement an enduring SO incentive scheme from the start of NETA, given the initial uncertainty surrounding the costs of the SO. For example, there will be no data on Balancing Mechanism volumes or prices on which to base such a scheme and it may take time for appropriate reference prices to emerge. Moreover, the incentive scheme will need revising when new transmission access and pricing arrangements are introduced. Consequently, Ofgem has argued that there should be an initial incentive scheme on SO external costs of a relatively short duration.

Summary of Ofgem's final proposals on form, scope and duration

3.5 Ofgem presented our conclusions on the form, scope and duration of the initial incentive scheme on SO external costs in the August 2000 Initial Proposals document. These are summarised below:

- ◆ **Form of the incentive scheme:** Ofgem concluded that a sliding scale form of incentive with appropriate targets, caps, collars and sharing factors would provide an effective incentive on NGC to ensure that costs are maintained at an efficient level and where possible further reductions are achieved.
- ◆ **Duration:** Ofgem argued that in the longer term the duration of the incentive scheme should become consistent with that of NGC's Transmission Price Control. However, we believed that the initial scheme under NETA should be of a shorter duration given the initial uncertainty in costs and the need for a comprehensive scheme when new access and pricing arrangements are implemented. Ofgem also

accepted the argument that it is desirable for the duration of the incentive scheme to be aligned with the financial and contracting years, which end on 31 March and begin on 1 April of each year. Thus, Ofgem proposed that the initial scheme should run until 31 March 2002.

- ◆ **Scope:** Ofgem believed that NGC should be incentivised on all system and energy balancing costs for the initial scheme under NETA. We also concluded that, for this initial scheme, NGC's exposure to the net imbalance volume⁵⁶ should be reduced via a suitable reference price.⁵⁷
- ◆ **Bundled versus unbundled:** Ofgem concluded that there should be a single bundled incentive scheme on SO external costs at the start of NETA. This will ensure that NGC faces consistent incentives across all categories of SO costs so that there are no perverse incentives on NGC to reduce one category of costs at the expense of another. Ultimately, this will ensure that NGC's incentives are aligned with customers' interests.
- ◆ **Approach to setting incentive scheme target:** Ofgem has concluded that the initial incentive scheme should continue to be based on an *ex-ante* forecast of costs. Ofgem understood the arguments that NGC made in favour of a daily target with a daily cap and collar, but we were not convinced that this approach is appropriate. Thus, Ofgem concluded that an *ex-ante* forecast of costs for the duration of an incentive scheme remained an appropriate basis for setting the incentive scheme target.

Income adjusting events

3.6 Under the current TSU and RPU schemes, NGC has the right to ask Ofgem to consider resetting the parameters of the incentive scheme should a particular event (or series of events) occur.⁵⁸ Such Income Adjusting Events (IAEs) must be

⁵⁶ The total net energy imbalance volume, is the sum of the values of TQEI_j (as defined in BSC T4.6.4 as the sum of imbalance volumes over all energy accounts other than energy accounts held by the Transmission Company).

⁵⁷ Ofgem's conclusions on the Net Imbalance Reference Price are presented in Chapter 6.

⁵⁸ LC 4A(10) defines the circumstances under which NGC's income from the current TSU and RPU incentives schemes could be adjusted up or down.

deemed to be outside of NGC's control and also result in a greater than £2m increase or decrease in TSU or RPU.

Previous consultations

- 3.7 In the April Consultation, Ofgem noted that the provision for IAEs provides protection for both NGC and customers in the event that an unforeseen incident results in extreme costs or unforeseen benefits. Ofgem argued that further consideration needed to be given as to whether these arrangements should be taken forward in the new incentive schemes under NETA.
- 3.8 In the August 2000 Initial Proposals document, Ofgem concluded that, given the uncertainties associated with setting an incentive scheme before the start of NETA, the provision for IAEs continued to be appropriate and proposed that it be retained for the start of NETA. We proposed that market participants, as well as NGC, should be entitled to ask Ofgem to consider whether an IAE should be declared. However, Ofgem re-stated its belief that an enduring incentive scheme should contain no provisions for IAEs and the provision for IAEs should be reviewed when considering the future SO incentive arrangements under NETA.
- 3.9 Ofgem's preliminary view was that the current threshold of £2m be retained for the initial incentive scheme under NETA.

NGC's view

- 3.10 In its response to the April Consultation, NGC argued that IAEs allow the risk of a number of highly unlikely, but extremely costly events to be excluded when considering an appropriate target for the incentive scheme. It argued that the risk of exposure to such events is effectively removed from the scheme, allowing a more challenging incentive scheme target to be set.
- 3.11 Therefore, NGC argued that income adjusting provisions are an essential part of the incentive scheme design, given that significant costs or windfall savings can arise from events outside its control and hence that IAEs should be retained for the initial SO incentive scheme under NETA. It welcomed Ofgem's conclusion in the August 2000 Initial Proposals document that provisions for IAEs should be retained.

- 3.12 NGC also argued that it was inappropriate for all participants to be able to call IAEs.

Other respondents' views

- 3.13 Fourteen respondents to the April Consultation commented on this issue. Of these, only four respondents thought provisions should be made for IAEs. Nine respondents believed that they were unnecessary and one other respondent commented but did not express an opinion.
- 3.14 Nine respondents to the August Consultation commented on the issue of IAEs. Six respondents were in favour of retaining IAEs. Five of these respondents supported the innovation that market participants as well as NGC should be able to call IAEs through Ofgem. Two of these respondents commented that the provision of IAEs should be reviewed in the long term, but given the uncertainty under NETA it would be sensible to retain provisions for IAEs. One respondent emphasised the need for certainty as to the basis for determining the charges faced by participants and commented that if IAEs are considered necessary for the initial schemes, they must be limited to circumstances truly outside of NGC's influence or control. This respondent suggested that the materiality threshold be raised from £2m to £10m to account for the new bundled scheme.
- 3.15 Three respondents believed that it was inappropriate to provide for IAEs under the new incentive scheme under NETA. One respondent did not believe IAEs should be permitted unless they arose as a consequence of civil emergencies.

Ofgem's final proposals

- 3.16 Ofgem continues to believe that, given the uncertainties embodied within a new incentive scheme for the start of NETA, provision for IAEs continues to be appropriate. This will cater for changes in circumstances outside of the control of NGC that would impact materially on the level of balancing costs. As a corollary, Ofgem believes that there should be scope for both NGC and other participants to ask Ofgem to consider whether an IAE has occurred. Ofgem also proposes that the current threshold of £2m be retained for the initial scheme.
- 3.17 Ofgem continue to believe that an enduring incentive scheme should contain no provisions for IAEs and Ofgem will seek to review this issue in setting up the

next SO incentive scheme under NETA. Ofgem believe that the ability for participants other than NGC to ask Ofgem to consider whether an IAE has occurred remains appropriate.

Incremental SO internal costs prior to 31 March 2001

3.18 Two sets of internal SO costs for the period 1 April 2000 to 31 March 2001 are included within the current licence based incentive schemes on SO external costs (TSU and RPU):

- ◆ an allowance of approximately £5.6m has been made for Ancillary Business Overheads; and
- ◆ an allowance of £540,000 has been made for incremental SO costs ('Incremental TS Costs') currently allowed in the SO incentive scheme. These costs are additional SO operational expenditure, and were not foreseen at the time of the setting the current transmission price control.

Previous consultations and initial proposals

3.19 In relation to the internal SO costs allowed under the current SO incentive schemes, Ofgem proposed in the April Consultation and August 2000 Initial Proposals document that a simple pro-rata approach should be followed to determine what proportion of these costs remain to be recovered when the current schemes are terminated on the implementation of NETA (if this occurs in the financial year to 31 March 2001). These remaining costs would be recovered under the initial NETA scheme in the period up to 31 March 2001.

3.20 In addition, Ofgem also proposed that NGC should be allowed to recover £3.9m of its NETA related costs during the period from the introduction of NETA to 31 March 2001. However, Ofgem noted that this would not commit us to agreement on the overall level of NETA related costs NGC should be allowed to recover.

NGC's view

3.21 NGC agreed with Ofgem's proposal that Ancillary Business Overheads and Incremental TS Costs should be recovered pro-rata under the initial SO incentive scheme under NETA. NGC also welcomed Ofgem's confirmation that a

proportion of its internal NETA development and operational costs would be recoverable under the incentive scheme prior to 1 April 2001.

Other respondents' views

- 3.22 Seven respondents to the August Consultation commented on this issue. Four of these respondents agreed that Ancillary Business Overheads and Incremental TS Costs currently recovered under the TSU incentive scheme should be recovered pro-rata under the initial NETA incentive scheme.
- 3.23 Two respondents commented that NGC's NETA costs should be open to scrutiny since NGC is not subject to the same competitive pressures as other participants and given the fact that other participants are expected to self-finance the development of their NETA related systems and preparations. One respondent sought further clarification on the composition of NGC's NETA costs.

Ofgem's final proposals

- 3.24 In the light of the announced delay to NETA Go live, Ofgem has been reconsidering the allowance for SO internal costs currently recovered under the incentive schemes on SO external costs.
- 3.25 Based on a Go live date of 27 March 2001, NGC would be allowed to recover £0.08m of Ancillary Services Business Overheads and Incremental TS Costs under the initial SO incentive scheme in the period 27 March 2001 to 31 March 2001.
- 3.26 With respect to NGC's NETA related costs, for which Ofgem had previously proposed an allowance Ofgem of £3.9m in the period between NETA Go live and 31 March 2001, Ofgem proposes that, given the relatively short period between the presently targeted introduction of NETA in late March 2001 and the introduction of the new TO price control and SO internal costs scheme on 1 April 2001, it is no longer necessary to make an allowance under the initial SO incentive scheme on external costs. Instead, these costs should be included with NGC's other internal SO costs and recovered via the BSUoS charge from 1 April 2001.

SO Internal costs: form, scope and duration of scheme

3.27 Currently, approximately £50m of costs associated with the fixed costs of system operation (system management costs and the costs of central NGC overheads allocated to the SO) are included in the NGC Transmission Business price control. These costs NGC has called "SO Base Costs". NGC has identified additional SO costs associated with NETA.

3.28 This section presents Ofgem's conclusions on the form, scope and duration of the scheme covering all NGC's SO internal costs after 1 April 2001.

Previous consultations

3.29 In the April Consultation, Ofgem proposed expanding the scope of the SO incentives to include all internal costs relating to NGC's SO activities (i.e. all costs associated with procuring and settling balancing services, core system management costs and continuing operational systems development). This required these costs to be removed from the Transmission Business price control. However, Ofgem noted that it was for further consideration whether and how these costs should be subject to incentives.

3.30 In the August 2000 Initial Proposals document, in the light of responses received, Ofgem concluded that a clear separation between the recovery of, and incentives relating to, SO and TO costs would result in clear benefits to customers. Ofgem noted that in preparation for this split, NGC had completed a business plan questionnaire setting out the forecasts of its internal SO costs, which was being reviewed by Ofgem, and a consultation on SO internal costs would be published in September 2000.

NGC's view

3.31 NGC agreed that all SO costs should be recovered under the incentive scheme from April 2001 and that this should be co-ordinated with changes to the main Price Control.

Other respondents' views

3.32 Eight respondents to the August Consultation commented on this issue. Of these, six respondents were in favour of Ofgem's proposal that internal SO costs

should be separated from TO costs and included in the SO incentive scheme. One of these respondents commented that this would help any proposed move to an independent SO, whilst another commented that the proposal was appropriate and consistent with the proposed BETTA arrangements.

- 3.33 One respondent urged caution over the treatment of internal SO costs and the incentive scheme, particularly about subsuming these costs in an overall sliding scale scheme, preferring an RPI-X treatment of these costs. Another respondent did not agree with the proposal. It believed that SO costs should not be bundled into a single incentive scheme, but kept separate to enhance transparency and prevent inertia creeping into the preservation of administered arrangements, which could frustrate the introduction of market mechanisms. One further respondent provided comments but did not express an opinion.

September SO initial proposals document

Scope of SO costs

- 3.34 Following on from the August document, Ofgem proposed that from 1 April 2001 onwards the costs incurred by NGC as TO and SO should be separately regulated. TO costs would continue to be regulated by means of an RPI-X price control, and new controls would be introduced for the SO. The activities of the SO will be significantly affected by the introduction of NETA. On the basis of the business plan questionnaire information, Ofgem has considered the scope of the control on SO internal costs by reference to two main categories of costs:

- ◆ SO Base Costs; plus
- ◆ Incremental costs incurred as a result of the introduction of NETA. These incremental costs are sub-divided between the costs of establishing the additional functions required – ‘set-up’ costs – and the enduring costs of running an expanded SO – ‘ongoing’ costs.

- 3.35 Ofgem argued that the distinction between the different categories of costs, whilst artificial from an operational perspective, enables a clear link to be made between Ofgem’s initial proposals for the Transmission Business price control (which included SO Base costs) and a review of the incremental costs of the SO.

Form of incentive

3.36 Ofgem recognised that there were difficult trade-offs in setting the form of the incentive scheme for the SO business. Consistent with the move to separate SO and TO internal costs, Ofgem's view was that the interactions between internal and external SO costs are stronger than the interactions between SO costs and TO costs and hence that the form of SO internal cost incentive should align with that for the SO external costs. This should ensure that the SO business has strong incentives to reduce the total costs of system operation.

3.37 Ofgem presented three options for the form of the incentive on SO internal costs:

- ◆ Option (a): RPI-X – NGC faces an efficiency incentive (the X factor) and shares the full benefits of any cost reductions against target or is exposed to the full cost of any overruns; i.e. 100% sharing factors.
- ◆ Option (b): a lump sum allowance – this is similar to Option (a) except that there is no efficiency incentive over and above the sharing factors; or
- ◆ Option (c): match the SO internal cost scheme fully with the SO external cost incentive mechanism - the incentive would be based on a target, the same sharing factors (which would be less than 100% i.e. NGC would be able to keep only a proportion of cost reductions and be exposed to a proportion of cost overruns) and a cap and collar.

3.38 Ofgem was concerned that an RPI-X form of control may encourage NGC to focus excessively on reducing its own costs at the expense of reducing total costs. In seeking to align NGC's SO incentives, Ofgem's initial view was that common sharing factors for the SO incentives and external costs was the most appropriate scheme (a version of Option (c)). Under this form of incentive, NGC and customers would share the benefits of any cost reductions.

Duration of incentive

3.39 Ofgem noted that for SO internal costs, a 5 year cost stream has been identified in line with the proposed duration of the TO price control. Ofgem suggested that annual targets for each of the 5 years could be set at this stage but that the

other parameters would need to be adjusted in line with developments in the SO external cost incentive scheme. In the short run, the incentive on SO internal costs will run for the period from 1 April 2001 to 31 March 2002. Ofgem pointed out that consideration would need to be given to how the incentive scheme for the remaining 4 years for which SO internal costs had been identified could be aligned with future SO incentive schemes on external costs. Ofgem noted that there were a number of options, with Ofgem minded to favour longer rather than shorter schemes in order to sharpen NGC's incentives to reduce overall costs. In this context, possible options include a further 1-year scheme followed by a 3 year scheme or two 2 year schemes.

- 3.40 At the end of the price control period (31 March 2006), it will be possible to set a new, longer term incentive scheme for SO costs overall, consistent with the duration of the TO price control, to ensure no perverse incentives are created for the Transmission Business as a whole.

NGC's view

- 3.41 NGC welcomed much of Ofgem's thinking on the form, scope and duration of the incentive on SO internal costs. NGC argued that:
- ◆ the assumed level of SO internal costs should be agreed for the period 1 April 2001 to 31 March 2006;
 - ◆ certain sunk costs (e.g. NETA set-up costs and income generated by the opening regulatory asset value) and non-controllable costs should not be incentivised;
 - ◆ the remaining SO costs should be incentivised;
 - ◆ the initial incentive scheme on SO internal costs should be set until 31 March 2002; and
 - ◆ the same sharing factors should apply to both SO internal and SO external costs.

Other respondents' views

Form of incentive

- 3.42 Eleven respondents welcomed the split between the SO and TO costs, with four citing the resulting increase in transparency as a key benefit. One respondent was concerned that any resulting merged control between SO internal and SO external costs might obscure this transparency. Another respondent said that, as long as transparency was maintained, the merging of the SO internal and external costs within the same scheme was appropriate.
- 3.43 Twelve respondents expressed a view on the form of the incentive scheme. Nine respondents favoured the use of a profit or sliding scale form of incentive scheme. Given the underlying uncertainty of NETA, three respondents suggested using RPI-X initially as a tried and tested method of regulating internal, controllable costs. Two of these respondents indicated that this could graduate to a merged scheme incorporating external costs in the medium term.
- 3.44 One respondent agreed that the sharing factors should be symmetrical. One other respondent suggested that the SO external and SO internal costs should be kept separate in the short run due to uncertainty over the cost drivers and then merged in the longer term once all the cost drivers had been identified and fully understood.

Duration

- 3.45 Ten out of twelve respondents expressed views on the duration of a scheme for the SO internal costs. All were in favour of the general principle of longer rather than shorter incentive schemes. However, most caveated this by saying that given the uncertainty underlying the costs associated with NETA and given future market developments, namely transmission access and BETTA, that a shorter scheme is preferable initially.
- 3.46 Two respondents expressed concern over agreeing a 5 year control, with one suggesting that this might be too generous given uncertainties over future costs.

Ofgem's final proposal

- 3.47 Having carefully considered all responses to previous consultations, Ofgem proposes that the scope of the SO internal costs scheme should cover the SO Base Costs, identified as part of the Transmission Business price control review, and the additional costs forecast to be incurred by NGC in preparing for and operating under NETA. Chapter 6 considers whether any elements of these costs should be treated as pass-through rather than incentivised costs.
- 3.48 On the form of the incentive on SO internal costs, Ofgem continues to believe that it will be in customers' interests to align NGC's incentives on internal and external SO costs.
- 3.49 However, given the initial uncertainty regarding external SO costs under NETA, Ofgem believes that a single incentive scheme approach (covering internal and external SO costs) could reduce the incentive to control SO internal costs, since any savings could be lost by movements in external costs. Therefore, Ofgem proposes that initially the schemes covering SO internal and external costs should operate separately. However, Ofgem proposes that the incentives between the two mechanisms should be aligned through the use of identical sharing factors (see Chapter 5). This will mitigate any perverse incentive to reduce one element of costs at the expense of another and should provide NGC with a strong incentive to reduce total SO costs.
- 3.50 Given the more limited scope for reductions or overruns in SO internal costs, Ofgem proposes that there should be no cap or collar on the SO internal costs scheme.
- 3.51 On the duration of the scheme covering internal costs, Ofgem continues to believe that it is appropriate that a five year cost stream is identified as part of this review of SO internal costs. Thus Ofgem will seek to guarantee, through the licence, the five year cost stream for SO internal costs. This will ensure that NGC has consistent incentives across the TO costs and SO internal costs. Identification and allowance of costs for a shorter period is likely to severely hinder any investment programme in the SO business to the potential detriment of SO external costs. Ofgem will consider, as part of a consultation on the next

SO incentive scheme, the appropriate duration and the appropriate sharing factors for the incentive scheme on SO internal and external costs.

Summary and conclusions

3.52 On the form, scope and duration of the incentive on SO external costs, Ofgem proposes that:

- ◆ a sliding scale form of incentive remains appropriate;
- ◆ the initial scheme should run until 31 March 2002;
- ◆ NGC's incentives should cover all system and energy balancing costs for the initial scheme under NETA. We have also concluded that, for this initial scheme, NGC's exposure to the Net Imbalance Volume should be reduced via a suitable reference price;
- ◆ there should be a single bundled incentive scheme at the start of NETA; and
- ◆ the initial incentive scheme should continue to be based on an ex-ante forecast of costs.

3.53 Ofgem has also concluded that provision for IAEs continues to be appropriate, and that there should be scope for both NGC and other participants to ask Ofgem to consider whether an IAE has occurred. Ofgem also proposes that the current threshold of £2m be retained for the initial scheme.

3.54 On the form, scope and duration of the scheme covering SO internal costs, Ofgem proposes:

- ◆ the scope of the scheme should cover all SO Base costs identified as part of the Transmission Business price control review and the incremental costs of preparing for and operating under a NETA, subject to the carve-out of a number of pass-through elements identified in Chapter 6;

- ◆ the form of the SO internal costs scheme should be the same as that for the incentive on SO external costs. Initially, separate SO internal and external schemes should operate in the period up to 31 March 2002, but the sharing factors for the two schemes should be the same. Ofgem proposes that there should be no cap or collar in relation to the incentive on SO internal costs; and
- ◆ the duration of the incentive on SO internal costs should be initially one year. However, Ofgem has identified a five year cost stream and considerations in future consultations on SO internal costs will relate only to the form of the incentive on SO internal costs and not the overall level of allowable costs.

4. SO External Costs: Incentive scheme target

Introduction

- 4.1 NGC has provided Ofgem with its views of the drivers of balancing costs under NETA, its forecast of outturn balancing costs and its proposals for the incentive scheme target on external costs. Ofgem's final proposals have been developed in the context of NGC's submission and responses to our initial proposals document. The discussion in this chapter needs to be considered in the light of the decisions that Ofgem has reached on the form, duration and scope of the initial SO incentive scheme (presented in Chapter 3).
- 4.2 Given our decision on the scope of the incentive scheme on external costs, the incentive scheme target will need to incorporate a forecast of the efficient level of costs associated with the following energy and system balancing services:
- ◆ energy (including forward energy contracts);
 - ◆ reserve;
 - ◆ frequency response;
 - ◆ transmission constraints;
 - ◆ black start;
 - ◆ reactive power; and
 - ◆ transmission losses.⁵⁹
- 4.3 The costs incurred in procuring and utilising these services will fall into two main categories:

⁵⁹ Although this is not a cost to which NGC is exposed, as currently, NGC will be incentivised to minimise the volume of transmission losses at a reference price.

