

**NGC system operator incentive scheme  
from April 2004**

**Initial consultation document**

December 2003

## Summary

This document sets out options for National Grid Company plc's (NGC) System Operator (SO) incentives which will apply from 1 April 2004. The options presented in this document are intended to maintain and, where appropriate, enhance the incentives on NGC to operate and develop the England and Wales transmission system in an economic, efficient and co-ordinated manner. NGC's existing SO incentive scheme was introduced on 1 April 2003 and was intended to run until 31 March 2004. Therefore, a new incentive scheme needs to be put in place from 1 April 2004.

In its role as SO, NGC is responsible for:

- ◆ ensuring that the system remains within safe operating limits and that the pattern of generation and demand is consistent with any transmission system related constraints (system balancing); and
- ◆ the residual purchasing and selling of electricity to keep the transmission system in balance in real time (electricity balancing).

In carrying out this role, NGC incurs costs for which market participants, and ultimately customers, pay. Ofgem sets incentive schemes covering NGC's SO costs which are designed to provide appropriate financial incentives for NGC to manage and minimise these costs within the incentive period. Ofgem sets a target level of costs and, if outturn costs are below this target, NGC keeps a proportion of the reduction in costs as an incentive payment, whereas if costs are above target, NGC bears a proportion of the costs in excess of the target. NGC's overall gains or losses are limited by a cap on payments and a floor on losses.

The past SO incentive schemes, which have been primarily targeted at NGC's costs of operating the existing transmission system and balancing real time supply and demand (i.e. the costs to NGC of purchasing balancing services from generators, suppliers and large customers), have delivered substantial benefits over time. Between 1994 (when the first incentive scheme was introduced) and 2001, NGC reduced the annual costs of system operation by more than £400 million. Ofgem has reduced the target for the external SO incentive scheme by around £70 million (from approximately £485 million) over the last three years since the introduction of the new electricity trading arrangements (NETA).

Ofgem's initial thoughts, set out in this document, are intended to build on the strengths of the existing schemes and enhance the incentives on NGC. In particular, the options discussed are designed to enhance the incentives on NGC to provide more transmission capacity in response to its customers' requirements. Such capacity could be delivered through improved operation of the existing transmission system or new investment.

### ***Ofgem's initial thoughts***

Ofgem considers that there are four options in relation to the scope of NGC's SO incentive arrangements from 1 April 2004:

- ◆ **Option 1**  
a full review of the external balancing costs that NGC incurs as SO to provide a revised shallow SO incentive scheme lasting for one year; or
- ◆ **Option 2**  
a full review of the external balancing costs that NGC incurs as SO to provide a revised and lengthened shallow SO incentive scheme lasting for two or three years (now that Ofgem intends to extend NGC's current price control until March 2007); or
- ◆ **Option 3**  
a full review of the scope and parameters of the current shallow SO incentive and the introduction of an interim enhanced SO incentive scheme, potentially with differing levels of sophistication for entry and exit, whilst reforms to transmission arrangements are ongoing. The shallow elements of the scheme would last for two or three years but the investment element would need to last for longer to have any effect; or
- ◆ **Option 4**  
a full review of the scope and parameters of the current shallow SO incentive and the introduction of an enhanced SO incentive scheme (based on the SO transmission capacity release incentive previously proposed by Ofgem), that will provide an enduring framework for NGC's incentives. The shallow elements of the scheme would last for two or three years but the investment element would be set on a rolling five-year basis.

Ofgem has for some time proposed the creation of long-term, tradable, firm rights for use of the transmission system. These rights would be available for entry to and exit from the system. In tandem with this change, Ofgem has proposed that the incentive arrangements should be enhanced to reward NGC for the provision of additional rights over and above an agreed baseline. NGC would also be exposed to the costs of buying back capacity rights should it be unable to physically deliver any capacity rights that it has sold. This approach, presented as Option 4 above, remains Ofgem's preferred approach in the long-term.

However, recognising that more progress has been made on developing the electricity transmission arrangements for entry than has been achieved for exit, due to the complexities of developing transmission arrangements for exit, Ofgem is considering developing separate entry and exit schemes. This approach was adopted in developing deeper incentives for Transco as the gas SO. Ofgem considers that a simple form of enhanced incentive can be introduced from April 2004. This approach, presented as Option 3 above, represents Ofgem's preferred approach for NGC's SO incentive scheme from 1 April 2004. The enhanced incentives included in both Options 3 and 4 would involve separating out constraint costs from other balancing costs through having a separate incentive scheme relating to capacity buy-backs. In this way, it would be possible to link constraint costs and investment costs, thereby providing NGC with a direct incentive to trade-off the two types of costs and, in addition, providing greater transparency regarding the costs of constraints and system balancing actions.