- ◆ **Balancing Services Contract Costs (BSCC):** These are the costs of the payments that NGC will make to the providers under contract of the balancing services listed above, excluding any costs paid through the Balancing Mechanism.⁶⁰
- ◆ **Balancing Mechanism Costs (CSOBM):** These are the costs NGC will pay daily in accordance with the Balancing and Settlement Code for accepting bids and offers in the Balancing Mechanism.

The impact of NETA on the volume and price of balancing services

4.4 In the April Consultation and August 2000 Initial Proposals documents, Ofgem presented NGC's view on its likely requirements for balancing services and the key drivers of its costs under NETA.

NGC's view

4.5 NGC argued that for the start of NETA the volumes of reserve and response that it will be necessary to hold will increase because of:

- ◆ *Intra half-hour adjustments:* Under NETA, generator bids and offers will be firm so there will be financial incentives for participants to balance at the half-hourly level. NGC argues that this will create an incentive for intra half-hour adjustments in order to achieve balance by the end of the half-hour period. NGC believes that this could mean the minute-by-minute balance of demand and generation will be made more difficult. In order to counteract this effect, NGC argues it will have to increase the level of dynamic frequency response it holds;
- ◆ *NGC's demand forecasting error:* The standard deviation of NGC's demand forecast error at 3 ½ hours ahead of real time is currently 1%. It expects this will increase under NETA due to increased demand side responsiveness to price signals. This will have to be managed by holding more regulating reserve;

⁶⁰ NGC may purchase energy in forward markets under NETA for the purpose of balancing the system. The cost of these purchases will also be a balancing service contract cost.

- ◆ *Profiling uncertainty:* NGC expects high levels of energy imbalances to occur during shoulder periods when demand changes rapidly with considerable daily variations in profile. NGC expects this to continue until market participants gain experience under NETA and this will also require it to hold additional regulating reserve during these periods.
- 4.6 NGC accepted that the additional levels of reserve and response that it required should decline over time and incorporated declining volumes in its forecasts.
- 4.7 NGC has told Ofgem that NETA will not influence the volume of black start capability or reactive power that it needs to procure. It believes that NETA will not have a significant impact on the volume of transmission constraints during the period covered by the initial scheme.
- 4.8 NGC believes that the volume of energy balancing that will be required is very uncertain and has sought to capture this uncertainty in its modelling of the Balancing Mechanism, which includes a probabilistic treatment of energy balancing requirements.
- 4.9 NGC told Ofgem that the price of balancing services under NETA would depend on two factors: the pattern of bids and offers in the Balancing Mechanism and balancing services contract prices.
- 4.10 In relation to bid and offer structures, NGC believed that the following factors would be relevant considerations:
- ◆ participants will be able to offer different prices in different markets i.e. Balancing Mechanism bids and offers could be different from prices seen in forward energy markets;
 - ◆ participants will be able to change the price of bids and offers submitted in the Balancing Mechanism from period to period to reflect changing system conditions; and
 - ◆ there will be no cap on the price of bids or offers submitted in the Balancing Mechanism.

- 4.11 In relation to the costs of balancing services contracts, NGC believed that three effects would influence the prices offered for the provision of such services:
- ◆ the higher volume of reserve that NGC expects to require could increase its price;
 - ◆ prices for frequency response could increase as participants internalise their expected exposure to imbalance prices as a result of providing response via their bids and offers; and
 - ◆ greater transparency in the prices paid by NGC for balancing services could lead to participants extracting the maximum value for the service they offer by bidding up to the price of the most expensive service provider.
- 4.12 In addition, NGC believed that the removal of the capacity payments mechanism and hence Unscheduled Availability (USAV) payments could lead to an increase the cost of balancing services contracts (and prices submitted to the Balancing Mechanism). NGC argued that participants would seek to recover their fixed costs in the bids/offers submitted to the various markets in the absence of USAV.
- 4.13 Overall, NGC argued that both the price and volume of balancing services required under NETA would increase. NGC acknowledged that an increase in competition may offset these trends to an extent, but considered that there would still be upward pressure on balancing costs. Further details on NGC's view on the price and volume of balancing services contracts are included in Appendix 3.

Respondents' views

- 4.14 Eighteen respondents to the April Consultation commented on the drivers of the volume and price of balancing services. All of the respondents believed that, initially under NETA, an increase in the volume of balancing services procured by NGC would be acceptable. Of these, thirteen respondents believed the initial estimates of the increase in volume of balancing services required were too large. Two further respondents suggested that more information would be required before any proposed volume increases could be agreed. Three further

respondents commented that they agreed with NGC's views on the volume of balancing services required.

- 4.15 Five respondents commented that although initially under NETA, the volume of reserve and response required should increase, this additional volume should be reduced once experience of operating under the new trading arrangements has been gained. One of these respondents believed there were no grounds for certainty that prices charged by generators and demand for balancing services will increase under NETA. One respondent thought that NGC's forecasts should be seen as a worst case scenario, whilst another believed the proposed requirement greatly exaggerated the actual requirement, and so should be appraised critically.
- 4.16 Two respondents commented explicitly on NGC's views on the drivers of balancing services costs. One argued that any sustained increase in the cost of balancing services should lead to a review of the way in which balancing services are procured. The other suggested that although balancing services costs may rise as the operators of flexible plant seek appropriate remuneration for the services they provide, competitive pressure will mean this should be a short term phenomenon.
- 4.17 Regarding demand forecasting, two respondents expressed concern about NGC's assumptions. One was sceptical that NGC's demand forecast will become less reliable under NETA and argued that the SO should have a good idea of total demand well before Gate Closure and with a great deal of certainty once FPNs are submitted 3 ½ hours before real time. The other added that it would expect NGC's demand forecasting techniques to adapt to the new environment as NGC becomes accustomed to the accuracy of the FPNs.
- 4.18 One respondent believed that the overall costs of system balancing will increase under NETA, which is partly a function of the removal of the Pool (which it believed cross subsidises system balancing costs) and partly due to the lower efficiency of participants self-balancing. Another stated that the increase in costs reflected the increase in risk of procuring these services under the new environment.

- 4.19 Lastly, two other respondents argued that one of the advantages of NETA is to encourage, and reward, a much greater amount of genuine demand participation in the wholesale market, thereby reducing the need for reserve.

Ofgem's view

- 4.20 Ofgem agreed with NGC and other participants that, at least initially under NETA, there may be a need to hold some additional response and reserve. Ofgem believed that it should be possible to reduce any additional holding of reserve and response procured for the introduction of NETA over time, as experience of trading under NETA is gained. Ofgem believed that the volume drivers under NETA warranted further consideration to ensure that the additional requirements were justified, and that there was no double counting between drivers.
- 4.21 In relation to the drivers of prices under NETA, Ofgem's initial view was that whilst generators and demand would naturally try to extract value for the service they provide, there are, equally, drivers that are working to reduce wholesale prices across the range of services that generators and demand offer. Ofgem believed increasing competition across the supply curve could lead to falling prices for utilising response and reserve. Ofgem stated that given recent experience of prices under the Pool, it is apparent that the shape of the supply curve needs to be taken into consideration when determining a target for the incentive scheme.

NGC's initial forecast of balancing services costs under NETA

- 4.22 In June 2000, on the assumption of a NETA Go live date of 21 November 2000, NGC presented Ofgem with its initial forecast of balancing costs under NETA and its proposals for the incentive scheme target. This section summarises the assumptions behind NGC's initial forecast of balancing costs and its proposal.

Balancing services contract costs

- 4.23 NGC's initial view on the changes in the volume of balancing services contracts required under NETA is summarised in Table 4.1.

Table 4.1 - Balancing service volumes under NETA

Service	Current Holding	Initial Increase in Service	Conversion of Initial Increase to Annual Equivalent	% Increase to 31 March 2001	% Increase from 1 April 2001 to 31 March 2002
Response	8 TWh	+200MW of response	$200\text{MW} \times 8760\text{hr} = +1.8\text{ TWh}$	+22%	+22%
Regulating Reserve	6 TWh	+60-150MW of regulating reserve	$90\text{MW (av.)} \times 8760\text{hr} = +0.8\text{ TWh}$	+33%	+11%
		+500-1000MW of regulating reserve at shoulders	$3\text{hr} \times 500\text{MW} = +1.5\text{GWh /day}$ $2\text{hr} \times 1000\text{MW} = +2\text{GWh /day}$ so $+3.5\text{GWh} \times 365\text{days} = +1.2\text{TWh}$		
Fast Reserve	3 TWh	None		0%	0%
Standing Reserve	7 TWh	None		0%	0%
Contingency Reserve	3000 MW /day	+500 MW /day	n/a	+15%	+8%
Black Start		None	n/a	0%	0%
Reactive Power	Approx. 33 TVARH	None	n/a	0%	0%

4.24 Overall, NGC expected to increase its holdings of regulating reserve by 33% and firm response by 22% to cater for the increased uncertainty. As a result of these increases in reserve and response holdings, it also expected to increase the level of contingency reserve by approximately 17% (500 MW). NGC expected to require additional holdings at these levels for the first four months of NETA i.e to 31 March 2001, thereafter it considered it would be possible to reduce its reserve holdings broadly back to current levels over the remaining 12 months. On an average basis across the period 1 April 2001 to 31 March 2002, this profiling corresponds to reducing the initial additional volume of contingency reserve by about half and that of regulating reserve by a third. However, NGC did not anticipate reducing its response holdings.

4.25 Based on its estimates of the necessary volumes of balancing services and its view of the drivers of prices of balancing services contract costs, NGC created an overall forecast of balancing service contract costs (see Table 4.2).

Table 4.2 - Forecast daily balancing services contract costs

Cost Category	Current Daily Cost	NGC Forecasts		
		Low Forecast	High Forecast	Mean Forecast
£k/day				
Reactive Power	127	127	127	127
Reserve ⁶¹	100	111	150	131
Response	129	130	151	142
Other Balancing Services	37	48	97	73
Total	393	416	525	472
Total (£m/day)	0.39	0.42	0.53	0.47

Balancing Mechanism costs

4.26 NGC has developed new forecasting tools and models to analyse the Balancing Mechanism and other NETA markets. Inevitably, the absence of historic data makes forecasting balancing costs under NETA a potentially more difficult and uncertain task than under the current arrangements. Nevertheless, NGC has attempted to capture all the information required to forecast Balancing Mechanism costs. The balancing services contract volumes, outlined earlier, are an input into this model, but the costs of balancing services contracts are additive to forecast Balancing Mechanism costs discussed below. In addition, inputs to its model include estimates of the imbalance volumes, the shape of the bid and offer supply curves and a number of other uncertainties.

4.27 The outputs of the model include estimates of the daily volume of bids and offers purchased, the imbalance prices and a distribution of costs⁶² incurred in the Balancing Mechanism. Since the model did not explicitly consider the costs of resolving constraints relating to the restricted set of offers and bids that could be used, NGC separately estimated these. It also considered the effect of unplanned outages by running the model with the capacities of all plant reduced by 8% (its estimate of the average level of unplanned outages). More detail on

⁶¹ This represented NGC's estimate before the Standing Reserve tender.

⁶² NGC has used scenarios and random sampling to develop a distribution of Balancing Mechanism costs.

the assumptions made by NGC are included in Appendix 3. NGC has produced a forecast of Balancing Mechanism costs based on the mean of its probability distribution (Table 4.3).

Table 4.3 - Initial forecast daily balancing mechanism costs (£m/day)⁶³

£m/day	NGC Forecast
	Mean
BM Costs	1.08
Constraint Locational Pricing	0.03
Unplanned outages	0.11
Total	1.23

4.28 Overall, NGC estimated that it would incur costs in the Balancing Mechanism amounting to some £1.23m per day. NGC believed that the distribution of these costs has a standard deviation of £0.71m but that the distribution was significantly skewed. The 90% confidence interval associated with its initial forecast distribution was £0.52m/day to £2.52m/day.⁶⁴

Adjustment for net imbalance volume

4.29 Ofgem has proposed reducing NGC's exposure to the Net Imbalance Volume at a reference price. In order to set an incentive scheme target, therefore, the cost of the Net Imbalance Volume at a reference price must be deducted from the total Balancing Mechanism costs presented in Table 4.3.

4.30 NGC proposed that the reference price should be set to System Buy Price (SBP) when the system is short of energy and to System Sell Price (SSP) when the system is long on energy. Using this assumption, NGC calculated a mean Net Imbalance Volume adjustment of £0.54m/day leading to incentivised Balancing Mechanism costs of £0.69m/day.⁶⁵

⁶³ Based on NETA Go Live of 21 November 2000.

⁶⁴ This indicates that a 1% increase in the probability of costs exceeding any given level equates to a much large change in absolute costs than a 1% decrease in probability.

⁶⁵ It should be noted that the incentivised Balancing Mechanism cost for NGC will need to be considered in the light of the reference price that is ultimately chosen. For example, a reference price of £20/MWh across the period as opposed to a reference price based on SBP and SSP would increase NGC's forecast of incentivised Balancing Mechanism costs from £0.69m/day to £0.94m/day.

Treatment of transmission losses

- 4.31 As under the current incentive arrangements, NGC would also be incentivised to minimise the volume of transmission losses by the use of a target cost constructed from a volume target and a reference price. NGC had taken its forecasts for both the volume and the reference price from the parameters of the current P&SA based incentive scheme on transmission losses. The Pool scheme has monthly profiling factors, which are derived directly from the historic outturns of the previous 3 years, and NGC had taken the factors for the winter months in combination with the mid-point of the target range (5.23 TWh) to give a daily target volume of transmission losses of 16.06 GWh (which equates to 5.84 TWh on an annual basis although NGC subsequently told us this value was only meant to apply to winter losses).
- 4.32 NGC Multiplied this volume by £25/MWh, the price in the Pool scheme, to give a daily target for transmission losses of £0.40m.

Summary of NGC's proposal

- 4.33 Tables 4.4 and 4.5 summarise NGC's initial forecast of balancing costs under NETA.

Table 4.4 - NGC's initial forecast of total incentivised costs (£m/day)

Cost Category		Mean Forecast Cost
Incentivised Balancing Mechanism cost	£m/day	0.69
Balancing services contract cost	£m/day	0.47
Transmission losses	£m/day	0.40
Total daily incentivised costs	£m/day	1.56

Table 4.5 - NGC's incentive scheme target proposal (£m)⁶⁶

Cost Category	NGC's Proposal		
	Go live to 31 March 2001	1 April 2001 to 31 March 2002	Total Go live to 31 March 2002
Incentivised Balancing Mechanism cost	90	252	342
Balancing services contract cost	61	172	233
Transmission losses	52	146	198
Total Incentivised Costs for Period	203	569	774

4.34 Overall, NGC proposed an incentive scheme target of £1.56m/day or £774m⁶⁷ for the initial SO incentive scheme under NETA.

Ofgem's initial proposals

4.35 In the August 2000 Initial Proposals document, Ofgem noted that the work undertaken by NGC to model balancing services costs under NETA had been useful and instructive. However, we believed that there were a number of areas in which NGC had been overly pessimistic in the assumptions it had made. As a result, we believed that a target based on NGC's forecast would not represent an appropriate balance between risk and reward i.e. the likelihood that costs could be higher or lower would not be equal. However, Ofgem recognised the uncertainties under which NGC's modelling had been undertaken. Nevertheless, Ofgem's sensitivities on NGC's analysis produced significantly different cost forecasts.

Balancing services contract costs

4.36 NGC proposed a substantial increase in the volume of reserve and frequency response it holds at the start of NETA:

⁶⁶ Based on NETA Go live of 21 November 2000.

⁶⁷ For the period 21 November 2000 to 31 March 2002.

- ◆ Ofgem accepted NGC's proposals for additional volumes for the period between Go live and 31 March 2001, but we considered that thereafter there may be scope for more rapid reductions than NGC proposed; and
- ◆ NGC argued that there could be a significant increase in the costs of procuring some services under NETA. We considered that NGC may have overestimated the increases in the prices of reserve and frequency response.

Balancing Mechanism costs

4.37 NGC modelled prices and volumes in the Balancing Mechanism to forecast the costs it might be expected to incur in achieving energy and system balance under NETA. Ofgem questioned a number of the assumptions made by NGC, including whether:

- ◆ it was more likely that participants would submit high prices into the Balancing Mechanism than low prices, i.e. whether it was more likely that the BM would be liquid and uncompetitive than not;
- ◆ NGC had overestimated the impact of generators not being available at any given time, due to forced outages, on the cost of actions in the Balancing Mechanism; and
- ◆ NGC's distribution of costs was unduly biased in one direction and in particular whether its decision to take the mean, as opposed to the median, of its distribution as its proposed target value was appropriate.

Transmission losses

4.38 Ofgem believed that NGC's assumptions on transmission losses required amendment. As discussed above, NGC had used a daily target based on transmission losses over the winter period. On an annual basis, this equated to target losses of 5.9 TWh compared to the mid-point of the current target range of 5.23 TWh. We considered it inappropriate to use winter losses as a basis of an annual target, and instead proposed the mid-point of the current target rate of 5.23 TWh.

4.39 In addition, NGC used a reference price for transmission losses of £25/MWh. Time-weighted Pool Purchase Price (PPP) for 1999/00 was £22.9/MWh and recent EFA prices suggested a market expectation that prices overall would be lower next year. Given this recent history, we believed a reference price in the range of £20/MWh to £23/MWh could be more appropriate. Ofgem also believed that further consideration should be given to the use of a reference price that better reflected actual energy prices across the period under consideration. The use of a reference price set ex-ante could result in perverse incentives on NGC when it was looking at decisions that affect incentivised costs across several categories.

Summary of Ofgem's initial proposal

4.40 Given the views expressed above, Ofgem developed a range for the incentive scheme target based on an allowance for each element of the incentivised costs under NETA (as shown in Table 4.6).⁶⁸ Ofgem stated that in developing our final proposals, we would make appropriate adjustments in these and other areas.

Table 4.6 - NGC's incentive scheme target proposal and Ofgem's initial proposal (£m)

Cost Category	NGC's Proposal			Ofgem's Initial Proposal		
	Go live to 31 March 2001	1 April 2001 to 31 March 2002	Total Go live to 31 March 2002	Go live to 31 March 2001	1 April 2001 to 31 March 2002	Total Go live to 31 March 2002
Balancing Mechanism cost	90	252	342	66 – 78	141 – 227	206 – 306
Balancing services contract cost	61	172	233	54 – 61	143 – 161	197 – 223
Transmission losses	52	146	198	37 – 43	105 – 120	142 – 163
Total incentivised costs for period	203	569	774	156 - 183	388 - 509	545 – 692

⁶⁸ NGC presented Ofgem with its information on the profiling of response and reserve volumes over the duration of the scheme shortly before the publication of the August Consultation document. Thus, the implications of this for NGC's forecast of incentivised costs and Ofgem's initial proposals had not been explored at this stage.

- 4.41 Across the whole of an incentive scheme that took effect with a NETA Go live date of 21 November 2000 and which ended on 31 March 2002, Ofgem suggested that the incentive scheme target (including losses) could be lower than NGC's proposal by between 11% and 30% at between £545m and £692m (corresponding to a 10-23% reduction for the period to 31 March 2001 and a 11-32% reduction thereafter).

NGC's view

Drivers of the volume and price of balancing services

- 4.42 In its response to the August 2000 Initial Proposals document, NGC re-asserted that the introduction of NETA would require it to hold additional volumes of reserve and response. Nevertheless, it agreed that it should be possible to reduce these additional volumes over time (discussed below).
- 4.43 NGC also argued that prices will be driven by the extent to which the Balancing Mechanism and the contracts markets allow service providers to recover their fixed costs, and to derive value for the flexibility of their plant to deliver energy in short timescales.

Forecast of balancing services contract costs

- 4.44 NGC welcomed Ofgem's proposal to allow it to hold additional volumes of reserve and response initially under NETA. It believed that these additional volumes could not be reduced more quickly than it had proposed without compromising system security. Furthermore, NGC argued that rather than overestimating balancing service contract costs, early indications from service providers suggested that it may have significantly underestimated these costs in its initial forecast.
- 4.45 On 27 October 2000, a delay to the introduction of the new electricity trading arrangements was announced by Ofgem.⁶⁹ Originally scheduled for 21 November 2000, Ofgem/DTI announced that implementation would be delayed until after the Christmas period and a new target date of 27 March 2001 was set.

⁶⁹ 'New Target Date for NETA', Ofgem Press Release, 27 October 2000.

4.46 Since publication of the August 2000 Initial Proposals document, NGC has revised its forecast of balancing services contract costs. NGC's revised forecast reflects:

- ◆ the delay to NETA Go live, resulting in a shorter duration for the scheme;
- ◆ Ofgem's comments on the costs of Black Start contracts and NGC's decision to contract for further Black Start capability in 2001/02;
- ◆ re-profiling of the additional volumes of response and reserve to be held in the light of the delay to NETA Go live (see Table 4.7); and
- ◆ recalculation of NGC's forecast of SSP/SBP (reflecting a change in the Balancing Reserve Level⁷⁰) leading to a reduction in the response imbalance refund.

4.47 NGC argued that no further adjustments to its forecast of balancing services contract costs would be appropriate.

Table 4.7 - Profiling of additional response and reserve volumes under NETA⁷¹

Month	Response (Intra half hour)		Regulating Reserve (DFE ⁷²)		Regulating Reserve Profile Uncertainty		Contingency Reserve	
	%	MW	%	MW	%	MW	%	MW
Apr 2001	100	200	100	100	100	115	100	500
May 2001	50	100	100	95	100	115	60	300
Jun 2001	50	100	100	90	100	115	60	300
Jul 2001	50	100	80	75	80	95	60	300
Aug 2001	50	100	70	60	70	80	50	250
Sep 2001	50	100	40	40	50	60	50	250
Oct 2001	60	120	40	40	50	90	60	300
Nov 2001	100	200	40	50	50	90	90	450
Dec 2001	100	200	40	50	50	90	90	450
Jan 2002	100	200	40	50	50	90	90	450
Feb 2002	100	200	20	25	50	90	90	450
Mar 2002	60	120	20	20	20	35	50	250

⁷⁰ See below for further explanation.

⁷¹ Percentages relate to percentage of additional Response/Reserve Holding requested by NGC.

⁷² Demand Forecast Error.

4.48 Overall, NGC's adjustments lead to a £13m reduction, on a like for like basis, in its forecast of balancing services contract costs.

Table 4.8 - NGC revised forecast of balancing services contract costs

	£m/annum
NGC Initial forecast	172
Less enhanced service reduction	-6.4
Standing Reserve Adjustment	-3.6
Black Start Adjustment	-0.2
Response Imbalance Refund	-3.1
Contingency Reserve	0.2
NGC Revised Forecast	159

4.49 Thus, NGC proposes an allowance of £159m for balancing services contract costs over the period 1 April 2001 to 31 March 2002.

Forecast of Balancing Mechanism costs

4.50 As with balancing services contract costs, NGC does not believe that the additional volumes of response and reserve it has assumed could be reduced more quickly than it has proposed. NGC also maintains that its forecast of costs represents a balanced central view and that Ofgem's proposed reductions from its forecast merely explore the downside range of possible outcomes.

4.51 Nevertheless, in addition to the adjustments consequent upon the delay to NETA and NGC's changes in its balancing services contract assumptions, NGC has made two adjustments to its forecast of Balancing Mechanism costs reflecting:

- ◆ the results of the standing reserve tender round which witnessed a rise in the offer prices from potential standing reserve contract providers and led NGC to contract for less standing reserve than it had anticipated; and
- ◆ the removal of a systematic bias with NGC's modelling of Balancing Mechanism costs which had led to an overestimate of the costs associated with post gate closure plant outages.

4.52 Overall, NGC's adjustments lead to a £2.3m reduction, on a like for like basis, in its forecast of Balancing Mechanism costs.

Table 4.9 - NGC revised forecast of Balancing Mechanism costs

	£m/annum
NGC Original forecast	448
Re-profiling of extra response/reserve	-2.0
Outcome of Standing Reserve tender	7.0
Modelling of Post Gate Closure Variables	-7.3
NGC New Forecast	446

4.53 Thus, NGC forecasts Balancing Mechanism costs of £446m over the period 1 April 2001 to 31 March 2002.

Net imbalance volume adjustment

4.54 NGC continues to believe that the reference price used to reduce its exposure to the net imbalance volume should be set to SBP when the system is short of energy and to SSP when the system is long on energy.

4.55 Since the August 2000 Initial Proposals document was published, the BSC Panel has set the Balancing Reserve Level (BRL) used in determining which offers and bids accepted in the Balancing Mechanism will feed through to energy imbalance prices, to 180 MWh. NGC, for its initial forecast of incentivised Balancing Mechanism costs had assumed a BRL of 200 MWh. In addition, to this change in the assumptions used to calculate its forecast SSP and SBP, NGC has discovered and corrected some errors in its method of calculating these prices. Given this, NGC has re-forecast its proposed net imbalance volume adjustment. On a like for like basis the adjustment to forecast Balancing Mechanism costs now proposed by NGC has fallen from -£197m to -£162m with a commensurate rise in incentivised Balancing Mechanism costs.

Table 4.10 - NGC revised forecast of incentivised Balancing Mechanism costs

		£m/annum
NGC Original	Initial Forecast Total BM Cost	448
	Original NIA	-197
	Incentivised BM Cost	251
NGC Revised	Revised Forecast Total BM Cost	446
	Revised NIA	-162
	Incentivised BM Cost	284

4.56 Thus, NGC proposes an allowance of £284m for incentivised Balancing Mechanism costs over the period 1 April 2001 to 31 March 2002.

Transmission losses

4.57 NGC accepted that its proposed volume for transmission losses was too high, particularly given that the delay to NETA means that the scheme will now run over only one winter. Based on recent information on the actual volume of transmission losses, NGC proposed a new target for the volume of transmission losses of 5.05 TWh. In addition, it has revised its reference price assumption down to £20/MWh. It now proposes a cost allowance for transmission losses of £101m per annum.

4.58 NGC does not believe that the incentive scheme would benefit from a floating reference price, particularly given the difficulty of agreeing an appropriate index at this time.

Summary of NGC's revised forecast

4.59 In summary, NGC has made a number of adjustments to its forecast of balancing costs under NETA, reflecting the delay to NETA Go live, profiling of the additional volumes of response and reserve to be held under NETA, and some adjustments proposed by Ofgem. On an annualised basis, these reduce its proposed target value by £26m (see Table 4.11).

Table 4.11 - incentive scheme target – NGC proposals (£m/annum)⁷³

	NGC Original Proposal	NGC Revised Proposal
Balancing services cost	172	159
Incentivised Balancing Mechanism costs	251	284
Incentivised balancing costs	422	442
Total incentivised balancing cost	422	442
Transmission losses	146	101
Proposed incentive scheme target	568	542

4.60 Overall, NGC proposes an incentive scheme target of £542m for the period 1 April 2001 to 31 March 2002.

4.61 NGC proposes using a simple of pro-rata of its forecast to adjust the incentive scheme target for the actual Go live date. For example, given the current target date for NETA Go live of 27 March 2001, NGC's proposed incentive target would need to be increased by 370/365 to obtain the target for an incentive scheme with a duration of 27 March 2001 to 31 March 2002.

Other respondents' views

NGC's approach

4.62 Thirteen respondents to the August 2000 Initial Proposals document commented on the volume and price of balancing services. Twelve respondents believed that NGC had been unduly pessimistic in its estimates. One respondent commented that NGC has tended in all its past forecasts to portray a more difficult future environment with higher expected costs than turns out to be the case, and suggested that Ofgem should consider more likely market scenarios. Three respondents broadly welcomed Ofgem's proposals on the matter.

4.63 One respondent agreed with NGC's forecast. It believed NGC's analysis was rigorous and sensible and it found it difficult to understand how Ofgem had calculated its adjustments without more detail being provided.

⁷³ Totals may not add due to rounding.

- 4.64 Many respondents commented that despite the evidence of modelling by NGC, it was very difficult to understand and forecast these costs. One respondent explained that individual participants were not well placed to comment on the specifics of NGC's cost forecasts.

Volume and price of balancing costs

- 4.65 Seven respondents commented that, although initially under NETA there was an argument for allowing additional volumes of response and reserve, they expected this allowance to be reduced soon after Go live as participants gain experience of trading under NETA. One respondent commented that it was reasonable to expect that the costs of the additional response and reserve would be offset by the introduction of better contracting options for the SO. Four other respondents commented that the response and reserve requirement must be considered in the context of the incentives that NETA provides to market participants to self-balance which should reduce the need for NGC to purchase reserve.
- 4.66 Four respondents disagreed with NGC's assertion that due to increased demand side responsiveness, demand forecast errors will increase. Another respondent believed that increased demand side response would be highly predictable since it would involve the acceptance of a bid or offer. One respondent believed a similar argument applied to profiling uncertainty. It believed that apart from inherent forecasting error, NGC will be aware of any system imbalance caused by participant profiling error at gate closure (through the submission of FPNs).
- 4.67 One respondent believed the assumption made by NGC on the volume of unplanned plant outages was a significant overestimate and believed that Ofgem should ensure there was no double counting between pre and post gate closure figures. It also believed that NGC had underestimated the impact of better incentives on generators to minimise unplanned plant outages.

Transmission losses

- 4.68 Eight respondents to the August Consultation commented on the allowance within the incentive scheme for transmission losses. Seven of these respondent's agreed with Ofgem's views. One respondent argued that the cost of losses should be determined from the demand weighted average system price, and not

the time weighted. Two respondents argued that they saw no reason why the target volume of transmission losses should not be 5.23 TWh or lower.

- 4.69 Nine respondents to the August Consultation provided comments on the reference price for transmission losses. Of these, six respondents agreed with Ofgem's view that NGC's reference price for losses was too high. Three other respondents provided comments but did not express an opinion.
- 4.70 Three respondents expressed a preference for a floating reference price. One of these respondents believed that the price used for transmission losses should reflect the real value of lost energy. It believed the reference price should be derived from forward energy markets. As it may take a short time for a reference price to emerge it suggested using a fixed price derived from the EFA market in the short term. Two respondents suggested that the reference price should be fixed ex-ante since to provide transparency. One believed that Ofgem's lower price of £20/MWh might also be too high, given the level of forward prices.

Ofgem's final view

- 4.71 Ofgem continues to believe that NGC's target significantly overestimates the likely costs that it will face. NGC's proposals must also be set in the context of NGC's forecasting performance under its current incentive schemes. In Ofgem's view, NGC has consistently argued that costs and uncertainties will rise when discussing incentive scheme targets. In the event NGC has agreed to, and then subsequently beaten, a target significantly lower than it originally proposed. Based on experience to date, Ofgem believes that there is evidence of a positive bias in NGC's forecasts.
- 4.72 We have conducted, with further information provided by NGC, a detailed assessment of the assumptions NGC has made and the modelling it has undertaken. In developing our final proposals, we have challenged NGC's forecasts of balancing costs in three areas:

- ◆ where we believe NGC has been unduly pessimistic in its assumptions and thus overestimated balancing costs under NETA;
- ◆ where we believe elements of NGC's modelling methodology results in a systematic modelling bias; and
- ◆ where NGC has underestimated the incentives faced by market participants under NETA which are likely to lead to lower balancing costs.

Balancing services contract costs

4.73 With respect to the allowance for balancing services contract costs, Ofgem has made the following adjustments to NGC's revised forecast.

Price of balancing services contracts

- 4.74 Ofgem believes that NGC has been overly pessimistic concerning increases in the prices of balancing services under NETA. Ofgem believes that the cost target should provide NGC with an incentive to mitigate the effect of upward price drivers (through contract negotiations and adopting a range of contracting strategies). Indeed, it is for precisely this reason that NGC has been given discretion in how it balances the system.
- 4.75 Nevertheless, we accept that certain low load factor plant, required to provide balancing services, may seek to factor recovery of fixed costs in to their bids in the Balancing Mechanism.
- 4.76 However, we have made no allowance for the attempt by service providers to extract additional payments for services provided under NETA apart from an adjustment for the removal of USAV payments. Given current plant margins we believe that with appropriate incentives, NGC should be able to mitigate attempts by service providers to increase contract prices through alternative purchasing strategies.
- 4.77 NGC has also forecast a further increase in black start contract costs for 2001/02 due to the acquisition of additional black start contracts. Ofgem notes that NGC in the past has requested and received an allowance for new black start contracts which it has then not signed. There is some uncertainty over whether NGC will

be able to agree two new contracts for the financial year 2001/2002.

Accordingly, Ofgem has made an allowance for only one new black start contract.

- 4.78 Overall, these adjustments reduce NGC's estimate of balancing services contract costs by £13m. Thus, Ofgem's final proposal is £146m.

Balancing Mechanism costs

- 4.79 With respect to the allowance for Balancing Mechanism costs, Ofgem has made the following adjustments to NGC's revised forecast.

Price of Balancing Mechanism bids/offers

- 4.80 Ofgem remains unconvinced that the probabilities that NGC has assigned to its Balancing Mechanism price scenarios are consistent or realistic. Based on the results of analysis conducted by NGC, we have removed the bias towards less competitive outcomes in NGC's BM price scenarios. Whilst we recognise that other sensitivities could be constructed under which forecast costs could be higher or lower, we believe that a symmetric set of probabilities across the four price scenarios is a more reasonable and consistent set of assumptions than those made by NGC.

Outages (pre Gate Closure)

- 4.81 NGC has assumed an unplanned plant outage rate of 8%, which increases Balancing Mechanism costs by £0.11m/day. NGC's key point is that on any given day, some plant will be unavailable because of technical/mechanical failures. Ofgem accepts that on any given day, a certain proportion of plant will be unavailable for these reasons. However, we have previously argued that we are not convinced that the effect of this will be to increase the bid-offer slope i.e. the supply curve in the Balancing Mechanism by as much as NGC believes. In addition, we previously questioned the use of a single unplanned outage rate since we would expect this to vary significantly between plant types and between plant of different ages.
- 4.82 More generally, we do not consider that NGC has taken sufficient account of the stronger incentives under NETA on participants to minimise unplanned outages and commercial decisions taken not to generate. For example, there is evidence

from scheduled plant outages this summer that generators have undertaken additional maintenance to improve reliability of plant for NETA. Taking these factors together, we consider it likely that NGC has over-estimated the impact of unplanned unavailability of plant. However, bearing in mind NGC's comments and the data it has provided, we have reduced the adjustment suggested in our initial proposals. Consequently, we have only reduced NGC's assumption of an 8% average outage to 6%.

Mean versus median

- 4.83 As Ofgem made clear in our initial proposals, we have previously sought to establish the use of the median of NGC's forecast when setting the incentive scheme targets.⁷⁴ We continue to believe that, consistent with the overall risk/reward profile offered under the four different options proposed, that the median remains the appropriate measure.

Incentives under NETA

- 4.84 Ofgem agrees with the views of respondents to the August 2000 Initial Proposals document, that NETA provides substantially improved incentives on participants to balance their own position and to ensure that they are available to participate in short term markets including the Balancing Mechanism. These incentives may well lead to some plant self warming in order to be able to participate in short term markets including the Balancing Mechanism. Such self-warming could result in an increased amount of inherent headroom (the volume of part loaded plant) on the system. This would enable NGC to avoid some of the costs associated with de-loading plant in order to provide response or reserve (i.e. some reserve is provided by the market without the need for NGC to contract). Thus, Ofgem considers that NGC may have overestimated the volume of offers/bids it will need to accept to deliver its desired levels of response and reserve and we have made an adjustment to account for this.

NGC's market share modelling

- 4.85 NGC has had to take a view on the market shares of each generating company in order to conduct its modelling of Balancing Mechanism costs. Whilst,

⁷⁴ 'Transmission Services Incentives Scheme, Proposals', OFFER, February 1998 and 'NGC Incentive Schemes from April 2000, Transmission Services Uplift and Reactive Power Uplift Schemes, A Decision Document', Ofgem, February 2000.

inevitably there is a significant element of judgement involved in making such assumptions, NGC has assumed that CCGT plant operate as a block and has given them a single market share figure within its modelling. The volume of inherent headroom assumed by NGC in its modelling is in part a function of the number of players assumed. Thus, treating all independent CCGTs as a block underestimates the inherent headroom available to NGC. Based on analysis provided by NGC, we believe that this assumption overestimates the volume of offers/bids it would need to purchase.

Table 4.12 - Ofgem adjustments to NGC's revised forecast of Balancing Mechanism costs⁷⁵

	£m/annum
NGC New Forecast	446
Ofgem Adjustments	-59
Ofgem Final Proposal	386

4.86 Overall, these adjustments amount to £59m. Against NGC's revised forecast of balancing mechanism costs of £446m, Ofgem's final proposal is £386m.

4.87 Taking into account the affects of the net imbalance volume adjustment, and assuming that the reference price is based on NGC's proposal, then Ofgem's final proposal for incentivised Balancing Mechanism costs is £224m over the period 1 April 2001 to 31 March 2002.

Transmission losses

4.88 Ofgem and NGC now agree on the target volume of losses and the appropriate reference price.

4.89 Thus, Ofgem proposes that the target volume of transmission losses should be 5.05 TWh/annum and the transmission losses reference price should be set ex-ante at £20/MWh. This results in a proposed allowance for transmission losses of £101m/annum. It should be noted that the exact choice reference price has a limited impact, given the plausible range of transmission losses. For example,

⁷⁵ Totals may not add due to rounding.

even assuming 100% sharing factors, if out-turn losses were 4.9 TWh (rather than 5.05 TWh), NGC would only gain an additional £0.45m if the reference price were 23 £/MWh instead of 20 £/MWh.

Summary and conclusions

Table 4.13 - Ofgem's view (£m/annum)⁷⁶

	NGC original proposal	NGC revised proposal	Ofgem view	£m reduction	% reduction
Balancing services contract cost	172	159	146	13	8%
Incentivised Balancing Mechanism cost	251	284	224	59	21%
Total balancing cost	422	442	370	71	16%
Transmission losses	146	101	101	-	-
Total cost	568	542	471	71	13%

- 4.90 In summary, Ofgem believes that NGC has been unduly pessimistic in its forecast of balancing costs under NETA and thus that its proposed target for the initial SO incentive scheme under NETA is too high. We have developed our final proposals based on NGC's response to a number of questions posed by Ofgem and further analysis where appropriate.
- 4.91 Ofgem believes that, on the basis of the adjustments we have made to the modelling undertaken by NGC, that the median of an appropriate distribution of balancing costs is £370m excluding losses or £471m including losses. Ofgem has therefore developed four options for the incentive scheme under NETA based around our forecast (see Chapter 5). The four options are designed to meet NGC's concerns about risk and uncertainty whilst continuing to provide NGC with strong incentives to control and reduce these costs. Our preferred option, Option 1, is based around a target cost of £471m over the period 1 April 2001 to 31 March 2002. This represents a £71m or 13% reduction against NGC's revised forecast of balancing costs under NETA.

⁷⁶ Totals may not add due to rounding.

- 4.92 We agree with NGC that a simple pro-rata of this target should be used to adjust the incentive scheme target for the actual Go live date. For example, given the current target date for NETA Go live of 27 March 2001, NGC's proposed incentive target would need to be increased by 370/365 to obtain the target for an incentive scheme with a duration of 27 March 2001 to 31 March 2002.
- 4.93 In Chapter 5 we consider, given this target, the possible combinations of sharing factors, caps and collars and target (or deadband) that would provide an appropriate incentive to NGC to reduce balancing costs under NETA. In this way, we have sought to address NGC's concerns with regard to the uncertainty of balancing costs through our proposals for the scheme sharing factors, cap and collar.

5. SO External Costs: Other Parameters

Introduction

5.1 This chapter presents Ofgem's final proposals on the following parameters for the initial SO incentive scheme under NETA:

- ◆ the sharing factors;
- ◆ cap and collar;
- ◆ the reference price to be used in reducing NGC's exposure to the Net Imbalance Volume; and
- ◆ the inclusion of a threshold price adjustment.

5.2 In addition it outlines four options for incentive scheme packages that we will allow NGC to choose between.

Incentive scheme sharing factors, cap and collar

Background

5.3 The current TSU and RPU incentive schemes that have applied since 1 April 2000, incorporate symmetric sharing factors of 50%. Thus, NGC and customers share equally the costs or benefits of better or worse than expected performance.

5.4 These schemes also cap NGC's potential profits and collar NGC's potential losses at approximately £23m per annum.

Previous consultations

5.5 Ofgem accepted in the April Consultation that there is inevitably uncertainty regarding the level of both system and energy balancing costs for the start of NETA. Thus, we suggested there might be merit in reducing the sharing factors in the initial SO incentive scheme. An alternative would be to leave the sharing factors at 50% but to reduce the cap and collar.

5.6 In the August 2000 Initial Proposals document, Ofgem stated that we remain committed to the general principle of symmetric sharing factors and continued

to believe that they reflect an appropriate balance between the interests of customers and NGC. We suggested that for the initial SO incentive scheme under NETA, it might be appropriate to retain symmetric sharing factors but reduce the exposure faced by NGC by setting them at a level between 10% and 30%. This would be broadly consistent with the sharing factors under the first incentive scheme on NGC (the Uplift Management Incentive Scheme or UMIS) introduced in 1994/95.⁷⁷

- 5.7 With respect to the cap and collar, Ofgem's initial view, as expressed in the April Consultation, was that the simplest arrangement would be a cap and collar that could be linked to the incentive scheme target. For example, the cap and collar could be set as percentages (for example, 10%) of the total cost target. We also suggested that symmetric caps and collars were appropriate and noted that consideration of the appropriate value for the cap and collar should be linked to the treatment of IAEs. In general, Ofgem believed that it would be sensible to limit NGC's exposure through a suitable combination of sharing factors, caps and collars, and possible provisions for IAEs.
- 5.8 In the August 2000 Initial Proposals document, Ofgem noted that under the current arrangements, the sum of NGC's maximum profit or loss across all the incentive schemes on external costs (licence and Pool-based) is approximately £26m in a financial year. A cap/collar based on 10% of the incentive scheme target for the initial SO incentive scheme would yield a cap and collar of around £40m per year. Ofgem suggested that for the initial SO incentive scheme under NETA, a cap and collar in the range £25m per year to £50m per year would be appropriate, given that we proposed a low sharing factor, and proposed to retain provisions for IAEs for the initial SO incentive scheme under NETA.
- 5.9 Whilst Ofgem continued to believe that symmetric caps and collars were appropriate, we understood NGC's concerns with regard to the uncertainties and risks it faces initially under NETA. Ofgem believed that the low sharing factors we had proposed and the retention of IAEs for this incentive scheme provided NGC with adequate protection at the start of NETA. Nevertheless, we noted that we would continue to consider whether an asymmetric cap and collar (with a larger cap than collar) might be appropriate for the initial SO incentive scheme.

⁷⁷ Under UMIS, the upside sharing factor was set to 30% whilst the downside sharing factor was set to 20%.