Ofgem has consistently proposed that increasing the duration of the SO incentive scheme would improve the incentives on NGC to trade-off investment costs against operating costs. Ofgem is therefore considering implementing a two or three year scheme (now that Ofgem intends to extend NGC's current main price control to March 2007, a three year scheme would end at the same time as the price control) from 1 April 2004. Any scheme that lasts for more than one year would require the development of a framework to enable the SO incentive to expand to cover GB SO costs after BETTA go-live (scheduled for April 2005). A possible framework is discussed in this document.

### ***Enhancing NGC's SO incentives***

NGC is currently subject to a "shallow" incentive scheme that only covers the costs of operating its transmission system. Ofgem has previously proposed a move to an enhanced, "deeper" incentive scheme that would also include some aspects of the

development of the transmission system. Under an enhanced scheme, NGC would have improved financial incentives to respond in a timely manner to signals from market participants indicating the need for the release of additional transmission capacity. An enhanced scheme would also improve the incentives on NGC to invest efficiently, particularly by strengthening the incentives on NGC to ensure that any investment it undertakes is required.

Enhanced incentives are likely to be increasingly important given the government's aim for renewable energy sources to provide 10 per cent of UK electricity supplies by 2010. Enhanced incentive arrangements would provide NGC with greater flexibility to deal with the increased uncertainties associated with future use of its transmission system, which is additionally particularly important for security of supply. The greater flexibility would arise from NGC having a funding mechanism for transmission capacity requirements that were not foreseen when its main price control was set, provided that it could be demonstrated that such capacity is required by NGC's customers.

Enhanced SO incentives are considered by Ofgem to provide benefits such as:

- ◆ reducing the costs that customers pay by extending the incentives on NGC to manage and, where possible, reduce the overall costs of system operation (e.g. making a trade-off between the costs of resolving transmission related constraints and the costs of developing the system to avoid such constraints);
- ◆ improving security of supply for customers by providing stronger incentives for NGC to deliver additional transmission capacity (where this is possible) in response to customers' increased demand, including, for example, access to NGC's network via new interconnectors;
- ◆ increasing competition in the generation and supply of electricity by improving the incentives on NGC to shorten the time it takes to deliver additional transmission entry and exit capacity since the commercial advantages of making the capacity available will be enhanced; and
- ◆ providing NGC with increased flexibility to accommodate new renewable energy sources, including offshore wind.

Ofgem has already put in place "deeper" SO incentives for Transco on the gas National Transmission System (NTS) in Great Britain. Although these "deeper" incentives are

relatively new (as is the Transco TO price control which already included a certain level of investment), early indications are that Transco is responding to them by delivering greater network capacity from existing assets and that market participants are willing to make significant long term commitments to obtain capacity up to fifteen years ahead, thus providing the framework for the enhanced incentives.

### ***Way forward***

Ofgem invites views on any of the issues raised in this document. Responses should be submitted in writing by 5 January 2004. Following consideration of responses, Ofgem expects to publish its next document in relation to NGC's SO incentive scheme from 1 April 2004 in early 2004.

# Table of contents

<b>1. Introduction.....</b>	<b>1</b>
Purpose of this document .....	1
Background.....	1
Enhancing NGC's SO incentives.....	5
Ofgem's initial thoughts .....	10
Related issues.....	12
Way forward .....	16
Outline of this document.....	18
<b>2. Summary impact assessment.....</b>	<b>19</b>
Issue.....	19
Objective .....	22
Policy.....	22
Ofgem's initial thoughts .....	28
<b>3. NGC's external SO incentive schemes since the implementation of NETA .....</b>	<b>30</b>
Introduction .....	30
Background.....	30
Details of the external SO incentive schemes under NETA.....	31
NGC's performance under the SO incentive schemes since the implementation of NETA .....	32
Conclusions .....	34
<b>4. Ofgem's initial thoughts.....</b>	<b>35</b>
Introduction .....	35
Enhancing NGC's SO incentives.....	35
Duration of NGC's incentive scheme to apply from 1 April 2004 .....	45
Form of NGC's incentive scheme to apply from 1 April 2004 .....	48
Impact of BETTA .....	49
Summary.....	52