NGC's view

- 5.10 It its response to the April Consultation, NGC stressed that there is considerable uncertainty with regard to Balancing Mechanism costs under NETA. In its view the principle source of this uncertainty being the bid and offer prices that participants will submit rather than the actions taken by NGC. Thus, NGC agreed that the sharing factors should be lower than the current 50%. It believed that the sharing factors could be increased back to current levels for later schemes as the drivers of balancing costs become better understood.
- 5.11 With respect to the incentive scheme cap and collar, NGC explained that translating the current caps and collars to a bundled scheme would yield a value of +/-£26m, or £70k a day. It believed that a cap and collar at this level might be appropriate in the longer term, but for the initial scheme this should be reduced. It explained that a reduction would reflect the uncertainty in setting an *ex-ante* target and the likely volatility of Balancing Mechanism prices during the initial period of NETA. It stated that this could be increased for a subsequent enduring scheme.
- 5.12 Nonetheless, NGC has since indicated to Ofgem that it would be willing to accept a cap and collar of £25m for the initial SO incentive scheme.
- 5.13 Since the April Consultation, NGC has proposed that the initial SO incentive scheme under NETA should incorporate sharing factors of 12.5% when outturn costs are below the incentive scheme target and 7.5% when outturn costs are above the incentive scheme target. NGC argued that given the asymmetric nature of the Balancing Mechanism cost distribution, and Ofgem's preference for symmetric caps and collars, then the sharing factors need to be asymmetric to ensure an equal coverage of upside benefits and downside losses.⁷⁸
- 5.14 If symmetric sharing factors are to be used, NGC proposes that the sharing factor for the initial incentive scheme should be at the bottom end of Ofgem's

⁷⁸ NGC argued that the sharing factors needed to be set such that it was incentivised across a 90% range of likely outturn costs. Given this and assuming a cap and collar of £26m an upside sharing factor of 14.5% and a downside sharing factor of 8.6%. NGC argues that if symmetric sharing factors are used then there will be a much greater likelihood of hitting the collar on losses than hitting the cap on profits. This, it argued, can be overcome by setting very low sharing factors (below 8.6%). However, in order to sharpen its incentives and reflect the inherent asymmetry in costs, NGC proposed to establish sharing factors of 12.5% (upside) and 7.5% (downside).

proposed range (i.e. 10%). This would reflect the uncertainty in setting an appropriate target.

Other respondents' views

- 5.15 Fifteen respondents to the April Consultation commented on this issue. Of these, thirteen agreed with Ofgem's proposal that the sharing factors should be symmetric, whilst two respondents were in favour of asymmetric sharing factors. Two respondents suggested a sharing factor of 50% was appropriate, whilst five respondents suggested that a lower sharing factor would be more appropriate for the initial incentive scheme under NETA.
- 5.16 Thirteen respondents to the August 2000 Initial Proposals consultation also commented on the issue of sharing factors. Of these, eight respondents were in favour of retaining symmetric sharing factors. Another respondent believed the sharing factor should remain symmetric if the mean value of the target distribution is accepted and asymmetric if the median value is chosen. One respondent was prepared to accept NGC's argument in favour of asymmetric sharing factors because of the asymmetric distribution of costs.
- 5.17 Nine respondents commented on the value of the sharing factors, with all nine agreeing that they should be lower than current levels. Two respondents favoured sharing factors at the high end of Ofgem's proposal, one respondent was in favour of sharing factors below 10%. A further respondent commented but did not express an opinion.
- 5.18 Fifteen respondents to the April Consultation commented on the issue of an appropriate cap and collar. Thirteen respondents agreed that payments to or by NGC should continue to be subject to a cap and collar, whilst one respondent disagreed. Of the respondents in favour of a cap and collar, two supported absolute values for the cap/collar (values of £20m, £10m and £5m were suggested), whilst two suggested that a percentage cap/collar would be more appropriate. Three respondents believed that the cap and collar for the initial scheme should be lower than at present.
- 5.19 Eleven respondents to the August 2000 Initial Proposals consultation commented on the level of the cap and collar. Three of the respondents were not in favour of a cap and collar for the incentive scheme, although one of these

respondents did suggest that initially under NETA a cap and collar in the region of £40-50m per year might be appropriate. One of these respondents believed that if sharing factors were modest then there may no longer be a requirement for caps and collars that distort the incentive on NGC when they are breached.

- 5.20 Eight respondents were in favour of retaining caps and collars for this incentive scheme. Three of these respondents suggested a low cap and collar was appropriate.⁷⁹ Two of these respondents favoured the use of a symmetric cap and collar.

Ofgem's final proposal

- 5.21 The approach taken by NGC in developing its proposals for the SO incentive scheme has been to propose a combination of incentive scheme target, sharing factors and cap and collar that in its view, reflects the inherent uncertainty in costs (by reflecting the range of possible outturn costs forecast by NGC).
- 5.22 Since the August 2000 Initial Proposals document, Ofgem has been considering the appropriate combination of sharing factors and cap/collar for the initial SO incentive scheme. In Chapter 4, we made clear that we consider NGC's proposed incentive scheme target is too high because we believe that NGC has overstated the uncertainty and change in the risk and reward profile in the move to NETA.
- 5.23 Ofgem has already taken a number of steps to mitigate the risks faced by NGC in operating under NETA, including reducing NGC's exposure to the net imbalance volume at a reference price and giving it the discretion to procure balancing services in markets and ways of NGC's choosing. However, recognising the challenge that would be posed to NGC by Ofgem's proposal of an incentive scheme target of £471m, and in light of the representations made by NGC and other respondents, we have developed four combinations of targets, sharing factors, caps and collars that we believe meet NGC's concerns as well as Ofgem's objective of an effective incentive on NGC to manage costs on customers' behalf. Ofgem has given NGC a choice between the four options shown in Table 5.1.

⁷⁹ One respondent argued that high sharing factors with narrow caps and collars may limit NGC's overall exposure but leads to a high probability of being in a situation where NGC ceases to be incentivised.

Table 5.1 - Incentive scheme form – Ofgem’s final proposal

	Ofgem Option 1	Ofgem Option 2	Ofgem Option 3	Ofgem Option 4
Incentive Scheme Target	£471m		£485m	
Deadband	-	£471m to £517m	-	£471m to £500m
Upside Sharing Factor	50%	25%	40%	40%
Downside Sharing Factor	10%	20%	12%	12%
Cap	£60m	£30m	£45m	£45m
Collar	£12m	£25m	£15m	£15m
Duration	One Year with option for rollover of target* to second year	One year scheme	One year scheme	One year scheme
Expected return against NGC’s distribution	£2.0m	£-3.7m	£1.4m	£0.6m
Expected return against Ofgem’s distribution	£12.8m	£3.6m	£11.3m	£9.5m

*Subject to an adjustment reflecting lower volumes of response and reserve holding.

5.24 Option 1 has been designed to provide a significant incentive to NGC to reduce balancing costs, through high upside potential, and to address NGC’s downside risk concerns, through a low downside sharing factor and low collar. Under Option 1, NGC’s maximum exposure would be £12m and balancing costs would have to rise to £591m before NGC would make this loss. On the other hand, NGC would have a strong incentive through the upside sharing factor to deliver real benefits to customers by reducing balancing costs.

5.25 Overall, Option 1 represents a significant increase in upside potential and a significant decrease in downside risk compared to the current incentive schemes. Based on NGC’s forecast distribution of costs, Option 1 gives an expected benefit of £2.0m. On the other hand, if outturn costs were to coincide with NGC’s proposed target of £542m it would lose £7.1m.

5.26 Option 2 has been designed to bridge the gap between Ofgem and NGC on the incentive scheme target, through use of a deadband. In return, Ofgem proposes a combination of sharing factors and cap and collar that provide for lower upside potential and higher downside risk. Under Option 2, NGC’s maximum loss is raised to £25m but balancing costs would have to rise to £642m before this loss would be incurred. Under this option, the expected outcome for NGC,

under its distribution would be a loss of £3.7m, whilst under Ofgem's distribution the outcome is an expected profit of £3.6m. In addition, the outcome for NGC's mean estimate of costs would be better than under Option 1 by approximately £2m (and the probability of NGC making a loss is lower).

- 5.27 Option 3 is similar to Option 1, except that to address NGC's concerns over what it perceives as the high risk of making a loss under Option 1, we have raised the incentive scheme target, reduced the potential for upside and raised the potential downside exposure. Under this option, the expected return for NGC, under its forecast distribution of costs, is £1.4m, and under Ofgem's forecast distribution of costs is £11.3m.
- 5.28 Option 4 is similar to Option 2, except that in return for a narrower deadband, NGC is offered higher upside potential and lower downside risk. Under this option, the expected return for NGC, under its forecast distribution of costs, is £0.6m, and under Ofgem's forecast distribution of costs is £9.5m.
- 5.29 As proposed in Chapter 3, the incentive on SO internal costs should share the same sharing factors as that for SO external costs, however no cap and collar would apply. Thus, under Option 1 the allowance for SO internal costs in any given year would be subject to an upside sharing factor of 50% and a downside sharing factor of 10%. Under Option 2, the allowance for SO internal costs in any given year would be subject to an upside sharing factor of 25% and a downside sharing factor of 20%. Under Options 3 and 4 the upside sharing factor would be 40% whilst the downside sharing factor would be 12%.
- 5.30 The proposed combinations of sharing factors and cap/collar have been specifically designed to mitigate the initial uncertainty faced by NGC under NETA. Thus, they do not set any precedents for future incentive arrangements. Ofgem continues to believe that in setting subsequent incentive schemes in the light of some experience of operation under NETA, NGC should face even stronger incentives. Ofgem's preference is therefore for symmetric sharing factors (in excess of 50%), symmetric caps and collars (in excess of £50m) and no deadbands on target costs.
- 5.31 Nevertheless, if NGC accepts Option 1 (which provides the stronger incentive to reduce balancing costs), Ofgem would give it the opportunity to roll over the

proposed incentive scheme target for a second year.⁸⁰ Ofgem would however wish to reset the incentive scheme sharing factors and cap and collar to restore symmetry and thus further strengthen NGC's incentive. Nevertheless, Option 1 would provide NGC with some comfort that if it achieved cost reductions in the first year of NETA, it could retain the benefits for the second year and hence provides NGC with an added incentive to reduce costs quickly.

Reference price for the net imbalance volume

5.32 As discussed in Chapter 4, Ofgem has concluded that NGC should face incentives on all energy and system balancing costs subject to reducing its exposure to the Net Imbalance Volume in the Balancing Mechanism, by use of a reference price (the Net Imbalance volume Reference Price or NIRP). Ofgem noted in the April Consultation that the reference price would have to lie between the SBP and SSP to provide NGC with the correct incentives. We also stated that it is important that the reference price should be transparent and not be open to manipulation by any party, including NGC.

Previous consultations

5.33 In the April Consultation Ofgem suggested three possible options for setting NIRP:

- ◆ a dynamic reference price that changed daily or even half-hourly taken from a liquid and transparent power exchange;
- ◆ a pre-determined fixed price or a matrix of prices to apply across seasons and/or time of day; or
- ◆ a reference price linked directly to energy imbalance prices. For example, the reference price could represent an average of the two energy imbalance prices or it could be based on proportion of the SBP and the SSP.

5.34 Ofgem argued that a dynamic reference price emerging from forwards markets is likely to reflect best the price of energy traded by market participants. However,

⁸⁰ Subject to making adjustments for a lower volume of response and reserve holding during the second year of operation under NETA.

Ofgem recognised that, a suitable reference price from a power exchange or other market may not have emerged at the start of NETA. Furthermore, whilst prices in the forwards markets and bids and offers in the Balancing Mechanism will have some common drivers, the drivers of prices in each market will not be identical. As noted above, if the reference price were to fall outside the range represented by the SBP and the SSP, the effectiveness of NGC's incentives would be significantly reduced. One possibility might be to constrain the reference price to ensure that it remains in the right range. Similar considerations also apply to the pre-determined reference price approach. In addition, Ofgem noted that there was likely to be considerable debate as to the appropriate value(s) for a pre-determined reference price. One possibility would be the average EFA price for winter peak/baseload contracts at the start of NETA.

- 5.35 In the August 2000 Initial Proposals document, following further consideration, Ofgem argued that a fixed reference price approach could potentially lead to perverse incentives, if energy market prices were to diverge significantly from the fixed reference price. Hence, we considered that there were two key options for setting the reference price.
- 5.36 First, Ofgem argued that it would be possible, as NGC suggests, to set NIRP to be equal or linked to the SBP or the SSP depending on the direction of the net imbalance in any given half hour. However, Ofgem was not convinced that this option would provide NGC with appropriate incentives, as far as possible, to minimise the net imbalance volume and/or accept the most economic bids and offers.
- 5.37 Second, it would be possible, to combine a floating price approach with a cap and collar set to SBP and SSP respectively. Thus, the incentive properties of using a NIRP that reflects energy prices in forwards markets could be maintained, whilst the SBP cap and SSP collar would ensure that the reference price would always be within the range given by SBP and SSP. One possibility would be to use a floating price based on EFA prices for month-ahead contracts.

5.38 Ofgem had an initial preference for the second option outlined above. Ofgem also noted that the allowable revenues for NGC would need to be considered in the light of the price that was ultimately chosen.⁸¹

NGC's view

5.39 As discussed above, NGC has proposed that NIRP should be set to the SBP when the system is short and to the SSP when the system is long. NGC's proposal for the incentive scheme target is based on this approach. NGC believes that this approach maintains some incentive on it to minimise net imbalance volumes, and the correct incentive to select the most economic bids/offers to resolve the imbalance.

Other respondents' views

5.40 Twenty one other respondents to the April Consultation commented on this issue. One respondent believed that a reference price would be unnecessary if the incentive schemes were unbundled. Seven respondents expressed a preference for a dynamic or 'floating' reference price. One of these respondents suggested that a fixed price be used initially before moving towards a price based on the forwards markets. Another simply highlighted that prices in forwards markets may be extremely volatile during the early days of NETA.

5.41 Many respondents to the April Consultation emphasised the need for the reference price to lie between SBP and SSP, to ensure NGC had the correct incentive. One respondent commented that NIRP must at least be varied according to the demand level or else, for much of the year, it will not fall between SBP and SSP leading to distorted incentives. Three respondents suggested that if NIRP was set to the average of SBP and SSP, this would at least have the merit of simplicity and transparency.

5.42 Eight respondents to the August 2000 Initial Proposals consultation commented on the basis for setting NIRP. Seven respondents were in favour of a floating reference price, one respondent provided comments but did not express an opinion.

⁸¹ For example, a reference price of £20/MWh across the period as opposed to a reference price based on SBP and SSP would increase NGC's original forecast of incentivised BM costs from £0.69m/day to £0.94m/day.

- 5.43 Five respondents did not believe that the proposal to use SSP and SBP was appropriate, since NGC will have discretion in procurement and hence will have direct influence over SSP and SBP which will affect its performance under the incentive scheme, possibly to its advantage. One commented that it was important to avoid perverse financial incentives for NGC to intervene in the forwards markets. Two of these respondents believed that the reference price should be low when the system is short, high when the system is long.
- 5.44 Three respondents believed that the reference price should be linked to a power exchange price, one suggested a closing mid-price, one a day ahead power exchange price and one suggested the average of power exchange and OTC prices.
- 5.45 Two respondents believed NIRP should be based on imbalance prices. One of these respondents explained that one of the aims of NETA was to reward flexible plant and that this would probably result in an increase in balancing costs over their current equivalent, and so the relationship between prices in the forward energy market and those in the Balancing Mechanism might be slight.

Ofgem's final proposal

- 5.46 Having carefully considered the views of all respondents', Ofgem continues to believe that NGC's proposal for NIRP would be successful in significantly reducing its exposure to the net imbalance volume but would not provide it with a strong incentive to reduce the costs of resolving the net imbalance volume. Furthermore, by setting NIRP to SSP/SBP, NGC would have a significant influence on the reference price against which its incentives are set.
- 5.47 Ofgem's preferred approach continues to be to use a market based (floating) reference price which would be bounded by SBP and SSP. However, given the basis for determining a reference price needs to be agreed now when no effective market based reference price has emerged, we believe that for the initial scheme NGC's suggestion should be adopted. Thus, Ofgem's proposal is that NIRP should be set to SSP when the system is long and SBP when the system is short. For future incentive schemes, Ofgem remains committed to using a dynamic reference price derived from a traded market such as a Power Exchange.

Threshold price adjustment

- 5.48 In its submission to the April Consultation, NGC suggested that the possible existence of very highly-priced sleeper bids and offers, could result in the costs of balancing the system moving outside the range over which the incentives apply as a result of a very small number of acceptances of such offers or bids. NGC proposed that the costs of all accepted offers with prices higher than £500/MWh should be excluded from the incentivised cost calculation.

August initial proposals

- 5.49 Whilst Ofgem accepted that NGC's hypothesis was possible, we did not agree with NGC's solution since we believed that it could encourage the placing of very high sleeper bids/offers. NGC would retain the option of seeking to call an IAE if necessary.

NGC's view

- 5.50 NGC agreed with Ofgem that these could be treated as IAEs, but argued that specific criteria need to be established against which an IAE could be called.

Other respondents' views

- 5.51 Four respondents to the August 2000 Initial Proposals consultation commented on the issue of a threshold price adjustment. All of these respondents were against the idea of allowing such an adjustment. Two respondents went further to say that they did not agree with Ofgem that the acceptance of sleeper offers/bids could trigger an Income Adjusting Event. One respondent argued that NGC should counter this by signing option contracts. One respondent commented that market participants faced risks of uncapped BM prices in their energy imbalance charges, and it seemed inconsistent that NGC should not be exposed to them through its incentive scheme.

Ofgem's final proposal

- 5.52 Ofgem agrees with the majority of respondents that no provision for a threshold price adjustment should be made. By exposing NGC to these costs through the incentive scheme, NGC will be encouraged to develop risk mitigation tools, such as option contracts, where it is efficient to do so. Ofgem also agrees with

respondents that NGC should use its freedom to contract ahead to mitigate the risks associated with high priced sleeper bids/offers.

Summary and conclusions

5.53 Ofgem has proposed four combinations of sharing factors and cap and collar that seek to meet NGC's concerns and Ofgem's objective of an effective incentive on NGC to manage costs on customers' behalf. Ofgem has given NGC a choice between these options. If NGC fails to accept any of the options then Ofgem proposes that all of the efficiently incurred costs associated with the SO function (internal and external) be directly passed through to participants (and ultimately customers). Ofgem would regulate the SO business to ensure that costs remain at efficient levels by actively monitoring the SO's actions. Where necessary, Ofgem could use its statutory powers to enforce licence conditions to ensure that NGC operates the transmission system in an efficient, economic and co-ordinated manner (licence condition 7B(1)). Subject to the enactment of relevant provisions of the Utilities Act, this would include the power to impose monetary penalties in the event that NGC were found to be in breach of their licence.

Table 5.2 - Incentive scheme form – Ofgem's final proposal

	Ofgem Option 1	Ofgem Option 2	Ofgem Option 3	Ofgem Option 4
Incentive Scheme Target	£471m		£485m	
Deadband	-	£471m to £517m	-	£471m to £500m
Upside Sharing Factor	50%	25%	40%	40%
Downside Sharing Factor	10%	20%	12%	12%
Cap	£60m	£30m	£45m	£45m
Collar	£12m	£25m	£15m	£15m
Duration	One Year with option for rollover of target* to second year	One year scheme	One year scheme	One year scheme
Expected return against NGC's distribution	£2.0m	£-3.7m	£1.4m	£0.6m
Expected return against Ofgem's distribution	£12.8m	£3.6m	£11.3m	£9.5m

*Subject to an adjustment reflecting lower volumes of response and reserve holding.

- 5.54 The proposed combinations of sharing factors and cap and collar have been designed to mitigate the uncertainty faced by NGC under the initial SO incentive scheme. Thus, they should in no way be seen as setting precedents for future incentive arrangements. Ofgem believes that the form of the incentive schemes proposed, represent a fair and pragmatic compromise designed to deliver real benefits to customers as quickly as possible under NETA.
- 5.55 Ofgem's final proposal for NIRP is that for the initial SO incentive scheme it should be set to SSP when the system is long and SBP when the system is short. This proposal will significantly reduce the risks faced by NGC under NETA and represents a pragmatic approach for the initial SO incentive scheme.
- 5.56 Ofgem agrees with the majority of respondents that no provision for a threshold price adjustment should be made. Ofgem continues to believe that the extent to which any such bids or offers are accepted, NGC should call an IAE if, as a result of accepting such a sleeper bid or offer, its incentivised costs move outside the incentivised range. It would then be for Ofgem to decide whether an event called by NGC, or any other participant, actually constitutes an IAE.

6. SO Internal Costs: Operating Expenditure

Introduction

- 6.1 This chapter sets out Ofgem's final proposals on NGC's operating costs associated with the SO function under NETA for the period 1 April 2001 to 31 March 2006. Ofgem's final proposals have been developed in the light of the responses of NGC and other participants to Ofgem's initial proposals.
- 6.2 Subsequent to publication of Ofgem's initial proposals, Ofgem/DTI announced a delay to the introduction of NETA with a new target date set for 27 March 2001. As a result, NGC has submitted estimated additional costs, which it expects to incur. NGC's estimate of these additional costs as well as Ofgem's conclusions on them are detailed in this chapter.
- 6.3 Thus, in carrying out a high level review of the internal operating costs of the SO function to create our final proposals, Ofgem has considered four categories of costs:
- ◆ the pre-NETA "SO Base" costs;⁸²
 - ◆ the NETA set-up costs necessary to manage the implementation of NETA;
 - ◆ the projected net incremental costs for the SO function as a consequence of NETA; and
 - ◆ NETA delay costs.

SO Base costs

NGC's initial view

- 6.4 The SO Base costs are the ongoing costs that NGC said it would incur for the SO function pre-NETA i.e. without taking into account the impact of NETA. They include the costs of:

⁸² These are the initial costs considered within the Price Control proposals in June 2000 (both transmission owner and system operator), and did not take into account the impact of NETA.

- ◆ the System Management (SM) operating unit;
- ◆ the Ancillary Services Business (ASB); and
- ◆ part of Commercial and Systems Strategy unit (CSS).

NGC estimated the SO Base costs to be £201.9m over the 5 year review period.

Ofgem's initial proposal

6.5 The SO Base costs were reviewed by Ofgem's consultants for the main Transmission Business price control. Ofgem proposed a range for SO Base operating costs that was consistent with the review carried out for the main Transmission Business price control. The main adjustments to SO Base costs related to staff costs. Ofgem presented two scenarios:

- ◆ Scenario A: Base salaries were adjusted to the market median⁸³ for staff whose actual average salaries were above the median for the relevant job group. A real wage growth factor of 2.3% was applied to the market median beyond 2000. For those staff whose salaries are below the median, NGC's pay policy was applied. This was consistent with the TO proposals; and
- ◆ Scenario B: Base salaries were the same as those assumed by NGC, i.e. the average actual salaries in each job group were taken and these were inflated by 2% p.a. from 2000 onwards.

6.6 For the organisational shapes of the SM and ASB operating units, Ofgem's two scenarios were as follows:

- ◆ Scenario A: No adjustments were made to the organisational shape of the SM operating unit until 2004/5 when staff numbers were reduced by 2% per annum. This is consistent with the overall organisational shape scenario in the TO proposals. No adjustments were made to the organisational shape of the ASB; and

⁸³ Derived from a benchmark study commissioned by NGC.

- ◆ Scenario B: The organisational shape of the SM unit for 2005/06 presented by NGC in its Business Plan Questionnaire (BPQ) submission was assumed to be achieved by 2003/04 and the same rates of change for numbers in each job group were applied for the remaining two years of the scheme period (04/05 and 05/06). No adjustments were made to the organisational shape of the ASB.

6.7 The central overheads incurred by National Grid Group (NGG) are allocated between the various operating units in the NGG group, including the Transmission Business, primarily on the basis of the time devoted to each unit. In the absence of sufficiently detailed information to apply this principle to the SO business, Ofgem reallocated these costs (along with additional NGC overheads) between the SO and TO functions on the basis of headcount, which was viewed as a good proxy for time.⁸⁴

6.8 The two Ofgem scenarios for the efficient level of Base operating costs for the SO are set out in Table 6.1 along with NGC's projected costs.

Table 6.1 - Base cash operating costs (2001/02 – 2005/06)

£m 2000 prices	NGC	Ofgem scenario A	Ofgem scenario B
Transmission Business	179.0	172.9	174.9
ASB	22.9	24.9	24.9
Total base operating costs per NGC	201.9	197.8	199.8

NGC's response

6.9 Given that the proposed scenarios on the base operating costs could be read across from the TO final proposals, NGC said that its views were as expressed in its responses to the TO price control proposals. However, NGC chose to re-iterate its view that the pay policy outlined in scenario A would hinder NGC's attempts to recruit and retain the quality of staff required to run an efficient Transmission Business. NGC also stated that it did not seem appropriate to increase disparities between job groups and market pay.

⁸⁴ Currently, the time recording at NGC is not sufficiently detailed for the allocation of overheads between the TO and SO functions although NGC plans to increase the level of detail for time recording in the future.

6.10 NGC also felt that Ofgem's accelerated headcount reductions ignored the underlying increase in demands on NGC's operational staff, requiring ever greater increases in productivity from NGC's staff simply to maintain the same level of performance.

Other respondents' views

6.11 Several respondents commented in general about the high level nature of the cost review that had been conducted and said that this made it difficult to comment in detail on the costs. One respondent argued that such underlying asymmetry in cost information favoured NGC. However, one respondent said that, in general, it supported Scenario A, whilst another respondent commented that the operating costs generally looked high and that NGC had a good history of hitting its internal price control targets which suggested that further efficiencies are possible.

6.12 One respondent said that the proposed salary adjustments were asymmetric and would only allow an overall increase in salaries below the market median for NGC's base staff costs.

Ofgem's final proposal

6.13 Scenario A is consistent with the TO final proposals (as already agreed with NGC), and is the scenario that would most likely have applied had the Transmission Business been subject to a single price control. Nonetheless we have considered the staffing requirements of the SO function on their own merits. We have concluded that an efficient SO should be able to carry out its functions with SO Base operational expenditure consistent with scenario A, and this is our final proposal.

Table 6.2a - Base cash operating costs (2001/02 – 2005/06)

£m 2000 prices	NGC	Ofgem initial proposal	Ofgem final proposal
Transmission Business per NGC	179.0	172.9 – 174.9	172.9
ASB per NGC	22.9	24.9	24.9
Total base operating costs per NGC	201.9	197.8 – 199.8	197.8

Table 6.2b - Annual profile of Base cash operating costs

£m 2000 prices	01/02	02/03	03/04	04/05	05/06	Total
Total base operating costs	39.6	39.8	39.2	39.0	40.2	197.8

NETA set-up costs

NGC's initial view

- 6.14 NGC highlighted four categories of set-up costs arising as a consequence of NETA: Phases 1 and 2 of System Management set-up costs, the costs of amendments to customer Charging Systems and Billing Arrangements and the set-up costs of the trading function that will operate as part of NGC's Market Development unit.
- 6.15 Of the System Management set up costs, Phase 1 costs related to preparations for meeting the original NETA Go live date of late Autumn 2000. Phase 2 costs were the further costs for developing information systems subsequent to that date, with NGC justifying the two phases as necessary due to the short time scales for system development prior to the original implementation date of NETA.
- 6.16 Under System Management Phase 1, NGC anticipated that its total operating expenditure would be £2.5m of recruitment and relocation costs in 2000/01 relating to 33 additional staff required in the System Management function at the commencement of NETA. These costs were based on NGC's past experience of relocating staff to Wokingham, consisting mostly of a mortgage subsidy, as well as NGC's estimates of recruitment costs.
- 6.17 Under System Management Phase 2, NGC anticipated that its operating costs would total £8.6m over the period from 2000/01 to 2002/03. These costs related to the upgrading of the IT systems.
- 6.18 For the development of Charging Systems and Billing Arrangements, NGC included a total of £5.3m operating expenditure (over the years 1999/2000 to 2001/2002).

- 6.19 Finally, the Trading Systems set-up costs related to the creation of a full trading function by NGC and included £1.6m of operating costs in 2001/02 relating solely to the relocation of existing staff from Coventry to Wokingham.

Ofgem's initial proposal

- 6.20 Whilst Ofgem understood that NGC would need to recruit skilled personnel from outside the Wokingham area to complete System Management Phase 1, it considered that not all new recruits would require a mortgage subsidy of the size indicated by NGC and also that NGC should benefit from some economies of scale or bulk discount in recruitment costs. As such, Ofgem proposed to adjust downwards the overall cost of relocation and recruitment for System Management Phase 1 by £1.2m (to £1.3m) in 2000/01.
- 6.21 Ofgem reviewed the costs of System Management Phase 2 and the Charging Systems and Billing Arrangements. Ofgem did not propose any adjustment to either of them. Furthermore, Ofgem did not adjust the relocation costs of staff from Coventry to Wokingham in relation to Trading Systems development, which NGC identified as costing £60k per person on the basis of past experience.

NGC's response

- 6.22 In response to Ofgem's initial proposals, NGC stated that the average relocation costs of £60k per employee was based on actual experience not just of staff relocation from Coventry to Wokingham as understood by Ofgem, but of all previous experience by NGC of relocating staff to Wokingham from anywhere in the country. NGC explained that it felt it would be extremely difficult to recruit the skilled staff necessary to deal with the implementation of NETA if it was restricted to the combined impact of Ofgem's proposals of average pay levels for staff in Wokingham (in line with SO base costs' salary adjustments) and low levels of relocation assistance.
- 6.23 NGC was pleased to note that Ofgem proposed no adjustments to the set up costs for Charging Systems and Billing Arrangements or Trading Systems.

Other respondents' views

6.24 Since most of the costs of NETA set-up relate to capital rather than operating expenditure, other respondents' views on the levels of NETA set up costs are captured within Chapter 7. However, three respondents made specific comments relating to the relocation costs, with one fully supporting Ofgem's initial proposal, and another believing NGC's estimate for relocation costs to be 'rather high'. Contrary to these responses, one other respondent felt that NGC was best placed to know the true costs of relocation and recruitment.

Ofgem's final proposal

6.25 Ofgem now accepts that the NGC relocation costs are based on past and verifiable experience. On the basis of further evidence from NGC, we accept the £60k per employee estimate for relocation of staff although we still believe that there are likely to be economies of scale on recruitment. Consequently, we propose adjusting relocation and recruitment costs by £0.2m as opposed to our initial proposed adjustment of £1.2m.

6.26 Table 6.3 summarises NGC's view of its NETA set-up operating costs alongside Ofgem's final proposals on the appropriate allowance for these costs, which are all incurred within the period 1999/00 – 2002/03. The annual breakdown of these costs are shown in Table 6.3.

Table 6.3 - NETA set-up operating costs for the period 1999/00 – 2002/03

£m 2000 prices	NGC proposals	Ofgem initial proposal	Ofgem's final proposal
System Management Phase 1	2.5	1.3	2.3
System Management Phase 2	8.6	8.6	8.6
Charging and Billing	5.3	5.3	5.3
Trading Systems	1.6	1.6	1.6
Adjusted operating costs - set up	18.0	16.7	17.8

NB Differences due to rounding.

Table 6.4 - NETA set up costs – Ofgem’s final proposal (annual breakdown)

£m 2000 prices	99/00	00/01	01/02	02/03	Total
System Management Phase 1		2.3			2.3
System Management Phase 2		0.5	4.9	3.2	8.6
Charging and Billing	0.6	3.3	1.4		5.3
Trading Systems			1.6		1.6
Adjusted operating costs – set up	0.6	6.1	7.9	3.2	17.8

Compared against Ofgem’s initial proposals, the costs for System Management Phase 1 in 2000/01 is £1m greater at £2.3m rather than £1.3m.

Recovery of NETA set-up costs

NGC’s initial view

- 6.27 £6.7m of the NETA set-up costs have been, or are projected to be, incurred by NGC prior to the commencement of the period for which Ofgem proposes to determine a revenue allowance (2001/02 to 2005/06). NGC has suggested annuitising these costs over the five year review period.

Ofgem’s initial proposal

- 6.28 Ofgem proposed, instead, to include these costs within the SO Regulatory Value at 1 April 2001 and depreciate them over a period of seven years. Since many of these costs relate to IT systems, this treatment is consistent with that adopted more generally for information systems and hardware, for which the useful economic life is approximately seven years. Ofgem considered that the NETA set-up operating costs projected to be incurred after 1 April 2001 should be included within the SO allowance for operating costs.

NGC’s response

- 6.29 In its response to Ofgem’s initial proposals, NGC continued to argue in favour of annuitising these costs but in subsequent discussions, it has indicated that it is willing to accept the capitalisation approach.

Other respondents' views

- 6.30 Two respondents commented on the recovery of NETA set up costs (pre 1 April 2001) by including them in the SO Regulatory Value. Both agreed that this was the best form of recovering them with one respondent saying that if NETA set up costs are to be recovered via NGC's SO internal costs then their inclusion in the Regulatory Value appears the least distortionary method.

Ofgem's final proposal

- 6.31 In light of the responses received, Ofgem will include the £6.7m of NGC's NETA set-up costs projected to be incurred prior to 1 April 2001 within the SO Regulatory Value and allow NGC to recover them over 7 years.

Incremental ongoing SO operating costs

NGC's initial view

- 6.32 Incremental ongoing SO operating costs are those which are anticipated by NGC to be incurred as a consequence of the introduction of NETA. These operating costs fall into two categories – the incremental ongoing costs of System Management and those of the new Market Development unit.
- 6.33 The projected incremental ongoing costs of System Management, as set out by NGC in its SO business plan, ranged between £2.0m and £3.4m per annum between 2000/01 and 2005/06. These costs consisted primarily of staff and computing costs.
- 6.34 The ongoing incremental staff costs related to an additional 33 personnel in the SM operating unit to be recruited as part of the set-up for NETA Go live. This number would decline steadily to 13 permanent additional staff by 2005/06. NGC stated that the reason for the gradual, rather than immediate, decline in staff numbers after the implementation of NETA is that there may be further changes to computing systems extending the set-up costs of System Management Phase 2 and there may be developments to the market which may need to be accommodated.

- 6.35 NGC identified certain reductions in System Management costs as a result of the introduction of NETA, amounting to savings of a total of £2.5m in the years 2000/01 to 2003/04.
- 6.36 A small amount (£0.3m) of the ongoing operating costs of System Management were projected to be incurred by NGC in 2000/01, prior to the commencement of the period for which Ofgem proposes to determine a revenue allowance (2001/02 to 2005/06).
- 6.37 The incremental System Management costs presented by NGC also included £0.1m per year for recruitment and relocation costs. This related to the ongoing attrition NGC expected among the additional personnel recruited for the expanded function.
- 6.38 For the Market Development unit, the projected incremental ongoing operating costs were £2.5m per annum from 2001/02 onwards. NGC proposes that the unit would undertake:
- ◆ the activities of the ASB which, according to NGC, would remain the same or similar to those undertaken at present (pre-NETA), such as the purchase of black start capabilities, reserve and frequency response; and
 - ◆ the activities of a new electricity trading function which would initially trade up to 5pm day-ahead.
- 6.39 NGC indicated that, of the total incremental costs of the trading function of £12.5m over the period from 2001/02 to 2005/06, £8.9m related to staff costs, and £2.7m to consultancy, legal and professional fees with the remainder relating to other, non-staff costs (£0.9m).
- 6.40 NGC has informed Ofgem that it considers that the new Market Development unit would require 81 personnel in order to undertake the above activities. These personnel would staff a market issues group (4 staff), a front office (32 staff), a middle office (29 staff) and a back office (14 staff), and would be led by one Director supported by a secretary.

Ofgem's initial proposal

- 6.41 For System Management, Ofgem believed that it would be possible for NGC to reduce its incremental staff numbers more quickly than it has projected following the implementation of NETA. Consequently, it proposed an adjustment to the incremental operating costs of System Management to reflect a reduction of additional staff to 13 by 2003/04 in line with the completion of the implementation of the IT systems required for NETA.
- 6.42 Ofgem also considered that NGC should be able to manage its pay around the median market pay range for each job group. Thus, base salaries were adjusted to the market median for those job groups with actual average salaries above the median. A real wage growth factor of 2.3% was applied to the market median beyond 2000/01. For those job groups with actual average salaries below the median, NGC's pay policy was applied.
- 6.43 Together, the adjustments to pay and organisational shape resulted in a reduction in base salaries in the incremental SO operating costs for System Management of between £0.23m and £0.05m per annum over the period from 2001/02 to 2005/06.
- 6.44 In line with our assumptions for the recruitment and relocation costs included in the NETA set-up costs, Ofgem proposed to remove 50% of the incremental System Management recruitment and relocation costs. Ofgem also proposed to include System Management costs incurred prior to 2000/01 (£0.3m) in the SO Regulatory Value for 1 April 2001.
- 6.45 In respect of the additional costs of creating an energy trading function, Ofgem believed that this should be driven mainly by the number, frequency and volume of transactions being made. In the period up until 5pm day-ahead, Ofgem expected that NGC would be trading relatively infrequently compared with its activities in the Balancing Mechanism, and hence the number of traders required might not be large. NGC has itself told Ofgem that it is uncertain as to the number of transactions it will undertake. The scale of trading and quantity of analytical support required will also be influenced by the incentive mechanism.

- 6.46 Ofgem's consultants reviewed NGC's proposed Market Development unit on the basis of experience of trading operations in the electricity and gas markets in the UK. The initial view of the minimum size of trading function for a company of this nature, dealing in products and trades of average complexity and frequency, would consist of around 48 personnel. Ofgem were also of the view that part of NGC's new trading function might substitute for activities currently undertaken by the ASB. In addition, Ofgem considered that the allowance for back and middle office costs should take account of the investment NGC proposes to make in IT systems.
- 6.47 Our consultants also benchmarked NGC's staff costs for its trading function against a subset of companies of a similar nature. After careful consideration, Ofgem's view was that, on average, the staff costs should be equivalent to the median of the comparator group. This allowed flexibility to offer more than the median for certain job profiles. A real wage growth factor of 2.3% was applied to the market median beyond 2000/01. For those job groups with actual average salaries below the median, NGC's pay policy was applied.
- 6.48 Ofgem derived two scenarios for the size of the Market Development unit. In Scenario A, Ofgem assumed that the Market Development unit remained the same size as the ASB, i.e. 48 staff, assuming that efficiencies in the ASB will offset the creation of a modest trading function. In Scenario B, Ofgem adopted NGC's view of the size and shape of the Market Development unit.

NGC's response

- 6.49 NGC argued that Ofgem have misunderstood the nature of the new Market Development unit and re-iterated that the trading function is only a subset of this larger unit, which is dedicated to a range of services for the contracting and procurement of Ancillary Services.
- 6.50 NGC stated that the current base of 48 staff involved in Ancillary Services comprises those dealing with:

- ◆ Contracts (8 staff) - negotiating, implementing and maintaining contracts for ancillary services;
- ◆ Assessment (8 staff) - responsible for assessing the value of commercial ancillary services;
- ◆ Contract development (4 staff) - responsible for developing new markets and commercial mechanisms;
- ◆ Settlement and Technical Development (10 staff) – for the monthly settlement to Service Providers;
- ◆ Finance (2 staff) – providing financial management to the ASB;
- ◆ Market analysis (4 staff) - providing generation and demand forecasts, market intelligence etc;
- ◆ Operational policy (2 staff) – responsible for within year planning of SO policy, agreeing operational requirements, and providing ongoing management of the incentive scheme within year;
- ◆ System Commercial Performance (8 staff) – responsible for reviewing and reporting the commercial and economic aspects of the operation of the system; and
- ◆ Manager and secretary.

6.51 NGC reiterated that its proposed incremental staff numbers total 33, comprising front, middle, and back offices for short term trading and support on market issues. This is summarised below:

- ◆ Front Office – an additional 13 staff mainly to facilitate a short term trading capability that will ultimately be able to trade 24 hours a day, to support the economic balancing of the system.
- ◆ Strategy and Portfolio Management (Middle Office) – NGC believes that an additional 8 staff would be required because of the enhanced price monitoring and forecasting that will be needed due to the shorter time scales for balancing the system.

- ◆ Balancing Services Finance and Settlement (Back Office) – 6 additional staff for the enhancement of financial controls, including trading risk and credit risk management.
- ◆ New market issues - 4 new staff to cover representation on the BSC panel, which is expected to be greater than Pool representation according to NGC. NGC believes that it also requires staff to be available in readiness for further market developments to NETA.
- ◆ Director and secretary.

6.52 NGC argues that there is little trade off between the staff required to trade energy in the short term and the Ancillary Services team, because Ancillary Services cannot be substituted by standard energy products. NGC also argues, counter to Ofgem, that new IT systems will enhance the performance of staff rather than automating manual tasks, i.e. they will not reduce staff requirements.

6.53 NGC believes that reducing the cost of new staff to the market median of the comparator group is likely to be inappropriate as the specialist skills in energy trading and risk management are in short supply so close to London. However, NGC remarks that it is difficult to comment without explicit details of the comparisons carried out by Ofgem's consultants and the precise adjustments made.

6.54 Finally, NGC do not believe that the Market Development unit can be directly compared with a traditional utility energy trading function as the range of activities within the Market Development unit will be much more extensive.

Other respondents' views

6.55 Ten out of 12 respondents expressed a view on the Market Development unit, and all supported a number close to 48, with 3 firmly believing the figure should be lower than 48. One of the respondents commented that any additional staff for a utility trading function should be a commercial decision for NGC and weighed against cost savings under the incentive scheme. Two respondents further remarked that the volume of trading undertaken by NGC to balance the system should be small relative to customer demand.

Ofgem's final proposal

- 6.56 In respect of System Management, Ofgem continue to believe that NGC can reduce staff numbers and meet the pay adjustments set out in Ofgem's initial proposals. However, Ofgem accepts that the relocation costs proposed by NGC are based on past experience, and will not reduce them by 50% as initially proposed.
- 6.57 Ofgem have investigated the size of the Market Development unit further and considered in more detail the nature of the additional posts proposed, helping identify any possible overlaps in tasks with those already within the ASB function.
- 6.58 Ofgem do not agree with NGC's representations that the Market Development unit has been misunderstood by Ofgem, its consultants and respondents, since we have always been clear that NGC consider there to be two distinct activities for the Market Development unit, in terms of (a) carrying out the functions of the ASB and (b) trading energy forward for energy balancing reasons.
- 6.59 Generally, Ofgem has broadly accepted NGC's proposals for an ASB staff of 48 and has concentrated its attention on the staffing levels of the trading function. However, we have considered staffing levels for the trading function in light of possible synergies between the two activities and potential efficiencies that might therefore be possible within the ASB.
- 6.60 We consider that there is considerable uncertainty over the volume of forward energy trading that NGC will require, given its licence prohibition on speculative trading. As pointed out by some respondents, forward energy trading by NGC will mainly involve non-locational half-hour blocks of energy, which will not be directly substitutable for intra half-hour, locational balancing actions in the Balancing Mechanism.
- 6.61 At least some of the support services required within the ASB for trading in the Balancing Mechanism are likely to be very similar to those required for trading outside the Balancing Mechanism. Consequently, Ofgem believes that these roles should not be duplicated, although there may be a need for some

replacement of existing staff with staff that have more suitable skills to meet the demands of NETA, i.e. a more flexible work force.