<b>5. Way forward.....</b>	<b>54</b>
Summary of views invited .....	54
Next steps .....	55
<b>Appendix 1 Incentivised Balancing Cost component breakdown .....</b>	<b>56</b>
Balancing Mechanism Costs (CSOBM).....	56
Balancing Services Contract Costs (BSCC).....	58
Transmission Losses (TL) and Transmission Losses Reference Price (TLRP) .....	60
Total Net Energy Imbalance Volume (TQEI) and the Net Imbalance Volume Reference Price (NIRP).....	62
Other Allowed Income (RT) and Balancing Services provided to others (OM) .....	65
Contribution of components to IBC .....	66
<b>Appendix 2 The regulatory framework .....</b>	<b>69</b>
Introduction .....	69
The Electricity Act 1989 (the “Electricity Act”) .....	69
The Utilities Act 2000 (the “Utilities Act”) .....	69
NGC’s Electricity Transmission Licence .....	69
Industry Codes .....	71



# 1. Introduction

## ***Purpose of this document***

- 1.1. This document sets out options for National Grid Company plc's (NGC) System Operator (SO) incentives which will apply from 1 April 2004. The options presented in this document are intended to maintain, and where appropriate, enhance the incentives on NGC to operate and develop the England and Wales transmission system in an economic, efficient and co-ordinated manner.

## ***Background***

- 1.2. Under its transmission licence, NGC has two roles: Transmission Asset Owner (TO) and System Operator (SO).

## ***TO role***

- 1.3. In its role as TO, NGC is responsible for building and maintaining the grid infrastructure in an economic, efficient and co-ordinated manner. NGC's current TO price control is set to apply from 1 April 2001 to 31 March 2006 (however, as outlined later in this chapter, it is now Ofgem's intention to extend this period to 31 March 2007). The proposals in this document do not materially affect the allowed revenues defined in NGC's TO price control.

## ***SO role***

- 1.4. In its role as SO, NGC is responsible for:
  - ◆ ensuring that the system remains within safe operating limits and that the pattern of generation and demand is consistent with any transmission system related constraints (system balancing); and
  - ◆ the residual purchasing and selling of electricity to keep the transmission system in balance in real time (electricity balancing).

## **System balancing**

- 1.5. NGC is responsible for system balancing and delivers against this responsibility mainly through bilateral contracts and the Balancing Mechanism, since system service requirements are often location-specific and hence cannot be obtained through the non-locational traded markets. This responsibility is primarily a consequence of the lack of sufficient information and related incentives to enable participants to resolve system balancing issues without a central role being taken by NGC.
- 1.6. In principle, Ofgem would welcome any developments in this area that would enable market participants to participate more actively in balancing the network, further reducing the need for NGC's central intervention through contracting for system balancing purposes.

## **Electricity balancing**

- 1.7. Throughout the process of introducing NETA there was extensive consultation<sup>1</sup> regarding the role of NGC versus the role of the market in ensuring electricity balancing. At that time it was recognised that the role of NGC was central in ensuring short-term security of supply (which was defined as the period from day minus one to real time<sup>2</sup>). This was characterised as the "residual balancer" role.
- 1.8. Longer term security of supply is delivered by the market and the commercial incentives provided by the trading arrangements. Via exposure to imbalance prices, suppliers face commercial incentives to contract ahead of the Balancing Mechanism to meet the demands of their customers. Generators, also through exposure to imbalance prices, have an incentive to forward contract with customers for their output and to hold reserve to hedge the risks of plant failure. The arrangements give market participants freedom to choose when and how to enter into such contracts. However, imbalances left to the day will tend to be met by generators or demand side participants that have relatively high costs,

<sup>1</sup> See, for example 'The new electricity trading arrangements: Volume 1: Consultation Document', Ofgem, July 1999; 'NGC System Operator incentives, Transmission Access and Losses under NETA: Consultation Document', Ofgem, December 1999.

<sup>2</sup> See 'The new electricity trading arrangements: Volume 1: Consultation Document', Ofgem, July 1999 section 12.2.

compared to the prices that could have been obtained by contracting further in advance, including trading in the forward markets.