- 6.62 Ofgem would also expect the new function to evolve with staff numbers adjusting as experience is gathered and as the nature and volume of trading and needed and undertaken becomes apparent. Ofgem proposes therefore to profile the number of additional staff assumed for this function. If additional staff are required at an accelerated rate then this should form part of the trade off against the savings on incentivised external and internal costs.
- 6.63 Based on further benchmarking using the views of respondents and our consultants, Ofgem have derived a revised view of the appropriate size for a trading function required for trading up until 5pm day ahead and for one involved in 24 hour trading. We consider, and NGC has agreed, that the increase in staff numbers required to move from day ahead to full time trading, should to some extent be offset by efficiencies as the trading function gains experience.
- 6.64 Ofgem believes that the increases in the size of the trading function beyond these levels should be a commercial decision weighed against the cost savings that may be derived on external balancing costs. Thus, Ofgem's final proposal is to assume 10 additional staff⁸⁵ in the trading function in the first year (58 in total for the Market Development unit), followed by a step up for subsequent years to 16 additional staff (to allow for 24 hour trading).

⁸⁵ Additional to the 48 ASB staff currently in place.

Table 6.5 - Magnitude of the trading function

	Per NGC	Ofgem initial proposals		Ofgem final proposals	
		Low	High	Year 1	Years 2-5
Staff numbers					
Director and secretary	2	2	2	2	2
Market issues group	4	2	4	2	2
Contracts and trading (Front Office)	32	19	32	23	27
Strategy and Portfolio (Middle Office)	29	17	29	21	23
Finance and Settlement (Back Office)	14	8	14	10	10
Total	81	48	81	58	64

- 6.65 If it becomes apparent that the volume of trading undertaken by NGC is substantially higher than we have anticipated and hence that it requires a materially larger trading function than we have proposed, Ofgem will be prepared to review the staffing levels proposed above. This could be accomplished when Ofgem comes to review the next incentive schemes on internal and external costs.
- 6.66 In the light of further analysis, we have accepted NGC's views on staff costs for the trading function and no longer propose to make any adjustments to them.
- 6.67 Table 6.6a summarises the on-going incremental operating costs arising as a consequence of NETA, and table 6.6b shows the annual profile for Ofgem's final proposals.

Table 6.6a - Summary of on-going incremental operating costs (2001/02 – 2005/06)

£m 2000 prices	NGC proposal	Ofgem initial proposals		Ofgem final proposals
		Scenario A	Scenario B	
On-going SM opex	13.6	12.7	12.7	12.9
On-going SM opex savings	(1.5)	(1.5)	(1.5)	(1.5)
On-going Trading opex	12.5	7.2	12.5	9.7
Total incremental opex	24.6	18.4	23.7	21.1

Note: £0.3m of incremental costs is prior to 2001/02, and is therefore included within the SO Regulatory Value in a similar way to NETA set up costs.

Table 6.6b - Annual profile of ongoing incremental operating costs

£m 2000 prices	01/02	02/03	03/04	04/05	05/06	Total
Total base operating costs	4.5	4.3	4.2	4.3	3.8	21.1

Transmission Services Scheme (TSS) IT costs

NGC's initial view

- 6.68 NGC highlighted £1.1m of operational expenditure for IT systems in relation to its Transmission Services Scheme (TSS), which would be used to help reduce the costs of constraints on the system.

Ofgem's initial proposal

- 6.69 These costs were covered in a footnote to Table 4.3 of the September SO Initial Proposals, having been omitted from the TO price control on the basis that they needed to be considered as part of the SO/incentive scheme arrangements.

NGC's response

- 6.70 NGC raised the question of these costs again and said it was concerned that they had fallen between the TO and SO price controls, despite having been accepted

by Ofgem's consultants. It reiterated the profile of TSS IT costs that it considered it would incur and these are shown in Table 6.7.

Ofgem's final proposal

- 6.71 Ofgem have considered the profile of TSS IT costs provided by NGC and have agreed that they should be included in our final SO proposals.

Table 6.7 - TSS IT costs

£m 2000 prices	01/02	02/03	03/04	Total
TSS computing and IS support	0.5	0.3	0.3	1.1

CUSC related costs

NGC's initial view

- 6.72 NGC highlighted additional operating costs relating to the introduction of the CUSC amounting to £0.16m for CUSC set-up costs and additional on-going expenditures (£0.35m per annum) to facilitate the modification process, that were not included in any of the BPOs submitted as part of the TO or SO price control reviews. NGC indicated that it would like these costs to be included in setting the SO incentive scheme on internal costs.

Ofgem's initial proposal

- 6.73 Under the existing arrangements, NGC has to incur costs associated with managing and implementing the MCUSA. Ofgem assumed the difference between these costs and those associated with CUSC were not likely to be material, and were minded to reject NGC's proposal, subject to NGC providing a more detailed breakdown of these costs, demonstrating that these costs are in addition to those already included in NGC's Base operating costs and do not represent double counting.

NGC's response

- 6.74 NGC argued that the expected increase in the volume of the modifications due to the greater flexibility of the new code, as well as their new licence obligation

to establish and operate the procedures for modifying CUSC in order to meet certain objectives better would require it to incur further costs. NGC describes this new obligation as significantly different to its current role under the MCUSA. In its response, NGC went on to further summarise why the resources it will require for its role under the proposed governance arrangements associated with CUSC would be materially different to that for MCUSA modifications. For example, NGC highlighted its ownership and operation of the modification process, the fixing of timescales that may not consider internal NGC resource constraints and the demands of satisfying wider industry consultation than at present.

Other respondents' views

6.75 Three respondents commented on the request by NGC for additional funds for CUSC. Two agreed that there was likely to be an increase in costs for NGC in order to satisfy its new role. One felt that any increase should be rejected as current representation on existing forums such as the Pool is high and resources should be directly transferable between old commitments under the Pool and new ones under NETA.

Ofgem's final proposal

6.76 On the basis of the further evidence presented by NGC, Ofgem accepts that in order to satisfy all its obligations under CUSC, NGC is likely to require extra resources, and hence we propose to allow NGC the £350k per annum it requested as well as the set up costs of £160k.

Table 6.8 - Annual profile of CUSC costs

£m 2000 prices	00/01	01/02	02/03	03/04	04/05	05/06	5 year total 01/02 - 05/06
CUSC	0.2	0.4	0.4	0.4	0.3	0.3	1.8

6.77 This represents full and fair allowance for these costs.

TNUoS charging systems and operational telecoms

NGC's initial view

- 6.78 NGC highlighted £1.1m of additional expenditure as a result of NETA for TNUoS systems amendments and operational telecoms (to enable electronic data exchange by all Balancing Mechanism participants).

Ofgem's initial proposal

- 6.79 These costs were considered but not included by Ofgem's consultants at the time of the initial proposals.

NGC's response

- 6.80 NGC was concerned that these costs had fallen between the TO and SO price controls, despite having been accepted by Ofgem's consultants.

Ofgem's final proposal

- 6.81 Ofgem has considered these costs and agree that they should be allowed with the profile shown in Table 6.9.

Table 6.9 - TNUoS systems and operational telecoms

Em 2000 prices	99/00	00/01	Total
TNUoS systems and operational telecoms	0.3	0.8	1.1

NETA delay costs

NGC's view

- 6.82 NGC has set out the likely impact on its NETA set up costs of the delay to NETA implementation (see Table 6.10a). In particular, it has identified the following changes to its original forecast of internal costs:

- ◆ £1.2m in additional costs due to the retention of key IT resources for the extended period and the re-testing of systems once full test data become available from Logica.
- ◆ £4m additional costs for system management phase 1 for further integration testing, retention of IT staff (who will test and commission NETA systems and provide support and development immediately after Go live).
- ◆ £4.2m for participant support in preparing for NETA Go live.
- ◆ In respect of ongoing System Management costs, NGC argues that the savings expected to arise from activities no longer required as a result of NETA will not be achieved as all existing systems will need to continue until the new Go live date. This amounts to £0.8m.
- ◆ NGC argues that the delay to NETA implementation will increase the costs associated with changes to the TNUoS charging system (£0.3m). This is due to the retention of key resources for an extended period and re-testing of systems when data becomes available.
- ◆ NGC also highlights further set up costs of £2.4m provided to manage the interface between NETA Settlement Systems and NGC's commercial and operational systems that NGC has recently identified. This is due to the complexity and volume of data from Logica systems being greater than it had anticipated. NGC describes this project as critical for the successful operation of Ancillary Services Settlement systems, TNUoS systems, Demand Forecast systems, and post event analysis tasks.
- ◆ Furthermore, NGC argue that Ofgem's proposal that staff could be reduced more quickly than originally shown by NGC in its Business Plan Questionnaire (BPQ) will be affected by the delay to NETA.
- ◆ Finally, NGC identified an increase of £0.4m in legal and administrative costs. NGC regards these as a contribution to the process and implementation of NETA and plan to absorb them.

Ofgem's final proposal

- 6.83 Ofgem believes that many of the additional costs categories identified by NGC are reasonable. It plans to treat these in a consistent manner with that adopted for other NETA related costs, with the exception of participant support costs, which will be passed through to users subject to verification by audit.
- 6.84 However, Ofgem believes that NGC should absorb more than just the projected administrative and legal costs of £0.4m and suggest that other elements estimated to cost a further £1.7m should also be absorbed as detailed in the table below. The adjustments we propose are as follows:
- ◆ after scrutiny of all the proposed increases in costs, Ofgem believes that costs estimated as £0.4m of the £1.2m for changes to Charging Systems and Billing Arrangements could have been foreseen and hence are not NETA delay costs;
 - ◆ similarly, we propose not to allow the recovery of a further estimated £1m associated with the delay to the development and testing of a new information interface system with central NETA systems. The need for this system was first raised in relation to NETA delay costs, indicating that NGC had only just identified the need for the system and hence its implementation costs would not be affected by the NETA delay. We have, however, allowed the original cost of the IT system in full; and
 - ◆ Ofgem also believes it would be inappropriate to allow an additional £0.3m for estimated costs attributed to delays in CUSC, because CUSC has not been delayed.
- 6.85 Finally, Ofgem propose that the sum incurred by NGC for participant support will be recovered in full in 2001/02, subject to being verified by an auditor as having been spent. The estimated amount is currently £4.2m. The further £4.9m of estimated costs incurred pre-April 2001 will be capitalised and recovered over 7 years in a similar way to all other such NETA set-up costs. The remaining £2.1m anticipated to be incurred in 2001/02 will be included within incentivised operating costs.

6.86 In the event of a significant delay (for example, in the event of a delay of greater than six months) to the introduction of NETA that is outside the control of NGC, Ofgem will consider whether a further allowance for any additional NETA delay costs are justified.

Table 6.10a - NETA delay costs

Cost category £m – 2000 prices	NGC (BPQ)	Go live 27March	Impact of delay	NGC request	Ofgem adjusted projections
<u>NETA set up (operating costs)</u>					
- SM Phase 2	8.6	8.6	0	0	0
- Charging and Billing	5.3	6.5	1.2	1.2	0.8
<u>NETA set up (capitalised costs)</u>					
- SM Phase 1	18.1	22.1	4.0	4.0	4.0
- Participant support		4.2	4.2	4.2	4.2
- Incremental SO operating costs	15.5	16.3	0.8	0.8	0.8
<u>Other</u>					
- Transmission Network Use of System (TNUoS) systems	1.1	3.8	2.7	2.7	1.4
- Legal and admin	3.3	3.7	0.4	0	0
Total	51.9	65.2	13.3	12.9	11.2

Table 6.10b - Annual profile of NETA delay costs

£m 2000 prices	00/01	01/02	02/03	03/04	04/05	05/06	Total 00/01 – 05/06
Total NETA delay costs	9.1	2.1					11.2

Summary of allowable operating costs

6.87 A summary of Ofgem's conclusions on the levels of allowable set-up and ongoing operating costs for the SO function under NETA is shown in Table 6.11.

Table 6.11 - Controllable SO operating costs under NETA (2001/02 – 2005/06)

£m 2000 prices	Table ref.	99/00	00/01	01/02	02/03	03/04	04/05	05/06	5 year total
		Additional to Initial Proposals							
Total NETA set up costs (relocation cost adjustment)	6.4 (see relevant footnote)		1.0						
SM 2 adjustment for re-phasing			(0.5)	6.2	3.3	2.1			11.6
TNUoS		0.3	0.8						
Efficient base SO costs	6.2b			39.6	39.8	39.2	39.0	40.2	197.8
TSS IT	6.7			0.5	0.3	0.3			1.1
CUSC	6.8		0.2	0.4	0.4	0.4	0.3	0.3	1.8
Incremental SO	6.6b			4.5	4.3	4.2	4.3	3.8	21.1
Estimated NETA delay costs	6.10b		9.1	2.1					2.1
Total		0.3	10.6	53.3	48.1	46.2	43.6	44.3	235.5

6.88 Tables 6.12a and 6.12b explains how the costs in Table 6.11 would then be recovered, being either directly passed through to customers i.e. not incentivised (Table 6.12a), or included within the incentive scheme i.e. incentivised (Table 6.12b). The non-incentivised costs are those over which NGC now, no longer has discretionary control, as these are either expended (or committed) one off expenditures ('sunk' costs) such as NETA set up costs, or are outside of NGC's

influence, i.e. rates. The latter (i.e. rates) will be passed through to users of the system whether higher or lower than the projected profile set out in table 6.12a.

Table 6.12a - Non-incentivised operating cost recovery

£m 2000 prices	Value	How recovered	01/02	02/03	03/04	04/05	05/06
Estimated participants costs	4.2	Pass through	4.2				
Capitalised NETA costs	6.7	To be capitalised					
Rates		Pass through	1.0	1.0	0.9	0.9	0.9
Total		Pass through	5.2	1.0	0.9	0.9	0.9

Table 6.12b - Incentivised operating cost recovery

£m 2000 prices	01/02	02/03	03/04	04/05	05/06	5 year total
NETA set-up costs (incurred post 1 April 2001)	6.2	3.3	2.1			11.6
Base (less rates)	39.6	39.8	39.2	39.0	40.2	197.8
TSS IT	0.5	0.3	0.3			1.1
CUSC	0.4	0.4	0.4	0.3	0.3	1.8
Incremental SO	4.5	4.3	4.2	4.3	3.8	21.1
Estimated NETA delay costs	2.1					2.1
Total	53.3	48.1	46.2	43.6	44.3	235.5

7. SO Internal Costs: Capital Expenditure

Introduction

- 7.1 This chapter sets out Ofgem's final proposals on NGC's allowed capital expenditure for the SO function the five year period 1 April 2001 to 31 March 2006. We separately identify those costs associated with capital expenditure that will be passed through directly to end customers and those costs will that be included within the overall SO incentive scheme on internal costs.
- 7.2 A full review of NGC's proposed capital expenditure was conducted for the Transmission Business price control. As a result, Ofgem's analysis of the SO capital expenditure mainly related to ensuring that the split of the Regulatory Value between the TO and SO functions was appropriate and avoided any double-counting. In addition, Ofgem also considered the costs and justification for the additional capital expenditure⁸⁶ resulting directly from the introduction of NETA.

Base SO capital expenditure and depreciation

NGC's initial view

- 7.3 NGC, as part of its SO BPQ, identified a sub-set of the Transmission Business Regulatory Value that it argued should be transferred to the SO business. The rest of NGC's Regulatory Value remaining with TO function to be funded through the TO price control. NGC proposed valuing the SO assets using the current cost net book value, which NGC suggested was an objective measure that was likely to be a close approximation to their Regulatory Value.
- 7.4 In addition, NGC proposed a different depreciation period for the SO function compared with that adopted for the Transmission Business Regulatory Value.⁸⁷ It suggested adopting a weighted average of the SO assets' remaining lives (weighted by current cost net book value), giving an average depreciation period of 16.8 years.

⁸⁶ Both for the TO and SO businesses.

⁸⁷ Current depreciation on assets in the Transmission Business are 20 years for pre-vesting assets and 40 years for post-vesting assets.

- 7.5 The additional 'Base' capital expenditure (i.e. before taking into account the impact of NETA) projected for the next five years by NGC is summarised in Table 7.1.

Table 7.1 - Base SO capital expenditure (2001/02 – 2005/06)

£m 2000 prices	01/02	02/03	03/04	04/05	05/06	Total
Integrated Energy Management System	14.2	11.8	1.9	0.0	0.0	27.9
Other schemes	1.6	1.9	3.9	3.4	3.9	14.7
Total	15.8	13.7	5.8	3.4	3.9	42.6

The additional capital expenditure includes £35.4m of operational capital expenditure and £7.2m of non-operational capital expenditure.

- 7.6 The replacement of NGC's Integrated Energy Management System (EMS) is the largest single cost element, accounting for 65% of total capital expenditure over the period from 2001/02 to 2005/06.⁸⁸ The remaining capital expenditure projects relate to replacement schemes for physical and IT-related assets.

Ofgem's initial proposal

- 7.7 Ofgem made no amendments to the assets which NGC suggested should be transferred into the SO Regulatory Value. Ofgem's consultants had reviewed these assets as part of the review of Transmission Business costs for the main Transmission Business price control, and had ensured that there had been no double counting during the transfer of assets from the Transmission Business.
- 7.8 However, instead of using current cost net book value to determine the starting SO Regulatory Value, Ofgem proposed scaling down the current cost values of the SO assets by the ratio of the Regulatory Value of the Transmission Business as a whole (£4518.1m) to its current cost asset value (£4760.8m) i.e. a scaling factor of 0.95 was applied to the current cost value of the SO assets to obtain a Regulatory Value as at 1 April 2001, whilst preserving the Regulatory Value of the TO function and the Transmission Business as a whole.

⁸⁸ The EMS is the key operational system within System Management for both real time control and monitoring facilities and provision of data into the commercial systems.

- 7.9 Ofgem also invited views on whether distinct economic lives should be used for specific asset categories, i.e. 7 years for short lived assets (mainly IT systems), and 40 years for longer life assets (e.g. buildings).

NGC's response

- 7.10 NGC had no issue with the scaling of the current cost value of SO assets to a related Regulatory Value given that the TO asset base was adjusted on an equal and opposite basis.
- 7.11 Furthermore, NGC agreed with Ofgem that the adoption of specific depreciation lives for different asset categories is appropriate, despite the increase in administrative complexity that this entails.

Other respondents' views

- 7.12 Two respondents were unhappy with the high level nature of the review that had been conducted and felt that more detail was necessary to be able to make a more informed judgement on the scale of capital expenditure. One respondent felt that it was important to ensure adequate monitoring of the actual capital expenditure undertaken by NGC, in line with Ofgem's proposals for distribution companies.
- 7.13 Four respondents agreed with the split in asset lives between different types of assets, whereas two felt that average asset lives were better to ensure consistency in treatment with the TO and to avoid setting a precedent of undue complexity for the future.

Ofgem's final proposal

- 7.14 Ofgem continues to believe that no adjustments to NGC's projections of SO Base capital expenditure are necessary.
- 7.15 Given the advantages of matching assets with their respective economic lives and given support from NGC and the majority of other respondents who expressed a view, Ofgem proposes to adopt this approach. We propose to adopt a 7 and 40 year economic life policy for short and long life assets respectively.

- 7.16 In relation to monitoring NGC's capital expenditure, Ofgem intends to adjust the SO Regulatory Value for March 2006 to take account of any differences between forecast and actual expenditure.

Impact of NETA on SO Base capital expenditure

NGC's initial view

- 7.17 NGC indicated that a number of NGC's pre-NETA capital expenditure schemes would be cancelled or deferred as a result of the introduction of NETA. These are primarily IT-related and would have the effect of reducing NGC's projected capital expenditure by between £0.05m and £1.1m per annum over the period from 2001/2 to 2005/6. Table 7.2 shows the level of incremental and avoided capital expenditure as a result of NETA.

Table 7.2 - Increases and decreases in capital expenditure arising as a result of NETA

£m 2000 prices	01/02	02/03	03/04	04/05	05/06	Total
Capital expenditure savings	(0.05)	(0.05)	(1.10)	(0.25)	(0.10)	(1.55)
Capital expenditure costs	0.00	0.00	0.00	0.00	1.65	1.65
Total	(0.05)	(0.05)	(1.10)	(0.25)	1.55	0.10

- 7.18 In 2005/6, NGC projected capital expenditure costs relating to the replacement of the NETA and New Economic Database servers. This cost offset the reduction in savings over the period, resulting in a net cost attributable to NETA of approximately £0.1m over the period from 2001/02 to 2005/06.

Ofgem's initial proposal

- 7.19 Ofgem reviewed NGC's projections of the impact of NETA on SO capital expenditure and proposed no adjustments.⁸⁹

Respondents' Views

- 7.20 No responses were received on this issue.

⁸⁹ However, a relatively small adjustment to the allocation of a single pre-NETA scheme was made, which NGC considered should be allocated to the TO rather than the SO. This adjustment is reflected in the capital expenditure totals shown in Table 7.1.

Ofgem's final proposal

- 7.21 Ofgem's initial proposal remains unchanged and we intend to make the allowance for additional SO capital expenditure as a result of NETA as shown in Table 7.2.

NETA set-up costs

NGC's initial view

- 7.22 NGC, in its submission to Ofgem, included two categories of capital expenditure required for the implementation of NETA. These were the costs of IT systems for system management (System Management Phase 1) and the costs of IT systems for the new trading function described in Chapter 6.
- 7.23 Within System Management Phase 1 costs, NGC included £18.1m of capital expenditure. These are the costs of resources, computing systems and facilities utilised in order to prepare the system operation business for NETA Go live. Over 93% of these costs relate to contract IT staff and specialists.
- 7.24 NGC, in its BPO highlighted capital expenditure of £10.4m in 2000/01 relating to the capital expenditure related set-up costs of the trading function. This included a 30% contingency on both IT and non-IT solutions costs.