- 1.9. Thus, the exposure to imbalance cash-out provides commercial incentives on participants to ensure that the level of generation is sufficient to meet demand. Consequently, NGC is not required to contract in advance to ensure that generation capacity is sufficient to meet peak demand. Under NETA, market mechanisms are intended to play this role and it would not be efficient or economic for NGC to duplicate this by acting, in effect, as the provider/buyer of last resort.
- 1.10. NGC's role as residual balancer is primarily defined in terms of what other participants cannot, or cannot at present, efficiently undertake through existing trading and market mechanisms. In its role as residual balancer NGC is responsible for:
- ◆ ensuring that demand and supply are balanced on a moment by moment basis;
  - ◆ managing the physical consequences of any plant failures, including commercial failures<sup>3</sup>, that occur on the network for the short period until the market is able to respond to such a failure; and
  - ◆ managing the physical consequences of any unexpected increases in demand for a short period until the market is able to respond to such an increase.
- 1.11. In order to mitigate these risks, NGC holds short-term reserve. NGC has the commercial flexibility to procure its reserve requirements through forward tenders/contracts or options and also via the Balancing Mechanism. When assessing the level of reserve requirement and whether to procure its reserve requirements forward or via the Balancing Mechanism, NGC takes account of a number of factors including:

<sup>3</sup> The term "commercial failure" covers the situation where a generation of supply company goes into receivership or administration. For a short period, contractual obligations may mean that generating capacity is not available to the market or that demand side services are withdrawn.

- ◆ the likely levels of plant margin;
- ◆ the likely levels of generator reliability; and
- ◆ the likely levels of demand forecast errors.

1.12. In planning and developing the transmission system and in order to balance the system in an economic, efficient and co-ordinated manner, as it is required to do under its Transmission Licence, NGC should consider the most efficient mechanism by which to deliver its obligations. In delivering against these obligations, NGC should not only consider the economic method and timing of procurement, but also the risk that it will be unable to balance the system in the short-term should the energy required to do so be unavailable close to real time. If NGC anticipates a period of system stress, it is likely that, by factoring in this risk, it would procure more balancing services ahead of time than might be suggested by narrow economic trade-offs.

1.13. NGC's SO incentive scheme provides funding for any costs efficiently incurred by NGC in procuring its reserve requirements and making provisions for eventualities to which the market cannot respond. However, there is the possibility that, for example in the event of a commercial failure, NGC's funding under the SO incentives may not be set to cover such costs. In such circumstances, any efficiently incurred costs may be treated as an Income Adjusting Event (IAE)<sup>4</sup>.

### ***NGC's SO incentives***

1.14. In order to allow NGC to carry out its role, the commercial arrangements provide NGC with freedom to develop and use a wide range of tools and options to balance the system in the most economic, efficient and coordinated manner. For example, NGC can buy and sell electricity in forward markets and, post Gate Closure, in the Balancing Mechanism. NGC is also free to contract for

<sup>4</sup> An IAE was approved by the Authority in June 2003 in relation to a balancing service which NGC entered into with AES Drax in November 2002. Details can be found in the following documents: 'Income adjusting event under NGC's 2002/03 system operator incentive scheme: A consultation document', Ofgem, May 2003 and 'Income adjusting event under NGC's 2002/03 system operator incentive scheme: A decision document', Ofgem, June 2003.

balancing services<sup>5</sup> from generators, suppliers and large customers. NGC can then exercise these contracts for balancing purposes as and when they are required. NGC is required to procure any balancing services competitively and via transparent processes. In order to fulfil this requirement, NGC is obliged under special condition AA4 of the transmission licence to have in place two documents; the Procurement Guidelines and the Balancing Principles Statement (the purpose of these two documents is further outlined in Appendix 2). NGC's procurement of balancing services is also constrained by a prohibition on speculative trading<sup>6</sup>.

- 1.15. In balancing the transmission system NGC, in its role as SO, incurs costs for which market participants, and ultimately customers, pay. NGC's SO costs can be divided into internal and external balancing costs. NGC's internal costs include the costs of its control centre, systems and staff. External balancing costs cover the costs of balancing services contracts and electricity purchases and sales for balancing purposes. NGC has consistent incentive schemes covering both internal and external balancing costs. The internal costs incentive targets have been agreed until 31 March 2006. There have been three external SO incentive schemes under NETA, details of which are provided in Chapter 3. The current external SO incentive scheme started on 1 April 2003 and is due to expire on 31 March 2004. Therefore, a new incentive scheme needs to be put in place from 1 April 2004.
- 1.16. Ofgem intends to develop and implement a new incentive scheme which will enhance the existing commercial incentives for NGC to operate and develop the transmission system in an economic, efficient and co-ordinated manner, which is in the interests of customers who ultimately pay for the costs of system operation.

### ***Enhancing NGC's SO incentives***

- 1.17. NGC is currently subject to a "shallow" incentive scheme that only covers the costs of operating the transmission system. Ofgem has previously proposed a

<sup>5</sup> The term "balancing services" is used to cover both services purchased in the Balancing Mechanism and services contracted outside the Balancing Mechanism.

<sup>6</sup> Special condition AA3 of NGC's transmission licence.

move to an enhanced, “deeper”, incentive scheme that would also include some aspects of the development of the transmission system. Under an enhanced scheme, NGC would have improved financial incentives to respond in a timely manner to signals from market participants indicating the need for the release of additional transmission capacity. An enhanced scheme would also improve the incentives on NGC to invest efficiently, particularly by strengthening the incentives on NGC to ensure that any investment it undertakes is required. Enhanced incentives would also encourage NGC to be more innovative and consider ways to release additional capacity more quickly where it is able to do so. The greater flexibility would arise from NGC having a funding mechanism for transmission requirements that were not foreseen when the main price control was set, provided that it can be demonstrated that such capacity is required by NGC’s customers. Enhanced incentives would extend and complement the current “shallow” incentive scheme for NGC.

1.18. Enhanced SO incentives would be designed to provide benefits such as:

- ◆ reducing the costs that customers pay by extending the incentives on NGC to manage and, where possible, reduce the overall costs of system operation (e.g. making a trade-off between the costs of resolving transmission related constraints and the costs of developing the system to avoid such constraints);
- ◆ improving security of supply for customers by providing stronger incentives for NGC to deliver additional transmission capacity (where this is possible) in response to customers’ increased demand, including, for example, access to NGC’s network via new interconnectors;
- ◆ increasing competition in the generation and supply of electricity by improving the incentives on NGC to shorten the time it takes to deliver additional transmission entry and exit capacity since the commercial advantages of making the capacity available will be enhanced; and
- ◆ providing NGC with increased flexibility to accommodate new renewable energy sources, including offshore wind.

1.19. Ofgem has already put in place “deeper” SO incentives for Transco on the gas National Transmission System (NTS) in Great Britain. Although these “deeper” incentives are relatively new, early indications are that Transco is responding to them by delivering greater network capacity from existing assets and that market participants are willing to make significant long-term commitments to obtain capacity up to fifteen years ahead, thus providing the framework for the enhanced, “deeper”, incentive.

### ***Progress to date***

1.20. Last year Ofgem outlined that, prior to the introduction of an enhanced SO incentive such as the SO transmission capacity release incentive, a number of developments to the transmission arrangements were required. The key elements of the transmission and incentive proposals included:

- ◆ introducing firm, tradable, long-term transmission capacity rights for both entry to and exit from the transmission system;
- ◆ developing commercial incentives on NGC to move away from the agreed baseline transmission capacity, in response to signals from market participants (from primary and secondary markets) that reflect their changing requirements for transmission capacity;
- ◆ 100 per cent sharing factors for additional revenue from incremental capacity release and a cap and floor on profits and losses set with reference to allowed rates of return;
- ◆ creating upside by setting a cap that would allow NGC to earn a rate of return higher than its TO price control regulated rate of return (6.25 per cent) on incremental transmission capacity it releases and downside by setting the floor equal to a lower rate of return where it delivers additional transmission capacity and there is insufficient demand;
- ◆ basing the allowed revenue for incremental transmission capacity on agreed unit cost allowances (UCAs) rather than on actual costs to ensure that NGC has a strong incentive to reduce the costs of delivering additional capacity;

- ◆ setting the parameters of the enhanced SO incentive on a 'rolling' five year basis. Once the five year period ended, the actual costs of the incremental capacity release would be subject to the normal investment review process; and
- ◆ taking steps to ensure there would be no double counting between the SO incentives and the TO incremental investment incentive allowance.