Ofgem's initial proposals

- 7.25 Ofgem reviewed the costs for System Management Phase 1 and proposed no adjustment.
- 7.26 Whilst Ofgem agreed that it may be necessary to include a contingency in relation to IT solutions costs, we did not consider it necessary in relation to non-IT costs such as human resources, policies and procedures and programme management. We therefore proposed to remove this element of the contingency. In addition, Ofgem considered the magnitude of the non-IT solutions costs to be excessive and proposed to reduce these trading set-up costs further, giving a combined reduction in costs of £1.0m in 2000/01.
- 7.27 Ofgem proposed that the adjusted capital expenditure relating to NETA set-up costs of £27.5m which had been incurred or was projected to be incurred prior

to 1 April 2001, should be included within the SO Regulatory Value at 1 April 2001. Ofgem also proposed that these costs should be depreciated over 7 years in accordance with our proposed policy on the depreciation period for IT systems and related assets.

NGC's response

- 7.28 NGC was concerned about the £1m downward adjustment proposed for non-IT solution costs. However, NGC recognised that some elements of the HR costs had been double counted and adjusted them downwards by £0.3m. Furthermore, NGC accepted that the 30% contingency on non-IT activities should only have been applied to process management, which is closely related to IT activity, and not to the other non-IT activities. This reduces NGC's estimated costs by a further £0.3m to £0.6m in total (this compares with the £1m adjustment proposed by Ofgem).

Other respondents' views

- 7.29 One respondent commented on the level of the capitalised NETA set up costs, and was concerned that the high level review had identified only a £1m reduction in capitalised NETA set up costs (out of £28.5 m).

Ofgem's final proposal

- 7.30 Given that NGC has itself identified £0.6m of costs that should not have been included in its proposal and our continued belief that NGC's non-IT contingency costs are excessive, Ofgem continues to believe that our proposed adjustment is appropriate and hence that an allowance for NETA set up costs of £27.5m should be made.

Summary of Regulatory Value roll forward for SO

- 7.31 Ofgem's proposed opening and closing Regulatory Value of the SO, the depreciation allowance and forecast capital expenditure are shown in Table 7.3. The table shows separately the amounts included within the SO Regulatory Value which relate to NETA set-up costs. These include certain items of operating expenditure, projected to be incurred prior to 1 April 2001 which Ofgem proposes to include in the Regulatory Value and depreciate over 7 years (see Chapter 6 for a discussion of these amounts).

Table 7.3 - SO Regulatory Value, depreciation and capital expenditure

£m 2000 prices	01/02	02/03	03/04	04/05	05/06
SO opening Regulatory Value	22.3	Land and buildings			
	41.6	NETA set-up costs*			
	51.0	Other assets			
Opening value	114.9	116.8	114.3	101.0	85.4
Depreciation (7 years for IT; 40 years for buildings)	(13.8)	(16.1)	(18.0)	(18.7)	(19.1)
Capex**	15.7	13.6	4.7	3.1	5.4
Closing value	116.8	114.3	101.0	85.4	71.7

* This includes NETA set up costs, NETA delay costs and re-phasing, TNUoS (£1.1m), CUSC (£0.2m) and £0.3m of on-going system management operating costs.

**The capex profile is the sum of tables 7.1 and 7.2 (pre-NETA base capex plus post NETA adjustments).

Additional capital expenditure

NGC's initial view

- 7.32 NGC highlighted two additional areas, not covered by its original BPQ that it believed might require additional capital expenditure. First, NGC believed that its forecasts of the costs of resolving transmission constraints under NETA would make the acceleration of a number of TO related investments in the transmission network economic against its forecast of constraint costs. However, at this stage, NGC had not quantified any of these investment costs.
- 7.33 Second, NGC pointed out that it had not included any additional expenditure relating to the introduction of new transmission access and pricing and losses arrangements that may require additional systems development.

Ofgem's initial proposal

- 7.34 Ofgem argued that in relation to further capital expenditure, such investment must provide tangible benefits. In evaluating any requests for additional funding for constraint-relieving capital expenditure, we said that we would look carefully at the capital expenditure plans already submitted as part of the TO price control and the constraint cost assumptions included in the SO external cost incentive scheme.

7.35 Ofgem recognised that NGC may incur additional costs as a result of the introduction of new transmission access arrangements and that the recovery of any efficiently incurred incremental costs would need to be discussed as the proposals for the new arrangements are developed. We will also seek to ensure that any additional costs are appropriately offset by any cost savings NGC will realise for system development included in the original BPQ that become redundant as a result of new transmission access arrangements. However, we did not believe that it was appropriate to include any allowance at this stage.

NGC's response

7.36 On capital expenditure on the transmission network not allowed under either the current or next TO price control (starting 1 April 2001), NGC identified a number of capital expenditure schemes (so-called Transmission Services or TS capital expenditure) that could provide benefits to customers via lower constraint costs (see table 7.4). NGC argued that these schemes would be justified even assuming constraint volumes remain unchanged under NETA.

Table 7.4 - TS capital expenditure profile

Em 2000 Prices	01/02	02/03	03/04	04/05	05/06	Total
TS capex	3.1	1.7	7.1	8.4	3.4	23.7

7.37 NGC proposed that one option for financing these costs would be to include their allowances for depreciation and rate of return in the pass-through element of internal costs for the SO business (along with rates etc., see chapter 6) until such time as the TO Regulatory Value is reviewed (next due for review in five years time for the period 1 April 2006 onwards). At this point, the remaining asset value of the TS capital expenditure could be added to the TO Regulatory Value, and the revenues and costs would drop out of the SO scheme.

Ofgem's final proposal

7.38 Ofgem has reviewed NGC's assumptions on new capital expenditure in the transmission network and has not proposed any revision to NGC's profile of TS capital expenditure. We believe that the depreciation and rate of return on these

investments should be recovered within the SO incentive scheme for the period of the next TO Price Control (1 April 2001 to 31 March 2006) and that thereafter the assets should be transferred to the Regulatory Value of the TO business.

- 7.39 On the costs of implementing new transmission access and pricing arrangements, Ofgem proposes to consider such costs once the design and requirements of any new regime have been agreed.

Rate of return

Ofgem's initial proposal

- 7.40 The choice of the appropriate rate of return on the Transmission Business Regulatory Value had been consulted upon within the TO initial proposals. Arguably, the rate of return on the SO Regulatory Value could differ from that used for the TO business, due to the relative size of the TO and SO businesses. However, given the assets are still funded from NGC as a whole, and the SO and TO are not to be separately ring-fenced, Ofgem believed it was appropriate to apply the same rate of return to both the TO and SO business functions. Hence, Ofgem propose to apply a rate of return of 6.25%, as used in determining the TO price control for NGC.

NGC's response

- 7.41 NGC believes that a combined SO incentive scheme covering internal and external costs is the best way of incentivising the system operator business. Given the uncertainty on external costs under NETA, NGC believes that, given the SO Regulatory Value is only approximately £100m, no conceivable rate of return would compensate it for these additional risks. Hence, NGC argues that it is important to align the incentive scheme sharing factors and cap and collar to be compatible with the allowed rate of return.

Other respondents' views

- 7.42 Only two respondents commented on the rate of return and both agreed that the rate of return should be the same as that applied to the TO business.

Ofgem's final proposal

- 7.43 Ofgem notes NGC's comments on risk and return for the incentive scheme. We remain of the view that given NGC's TO and SO businesses remain under the same ownership, the rate of return on the two business functions should remain the same. Hence, we propose to apply a rate or return of 6.25% as accepted by NGC for the TO price control.

Recovery of costs

- 7.44 Table 7.5 below sets out the cost recovery for the capitalised items set out above. It is divided between those that will be passed on directly to users ('sunk', non controllable costs expended on setting up NETA) and those that will be captured within the incentive on SO internal costs.

Table 7.5 - Cost recovery on capitalised costs (2001/02 – 2005/06)

Em 2000 prices	00/01	01/02	02/03	03/04	04/05	05/06
<u>Non-incentivised cost recovery</u>						
1) Opening RV (at 1 April 2001)						
Regulatory Value (at year end)	114.9	101.1	87.3	73.5	59.7	45.9
- depreciation		13.8	13.8	13.8	13.8	13.8
- rate of return		6.8	5.9	5.0	4.2	3.3
Total non-incentivised cost recovery		20.6	19.7	18.8	18.0	17.1
<u>Incentivised costs</u>						
1) Additional capex		15.7	13.6	4.7	3.1	5.4
Regulatory Value (at year end)			15.7	27.0	27.5	25.7
- depreciation		0.0	2.3	4.2	4.9	5.3
- rate of return		0.5	1.3	1.7	1.7	1.8
2) TS capex						
Regulatory Value		3.1	4.8	11.7	19.8	22.7
- depreciation		0.0	0.1	0.1	0.3	0.5
- rate of return		0.2	0.2	0.5	1.0	1.3
Total incentivised cost recovery		0.7	3.9	6.5	7.9	8.9

Summary of operating and capital cost recovery

7.45 Table 7.6 summarises the total cost recovery for both the operating cost elements (tables 6.12a and 6.12b) and the capitalised items set out above (table 7.5).

Table 7.6 - Total SO cost recovery: incentivised and non-incentivised

£m 2000 prices	Table ref.					
Category		01/02	02/03	03/04	04/05	05/06
Pass through – rates and participants' costs	Table 6.12a	5.2	1.0	0.9	0.9	0.9
Non-incentivised capex	Table 7.5	20.6	19.7	18.8	18.0	17.1
Total projected non-incentivised costs		25.8	20.7	19.7	18.9	18.0
Incentivised opex	Table 6.12b	53.3	48.1	46.2	43.6	44.3
Incentivised capex	Table 7.5	0.7	3.9	6.5	7.9	8.9
Total incentivised costs		54.0	52.0	52.7	51.5	53.2

8. Summary of Ofgem's Final Proposals

Introduction

- 8.1 This chapter summarises Ofgem's final proposals for the SO incentive scheme on external costs to apply from NETA Go live to 31 March 2002, the allowances for SO internal costs for the five year period beginning 1 April 2001 and ending 31 March 2006 and the incentive scheme on SO internal costs to apply from 1 April 2001 to 31 March 2002.

Form of incentive schemes

SO external costs

- 8.2 On the form, scope and duration of the incentive on SO external costs, Ofgem proposes that:
- ◆ a sliding scale form of incentive remains appropriate;
 - ◆ the initial scheme should run until 31 March 2002;
 - ◆ NGC's incentives should cover all system and energy balancing costs for the initial scheme under NETA. We have also concluded that, for this initial scheme, NGC's exposure to the Net Imbalance Volume should be reduced via a suitable reference price;
 - ◆ there should be a single bundled incentive scheme at the start of NETA; and
 - ◆ the initial incentive scheme should continue to be based on an ex-ante forecast of costs.
- 8.3 Ofgem has also concluded that provision for IAEs continues to be appropriate, and that there should be scope for both NGC and other participants to ask Ofgem to consider whether an IAE has occurred. Ofgem also proposes that the current threshold of £2m be retained for the initial scheme.

SO internal costs

8.4 On the form, scope and duration of the scheme covering SO internal costs, Ofgem proposes:

- ◆ the scope of the scheme should cover all SO Base costs identified as part of the TO Price Review and the incremental costs of preparing for and operating under NETA, subject to the carve-out of pass-through elements identified in Chapter 6;
- ◆ the form of the SO internal costs scheme should be the same as that for the incentive on SO external costs. Initially, separate SO internal and external schemes should operate in the period up to 31 March 2002, but the sharing factors for the two schemes should be the same. Ofgem proposes that there should be no cap or collar in relation to the incentive on SO internal costs; and
- ◆ the duration of the incentive on SO internal costs should initially be one year. However, Ofgem has identified a five year cost stream and considerations in future consultations on SO internal costs will relate only to the form of the incentive on SO internal costs and not the overall level of allowable costs with the exception of the trading function (see Chapter 6).

SO external and internal costs

SO external costs

8.5 Ofgem believes that a reasonable forecast of balancing costs for the initial SO incentive scheme under NETA would be £471m for the period 1 April 2001 to 31 March 2002. This represents a £71m or 13% reduction against NGC's revised forecast of balancing costs under NETA. If NETA were introduced before 1 April 2001, then a simple of pro-rata of NGC's forecast would be used to derive an incentive scheme target.

Table 8.1 - Ofgem's final proposals - incentivised costs (£m/annum)

	NGC Original Proposal	NGC Revised Proposal	Ofgem Final Proposal	£m Reduction	% Reduction
Balancing Services Contract Cost	172	159	146	13	8%
Incentivised BM Cost	251	284	224	59	21%
Total Balancing Cost	422	442	370	71	16%
Transmission Losses	146	101	101	-	-
Total (BSCC + BM + losses)	568	542	471	71	13%

SO internal costs

Operating expenditure

- 8.6 A summary of Ofgem's conclusions on the levels of allowable set-up and ongoing operating costs for the SO function under NETA is shown in table 8.2.

Table 8.2 - Controllable SO operating costs under NETA (2001/02 - 2005/06)

Em 2000 prices	Table ref.	99/00	00/01	01/02	02/03	03/04	04/05	05/06	5 year total
		Additional to Initial Proposals							
Total NETA set up costs (relocation cost adjustment)	6.4 (see relevant footnote)		1.0						
SM 2 adjustment for re-phasing			(0.5)	6.2	3.3	2.1			11.6
TNUoS		0.3	0.8						
Efficient base SO costs	6.2b			39.6	39.8	39.2	39.0	40.2	197.8
TSS IT	6.7			0.5	0.3	0.3			1.1
CUSC	6.8		0.2	0.4	0.4	0.4	0.3	0.3	1.8
Incremental SO	6.6b			4.5	4.3	4.2	4.3	3.8	21.1
Estimated NETA delay costs	6.10b		9.1	2.1					2.1
Total		0.3	10.6	53.3	48.1	46.2	43.6	44.3	235.5

8.7 Tables 8.3 and 8.4 explain how the costs in Table 8.2 would then be recovered, being either directly passed on to customers i.e. non-incentivised (Table 8.3), or included within the incentive scheme i.e. incentivised (Table 8.4). The non-incentivised costs are those over which NGC now, no longer has discretionary control, as there are either expended (or committed) one off expenditures ('sunk' costs) such as NETA set up costs, or are outside of NGC's influence, e.g. rates.

Table 8.3 - Non-incentivised operating cost recovery

£m 2000 prices	Value	How recovered	01/02	02/03	03/04	04/05	05/06
Estimated participants costs	4.2	Pass through	4.2				
Capitalised NETA costs	6.7	To be capitalised					
Rates		Pass through	1.0	1.0	0.9	0.9	0.9
Total		Pass through	5.2	1.0	0.9	0.9	0.9

Table 8.4 - Incentivised operating cost recovery

£m 2000 prices	01/02	02/03	03/04	04/05	05/06	5 year total
NETA set-up costs (incurred post 1 April 2001)	6.2	3.3	2.1			11.6
Base (less rates)	39.6	39.8	39.2	39.0	40.2	197.8
TSS IT	0.5	0.3	0.3			1.1
CUSC	0.4	0.4	0.4	0.3	0.3	1.8
Incremental SO	4.5	4.3	4.2	4.3	3.8	21.1
Estimated NETA delay costs	2.1					2.1
Total	53.3	48.1	46.2	43.6	44.3	235.5

Capital expenditure

- 8.8 Table 8.5 below sets out the cost recovery for the capitalised items set out in Chapter 7. It is divided between those that will be passed on directly to users ('sunk', non controllable costs expended on setting up NETA) and those that will be captured within the incentive on SO internal costs.

Table 8.5 - Cost recovery on capitalised costs (2001/02 – 2005/06)

£m 2000 prices	00/01	01/02	02/03	03/04	04/05	05/06
<u>Non-incentivised cost recovery</u>						
1) Opening RV						
Regulatory Value	114.9	101.1	87.3	73.5	59.7	45.9
- depreciation		13.8	13.8	13.8	13.8	13.8
- rate of return		6.8	5.9	5.0	4.2	3.3
Total non-incentivised cost recovery		20.6	19.7	18.8	18.0	17.1
<u>Incentivised costs</u>						
1) Additional capex		15.7	13.6	4.7	3.1	5.4
Regulatory Value			15.7	27.0	27.5	25.7
- depreciation		0.0	2.3	4.2	4.9	5.3
- rate of return		0.5	1.3	1.7	1.7	1.8
2) TS capex						
Regulatory Value		3.1	4.8	11.7	19.8	22.7
- depreciation		0.0	0.1	0.1	0.3	0.5
- rate of return		0.2	0.2	0.5	1.0	1.3
Total incentivised cost recovery		0.7	3.9	6.5	7.9	8.9

Other parameters

8.9 Ofgem has proposed four combinations of incentive scheme target (on SO external costs), sharing factors and cap and collar that seek to meet NGC's concerns and Ofgem's objective of an effective incentive on NGC to manage costs on customers' behalf. Ofgem has given NGC a choice between these options. If NGC fails to accept any of the options then Ofgem proposes that all

of the efficiently incurred costs associated with the SO function (internal and external) be directly passed through to participants (and ultimately customers). Ofgem would regulate the SO business to ensure that costs remained at efficient levels by actively monitoring the SO's actions. Where necessary, Ofgem's could use its statutory powers to enforce licence conditions to ensure that NGC operates the transmission system in an efficient, economic and co-ordinated manner (licence Condition 7B(1)). Subject to the enactment of relevant provisions of the Utilities Act, this would include the power to impose monetary penalties in the event that NGC were found to be in breach of their licence.

Table 8.6 - Incentive scheme form - Ofgem's final proposal

	Ofgem Option 1	Ofgem Option 2	Ofgem Option 3	Ofgem Option 4
Incentive Scheme Target	£471m		£485m	
Deadband	-	£471m to £517m	-	£471m to £500m
Upside Sharing Factor	50%	25%	40%	40%
Downside Sharing Factor	10%	20%	12%	12%
Cap	£60m	£30m	£45m	£45m
Collar	£12m	£25m	£15m	£15m
Duration	One Year with option for rollover of target* to second year	One year scheme	One year scheme	One year scheme
Expected return against NGC's distribution	£2.0m	£-3.7m	£1.4m	£0.6m
Expected return against Ofgem's distribution	£12.8m	£3.6m	£11.3m	£9.5m

*Subject to an adjustment reflecting lower volumes of response and reserve holding.

8.10 The proposed combinations of sharing factors and cap and collar have been designed to mitigate the uncertainty faced by NGC under the initial SO incentive scheme. Thus, they should in no way be seen as setting precedents for future incentive arrangements. Ofgem believes that the form of the incentive schemes proposed, represent a fair and pragmatic compromise designed to deliver real benefits to customers as quickly as possible under NETA.

8.11 Ofgem's final proposal for NIRP is that for the initial SO incentive scheme it should be set to SSP when the system is long and SBP when the system is short. This proposal will significantly reduce the risks faced by NGC under NETA and represents a pragmatic approach for the initial SO incentive scheme.

8.12 Ofgem agrees with the majority of respondents that no provision for a threshold price adjustment should be made. Ofgem continues to believe that the extent to which any such bids or offers are accepted, NGC should call an IAE if, as a result of accepting such a sleeper bid or offer, its incentivised costs move outside the incentivised range. It would then be for Ofgem to decide whether an event called by NGC actually constitutes an IAE.

Appendix 1 Current Definitions of Ancillary Services

- 1.1 NGC is required, under Condition 6 of its Transmission Licence, to procure sufficient "Ancillary Services" as is appropriate to enable it to discharge its obligations under the Electricity Act 1989 and Transmission Licence. This requirement is couched in terms of the provision of services specified in the Grid Code and the MCUSA. The Ancillary Services Business, currently a separate business (under the Transmission Licence) within NGC, is currently responsible for procuring these Ancillary Services and there is an economic purchasing obligation on NGC in contracting for Ancillary Services.
- 1.2 There are two categories of Ancillary Services: System Services and Commercial Services. System Services are services that NGC requires to operate the system safely and reliably. Part 1 System Services are services that all licensed generators must be capable of providing in accordance with the terms of the Grid Code and the MCUSA.⁹⁰ They are restricted to specified capabilities for frequency response and reactive power. Should a generator fail to provide them, NGC has the right to refuse to connect the generator to the transmission system. Part 2 System Services (such as black start services) are not required from every generator and their provision is agreed on a site by site basis. However, if NGC requests the provision of a Part 2 System Service, a participant must provide terms (technical and commercial) for its supply. Commercial Services are services that are essential but not mandatory and generators can refuse to provide them. NGC makes payments for both System and Commercial Services under a variety of arrangements.
- 1.3 Four main Ancillary Services are defined: reactive power; reserve; frequency response and black start capability. In addition, NGC has, on occasion, signed Ancillary Services contracts to assist in the alleviation of constraints and it has contracts for emergency assistance from the French and Scottish transmission systems. It is Ofgem's view that reserve is primarily associated with achieving an energy balance whilst reactive power and black start are used for system balancing. Frequency response is generally a System Service but to the extent

⁹⁰Unlicensed generators may also provide Ancillary Services but are not obliged to under the terms of the Grid Code.

that, at longer timescales, it merges with reserve it can also be considered partly as an energy balancing service.

- 1.4 Reactive power flows are required to control the voltage of the system. NGC uses the reactive power capabilities of generators and some consumers to provide real-time control of the voltage on a locational basis. In addition, NGC can use its own transmission assets to control flows. The way the transmission network itself is configured and operated also affects reactive power flows and NGC owns and utilises specialist equipment, such as Static VAR Compensators, the capital costs of which are remunerated under NGC's Transmission Price Control.
- 1.5 A number of different types of reserve are defined. Scheduled reserve (also known as spinning reserve) is provided by part loading generating units able to increase output rapidly. There are two elements to scheduled reserve, frequency response as detailed below, and regulating reserve available over a 5-30 minute timescale. Standing reserve is provided under contract by generating plant and load managers able to respond in less than 20 minutes and maintain a service for at least two hours (repeatable within 20 hours). Contingency reserve is provided over longer timescales (5 to 24 hours). It is typically provided by NGC instructing plant with long notice to synchronisation times to start-up or to remain on hot standby.
- 1.6 Frequency response can be viewed as short term reserve that is provided automatically i.e. without explicit instruction and is used to contain and reduce or recover frequency changes before reserve can be instructed. Frequency response is divided between the continuous service provided by generating units and the occasional service provided by parties that respond to large frequency changes (e.g. using a low frequency relay) and comprises different forms of response (primary, secondary and high frequency).
- 1.7 Black start is the capability of a power station to start-up at least one of its generating units without an external power supply and is called on by NGC as a means of restoring supplies following a major failure on all or part of the network.

Appendix 2 Current Procurement of Ancillary Services

- 2.1 Currently, Ancillary Services are typically procured under bilateral contracts between NGC and individual service providers. The length of these contracts varies between one year and effectively the lifetime of the asset (for Part 1 System Services). Remuneration for the service can either be cost or value based. Initially, cost-based remuneration was considered appropriate for mandatory services. However, progress is continuing to be made towards introducing competition (particularly from the demand-side) and market-based mechanisms for procurement and value-based remuneration.
- 2.2 NGC currently holds two tender rounds each year to meet its reactive power requirements. Any eligible service provider⁹¹ can submit bids to NGC to provide reactive power services. NGC makes information available, in the public domain, on these tender rounds to aid transparency. This includes details on the tender evaluation, the number and type of tenders, details on the proportion of successful bids and the aggregate payments and volumes that have been made. Since reactive power is a Part 1 System Service, there are default arrangements to provide remuneration to generators that do not participate or are unsuccessful in the auction. The default payments are geographically differentiated and the basis for remuneration is changing from a split between capability and utilisation payments to pure utilisation payments from 1 April 2000.
- 2.3 In the last tender round, for contracts from 1 April 1999 to 31 March 2000, 102 tenders were received from centrally despatched generating sets (67% of eligible sets) at 39 power stations owned by 11 generators. No tender offered services above the minimum obligatory services.⁹² Agreements were offered to 75 sets and signed with 57 sets (11 generators) or approximately 40% of the market. During the first year of reactive power tenders (April 1998 to March 1999),

⁹¹ Eligible service providers are defined in Master Connection Use of System Agreement (MCUSA) but include centrally despatched generators, embedded generators, non-centrally despatched providers and large demand users.

⁹² The Grid Code connection conditions specify "All Generating Units must be capable of supplying rated power output (MW) at any point between the limits 0.85 power factor lagging and 0.95 power factor leading at the Generating Unit terminals. The short circuit ration of Generating Units shall be not less than 0.5."

Additional services above the mandatory conditions include Commercial Services such as synchronous compensation and extended power factor ability.

approximately 27% of total reactive power payments were under contract with the remaining 73% being made under the default arrangements.

- 2.4 The different types of reserve are procured and remunerated in different ways. Scheduled reserve is procured and paid for through the Pool with the costs appearing in Transport Uplift. Contingency reserve is procured through bilateral contracts. The costs of contingency reserve are captured through cancelled start and hot standby payments if the cancellation occurs within the plant's notice to synchronise period. If a plant is ordered and subsequently cancelled outside its notice to synchronise time then the service is provided free. If the plant is subsequently called to provide energy (not whilst being called to provide contingency reserve) then these costs appear in Operational Outturn.
- 2.5 Standing reserve is provided under contract via an annual tender process conducted by NGC. In assessing an individual tender, NGC calculates the effective expected cost of the reserve offered, taking into account the split between capability and utilisation prices, and a probabilistic assessment of the expected utilisation of the reserve contract.⁹³ NGC will enter into a reserve contract with a participant if the expected cost of each MWh of a tender is less than the Value of Lost Load (VoLL), on the basis that VoLL is intended to represent the maximum price that customers are willing to pay to ensure security of supply. Information on the standing reserve tender, including offered and accepted volumes and successful tender prices has been made available in an NGC report available on their website.⁹⁴ The total new volume of standing reserve options for 1998/99 was 1174 MW bringing the total volume, including existing contracts, to 2120 MW. It is estimated that the standing reserve agreements entered into for the 1998/9 financial year will amount to an "Average Equivalent Cost" of around £9.8/kW per annum for approximately 4,500 service hours.
- 2.6 Cost based payments cover approximately half the required level of frequency response services, with the remainder being provided through commercial arrangements that provide value based remuneration. In addition, there have been discussions on the development of a frequency response market. Since the

⁹³ The probabilistic assessment takes into account plant loss statistics, reserve contracts (including scheduled reserve) already accepted and demand forecast errors.

level of frequency response required is based on NGC's judgement of the maximum infeed loss that could occur, NGC can make a trade-off between constraint payments (to limit the infeed loss possible) and frequency response payments.⁹⁵ Similar tradeoffs can be made between other Ancillary Services, notably reserve and reactive power. In addition, deloading plant for constraints can also be used to provide frequency response, reserve and reactive power.

- 2.7 Black start capability is procured under long term contracts that are subject to commercial negotiations between NGC and the service providers. Payments for black start facilities are based on three main components – staged payments reflecting the investment costs of installing new black start facilities, availability payments (£/hr) and utilisation payments (£/MWh).
- 2.8 Ancillary Service constraint contracts are also the result of bilateral negotiations.
- 2.9 Table A2.1 provides a breakdown of the annual average costs of Ancillary Services in England and Wales over the period 1996 to 1998.

⁹⁴ NGC's web address is www.nationalgrid.com

⁹⁵ There are also strong trade-offs between constraints and other Ancillary Services including reactive power and reserve.

Table A2.1 – Approximate breakdown of annual ancillary services costs (£m)

Service	Contract costs	Pool costs	Notes
Reactive Power	50	Small	The costs of voltage constraints are included within constraints below.
Frequency Response	35	40	
Regulating Reserve	10	70	Regulating reserve covers all categories of reserve held on synchronised plant, excluding frequency response.
Standing Reserve	5	10	The contract costs are option fees minus exercise rebates. The balance between contract and Pool costs is dominated by exercise rebates.
Constraints	< 1	35	In any year, there are very few ancillary constraint contracts.
Black Start	10	< 1	

Note: Costs are rounded to the nearest £5m. Overhead and Miscellaneous costs have been excluded from this breakdown.

Source: 'The New Electricity Trading Arrangements, Volume 2, An Ofgem decision document', October 1999.

Appendix 3 NGC's Forecast of Balancing Costs under NETA

3.1 The following appendix is taken largely from Ofgem's August Initial Proposals document. Hence, it may not fully reflect the revised forecasts provided by NGC but does provide much of the rationale and assumptions behind NGC's forecast of balancing costs.

NGC's forecast of balancing services contract costs under NETA

3.2 For the reasons outlined in Chapter 4, NGC believes that the volumes of response and reserve that it holds will need to increase at least initially under NETA whilst it and participants gain experience.

3.3 In relation to the three main drivers of the volumes of reserve and response that NGC has identified, NGC has estimated that following additional volumes of balancing services will be required initially:

- ◆ **Intra half-hour adjustments:** NGC considers that it will need to increase the level of dynamic frequency response it holds by 22% or 200MW (from 8 TWh/year to 9.8 TWh/year).
- ◆ **NGC's demand forecasting error:** NGC expects the standard deviation of its demand forecast error at 3 ½ hours ahead of real time to increase from 1% to 1.3%. It proposes to manage this by holding between 60MW and 150MW more regulating reserve.
- ◆ **Profiling uncertainty:** To counter this, NGC expects to hold a further 500MW to 1000MW of additional regulating reserve during these periods.

3.4 Overall, NGC expects to increase regulating reserve holding by 33% to cater for the increased uncertainty under initial NETA. As a result of these increases in reserve and response holdings, it also expects to increase the level of contingency reserve by approximately 17% (500 MW). NGC expects to require additional holdings at these levels for the first four months of NETA i.e to 31 March 2001, thereafter it considers it will be possible to reduce its reserve

holdings broadly back to current levels over the remaining 12 months. On an average basis across the period 1 April 2001 to 31 March 2002, this profiling corresponds to holding about half the additional volume of contingency reserve and a third of the additional regulating reserve originally proposed by NGC. However, NGC does not anticipate reducing its response holdings.

- 3.5 Table A3.1 summarises NGC's views on the volumes of balancing services it will need to hold initially under NETA (based on a NETA Go live date of 21 November 2000).

Table A3.1 - Balancing service volumes under NETA

Service	Current Holding	Initial Increase in Service	Conversion of Initial Increase to Annual Equivalent	% Increase to 31 March 2001	% Increase from 1 April 2001 to 31 March 2002
Response	8 TWh	+ 200MW of response	$200\text{MW} \times 8760\text{hr} = +1.8 \text{ TWh}$	+ 22%	+ 22%
Regulating Reserve	6 TWh	+ 60-150MW of regulating reserve	$90\text{MW (av.)} \times 8760\text{hr} = +0.8 \text{ TWh}$	+ 33%	+ 11%
		+ 500-1000MW of regulating reserve at shoulders	$3\text{hr} \times 500\text{MW} = +1.5\text{GWh /day}$ $2\text{hr} \times 1000\text{MW} = +2\text{GWh /day}$ so $+3.5\text{GWh} \times 365\text{days} = +1.2\text{TWh}$		
Fast Reserve	3 TWh	None		0%	0%
Standing Reserve	7 TWh	None		0%	0%
Contingency Reserve	3000 MW /day	+ 500 MW /day	n/a	+ 15%	+ 8%
Black Start		None	n/a	0%	0%
Reactive Power	Approx. 33 TVARH	None	n/a	0%	0%

Balancing services contract costs

- 3.6 Based on its estimates of the necessary volumes of balancing services contracts and the drivers of prices of balancing services contract costs (discussed in the previous section), NGC has created an overall forecast of these contract costs. NGC has told Ofgem that it expects the contract costs of the following balancing services to be affected by NETA:⁹⁶

Reactive power: NGC has assumed that there will be no change in the cost of reactive power under NETA.

Response: NGC is expecting to increase the volume of total response holding by 22%. NGC expects NETA to increase energy market liquidity. Firm response contracts are normally backed by energy contracts, and NGC expects NETA to allow it to purchase contracts that better meet its requirements.

Refund of response imbalance charges: The provision of mandatory frequency response and intertrip services will result, under NETA, in the service provider being exposed to imbalance charges. This is because delivery of the service results in the BM Unit moving away from its FPN without the acceptance of a bid or offer.

- 3.7 NGC has agreed to refund imbalance charges arising due to the provision of response. To estimate the imbalance refund NGC has estimated the difference between the System Buy Price (SBP) and the System Sell Price (SSP). NGC's initial estimate is that the response imbalance refund could be between £11k/day and £55k/day depending on the range of SBP minus SSP as estimated by NGC in its forecast of Balancing Mechanism costs.

Standing reserve: The closing date for standing reserve tenders for the first months of NETA was 30 June 2000. NGC has now concluded its standing reserve tender assessment. NGC has told Ofgem that tender prices were higher than anticipated, and NGC has only offered contracts for around 1000MW of plant (compared to 1900MW in the current year) with the rejection of a number of uneconomic tenders. Taking account of higher utilisation prices for plant that

⁹⁶ Under NETA, Regulating Reserve will be delivered by the acceptance of Bids and Offers in the BM. The change in volume of Regulating Reserve impacts on the costs of the BM, but has no direct impact on balancing services contract costs.

has been offered contracts, and the plant without contracts that will need to be procured via the Balancing Mechanism, NGC now expects costs for standing reserve to increase on average by £21k per day. This represents a 60% increase over the current cost of this service but with only half the contracted volume. It believes this will also have a consequential impact on regulating reserve volumes.

OCGT fast start: NGC has assumed there will be no change in the costs of the contracts that it holds with OCGTs.

Contingency reserve: contingency reserve is currently provided by the cancelled start and hot standby services. Under NETA, NGC expects the same functionality to be delivered by the warming service. At least initially, NGC is planning to increase its holding of this service by 17%. NGC also argues that a proportion of its existing contingency reserve has a notice to deviate from zero time (NDZ) greater than 3½ hours and hence it will have to re-contract with participants who have shorter NDZs, probably at a higher price. At present, NGC has only discussed with service providers the form of contracts under NETA and not prices or service enhancement. However, it is NGC's expectation that the enhanced service requirement, combined with the extra holding may result in cost increases.

Constraint contracts: As at present, NGC does not intend to enter into any constraint contracts.

Black start: It is NGC's current view that participants negotiating black start contracts will attempt to recover some of the loss of capacity and USAV payments under NETA.

3.8 Overall, NGC's forecast of Balancing Services Contract Costs is shown in Table A3.2.

Table A3.2 - Forecast daily balancing services contract costs

Cost Category	Current Daily Cost	NGC Forecasts		
£k/day		Low Forecast	High Forecast	Mean Forecast
Reactive Power	127	127	127	127
Reserve ⁹⁷	100	111	150	131
Response	129	130	151	142
Other Balancing Services	37	48	97	73
Total	393	416	525	472
Total (£m)	0.39	0.42	0.53	0.47

NGC's forecast of Balancing Mechanism costs under NETA

- 3.9 NGC has constructed a simulation model of the Balancing Mechanism (Simulation Assessment and Review of Balances or SARB), that it used to construct a probability distribution for Balancing Mechanism costs, based on simulation of the behaviour of participants in the NETA markets. In broad terms, SARB models Balancing Mechanism costs based on a snapshot of the system at given times of the year, modelled to a genset level and based around a number of sensitivities and scenarios designed to capture the inherent uncertainty associated with many of the Balancing Mechanism cost drivers.
- 3.10 NGC has attempted to capture all the information required to calculate the Balancing Mechanism cost. The balancing services contract volume drivers, outlined earlier, are an input into this model, but the costs of balancing services contracts are additive to forecast Balancing Mechanism costs discussed below. In addition, inputs to SARB include estimates of the imbalance volumes, the shape of the bid and offer supply curves and a number of other uncertainties.
- 3.11 The outputs of the model include estimates for the daily volume of bids and offers purchased, the imbalance prices and a distribution of costs incurred in the Balancing Mechanism. NGC has used scenarios and random sampling to develop a distribution of Balancing Mechanism costs.

⁹⁷ This represented NGC's estimate before the recent Standing Reserve tender.

3.12 NGC has modelled four main Balancing Mechanism volume and price drivers:

- ◆ price scenarios covering drivers of bid and offer prices in the Balancing Mechanism;
- ◆ imbalance volume scenarios – voluntary imbalance positions taken by participants in the Balancing Mechanism i.e. how much energy is left to be traded in the Balancing Mechanism or settled at imbalance prices;
- ◆ post Gate Closure volume variables; and
- ◆ additional factors.

3.13 Each of these is considered in turn below.

Price scenarios

3.14 NGC has identified seven key factors that it believes capture the interactions between behaviour in the Balancing Mechanism and other markets under NETA:

- ◆ **Energy market prices:** Prices in forwards markets which influence the prices that participants wish to achieve in the Balancing Mechanism i.e. the extent to which they seek to recover their fixed costs;
- ◆ **Balancing Mechanism pricing strategy:** The level of costs that NGC has assumed will be recovered through Balancing Mechanism bids/offers;
- ◆ **Plant operation:** The way in which generators spread running (operation) across the units within a station and across stations. For example, with two units a generator could either contract for the output of one unit and bid the other into the Balancing Mechanism (unstraddled) or the contract could be spread across both units, with half the capacity of each participating in the Balancing Mechanism (straddled). Similarly, different approaches can be adopted for recovering fixed costs across units. This influences the level of costs generators seek to recover in the Balancing Mechanism and the spread of bids and offers they submit;

- ◆ **Balancing Mechanism liquidity:** Number of participants actively submitting bids/offers in the Balancing Mechanism, which NGC assumes will influence the shape of supply curve;
- ◆ **Market player forecast ability:** Relates to the sophistication of Balancing Mechanism participants and manifests itself as a risk premium on top of cost based bids/offers;
- ◆ **Balancing Mechanism price volatility:** NGC believes that price volatility in the Balancing Mechanism will be linked to liquidity in the Balancing Mechanism i.e. low liquidity would result in more volatile prices and
- ◆ **Sleeper bids:** NGC believes that the submission of "Sleeper Bids" - very high bids/offers – will also relate to liquidity in the Balancing Mechanism. For example, non-active participants might choose to submit such sleeper bids.

3.15 On the basis of these drivers, NGC has developed four price scenarios. In each, NGC assumes there is little or no demand side participation in the Balancing Mechanism. NGC's scenarios are summarised in Table A3.3.

Table A.3.3 - Balancing Mechanism price scenarios

	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Energy Market Prices	Very Low	Low	Low	Very Low
BM Pricing Strategy	Recover pure short run marginal costs	Recover short run marginal costs & residual fixed costs	Recover short run marginal costs & pro-rated fixed costs	Recover short run marginal costs, residual fixed costs & contribution to corporate overheads
Plant Operation	Highly straddled	Partially straddled	Marginal plant unstraddled	Marginal plant unstraddled
BM Liquidity	Very Competitive	Fairly Competitive	Fairly Competitive	Limited Competition
BM Price Volatility	<i>Low Volatility</i>	<i>Volatile</i>	<i>Volatile</i>	<i>Very Volatile</i>
Sleeper Bids (exc. Nuclear)	<i>None</i>	<i>Few</i>	<i>Few</i>	<i>Many</i>
Market Player Forecast Ability	All perceptive and accurate	Some perceptive and accurate	Few perceptive and accurate	Few perceptive and accurate
Probability	5%	45%	40%	10%

- 3.16 Scenario 1 represents a situation where there is intense competition and bids and offers in all the NETA markets reflect only short run marginal costs. NGC believes extreme competition would cause significant increases in Balancing Mechanism volumes and in the long term would force out excess market capacity. NGC believes that this scenario is unlikely and could only be sustainable in the short term.
- 3.17 Scenarios 2 and 3 both model less extreme market conditions, with bids and offers reflecting marginal costs, start up and no-load costs and a proportion of station fixed costs. The scenarios differ in the extent of generator straddling and the sophistication used by participants in seeking to recover their fixed costs (scenario 2 assumes greater sophistication than scenario 3). NGC believes both scenarios are sustainable in the long term.
- 3.18 Scenario 4 represents a market in which there are few active Balancing Mechanism participants, due in part to the overheads of trading and the cost of developing systems to operate in tight time-scales. As a result, many participants are able to factor corporate costs, as well as variable and fixed costs, into their bid and offer prices. NGC believes this is unlikely to be sustainable in the long term, but is credible initially under NETA.

Imbalance volume scenarios

- 3.19 Table A3.4 below, summarises the assumptions made by NGC on the voluntary imbalance positions taken by participants in settlement under NETA. NGC has assumed that voluntary imbalances will at most amount to 2% of total demand and has assigned probabilities to whether the system overall will be long, short or balanced. NGC considers that the financial consequences of being under-contracted and exposed to the SBP are likely to be greater than those from being over-contracted. Consequently, it has assumed that the chance that the system will be over-contracted (i.e. long) is greater than it being under-contracted (i.e. short).

Table A3.4 - Imbalance volume scenarios

Scenario	Imbalance Volume (Percentage of Demand)	Probability
1 Long	-2%	40%
2 Balanced	0	40%
3 Short	+2%	20%

Post Gate Closure volume variables

3.20 NGC has modelled three other drivers of volumes in the Balancing Mechanism, reflecting uncertainties it perceives will exist after Gate Closure, as shown in Table A4.5. The values for plant breakdown and under/over generation (against despatch schedules) have been taken from analysis of historic Pool data whilst the demand forecasting error reflects NGC's view, discussed above, that greater demand-side responsiveness to price signals will lead to greater uncertainty over the level of demand.

Table A4.5 - Post Gate Closure variables

Variable	Value
Plant Breakdown	450 MW
Demand forecasting error	1.3%
Under/Over generation	80 MW

Additional factors

3.21 At the start of NETA, transmission constraints will be resolved by NGC through the acceptance of Balancing Mechanism bids and offers. NGC has modelled additional constraint volumes in the Balancing Mechanism and prices these using a national merit order i.e. it takes no account of participants behind constraints adjusting their bids or offers to increase their revenues. NGC believes that this form of modelling underestimates the locational cost of constraints. NGC has estimated the additional constraint-related costs that need to be included in the forecast of Balancing Mechanism costs by estimating the difference between forecast prices associated with plant it has forecast to be constrained on/off in the Balancing Mechanism and its national prices.

3.22 NGC has assumed that 450 MW of plant will breakdown after Gate Closure and thus be unavailable for participation in the Balancing Mechanism. However, plant breakdown before Gate Closure has not been captured within the central features of NGC modelling. This is due to the modelling difficulty of ensuring consistency between assumed contracted energy positions and plant availability. NGC has argued that historically unplanned outages before Gate Closure run at approximately 8% and it believes that unplanned outages provide an upward driver of costs since it increases the bid and offer merit order. This impact of unplanned outages (before Gate Closure) has been modelled by reducing all genset registered capacities (and stable export limits) by their average unplanned outage rate.