1.21. In its March 2003 Final Proposals document<sup>7</sup>, Ofgem proposed a phased approach to introducing the new enhanced incentive scheme. Phase 1 of this approach entailed the introduction of a further one year long shallow external SO incentive to begin on 1 April 2003 (i.e. the current external SO incentive scheme). Ofgem considered that a further one year long shallow incentive would serve to continue the effective annual incentives under which NGC has predominantly operated since 1994, whilst preparations for the introduction of enhanced incentive arrangements took place.

1.22. Ofgem stated that reform of the contractual framework and charging methodologies relating to use of NGC's transmission system and the associated introduction of enhanced SO incentive scheme should be progressed during the duration of the current shallow incentive scheme. Ofgem suggested that, subject to there having been adequate reforms to the transmission arrangements, enhanced incentives should be introduced on 1 April 2004 as Phase 2 of the implementation of enhanced SO incentives for NGC.

1.23. Within the scope of this phased approach, and in line with its obligations in respect of developing, maintaining, operating and charging for the transmission system<sup>8</sup>, NGC committed to use all reasonable endeavours to review and, if

<sup>7</sup> 'NGC system operator incentive scheme from 1 April 2003 – 31 March 2004, Final Proposals and Statutory Licence Consultation', March 2003, Ofgem.

<sup>8</sup> NGC outlined its existing obligations as follows:

- under Section 9 of the Electricity Act, NGC has a duty to develop and maintain an efficient, co-ordinated and economical system of electricity transmission;
- under special condition AA4 of the Transmission Licence, NGC has an obligation to operate the transmission system in an efficient, economic and co-ordinated manner;
- under Conditions C7 and C7A of the Transmission Licence, NGC has an obligation to develop a use of system charging methodology and to keep it under review at all times and make such modifications as may be requisite for the purposes of better achieving the relevant objectives (these latter including compliance of the methodology with facilitation of competition and with cost reflectiveness); and
- under Condition C7B, NGC has analogous obligations with respect to connection charging



appropriate, bring forward proposals for reform of the contractual framework and charging methodologies, for implementation in April 2004, in respect of:

- ◆ charges for the provision of a connection to the transmission system that represent the cost of connection attributable to a single user, and that encourage competition in the provision of connections;
- ◆ the investment cost signals given by Transmission Network Use of System (TNUoS) charges, specifically looking at the marginal costing method and the locational signals provided by the charges;
- ◆ the time period over which TNUoS charges apply, looking specifically at charges applicable to periods of less than one year and greater than one year;
- ◆ the treatment of competing requests for new transmission capacity in the offer and modification processes set out in the CUSC;
- ◆ the treatment of licence exempt embedded generators and the appropriate recovery of costs which they impose on the transmission system, against the background of policies designed to encourage the development of such generation; and
- ◆ the provision of firm transmission rights, compensation for disconnection and remedies for breach of access rights.

1.24. NGC considered that identifying a solution for exit arrangements would be more problematic than for entry and that implementation of any comprehensive solution by April 2004 would be unlikely. However, NGC recognised that it is important that, as far as is possible, progress be made on exit arrangements, in line with its commitments on other elements of the contractual framework and charging methodologies. Consequently, NGC proposed to initially focus on, and, if appropriate, bring forward proposals in respect of:

- ◆ the charging base upon which to levy demand TNUoS charges; and

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methodology.

- ◆ the basis for the calculation of demand TNUoS charges.

1.25. In addition to, and in parallel with, NGC's review in June 2003 Ofgem invited views on NGC's transmission charging methodology<sup>9</sup>, so as to be in a position to assess any proposals for change that NGC might bring forward (in September 2003 Ofgem published a summary of responses received<sup>10</sup>). Ofgem considered that the combination of NGC's existing licence obligations, NGC's commitments and Ofgem's own charging methodology review provided sufficient assurance that significant developments, consistent with the thrust of Ofgem's reform principles, would be in place by 1 April 2004, in time for the introduction of revised incentive arrangements, i.e. Phase 2. Chapter 4 provides an update in respect of the progress made in connection with NGC's commitments.

### ***Ofgem's initial thoughts***

1.26. There are wide ranging issues to take into account when developing the new SO incentives. These include:

- ◆ whether to introduce an enhanced, "deeper", SO incentive; and
- ◆ the most appropriate duration for the scheme, where the likely implementation date of the British Electricity Trading and Transmission Arrangements (BETTA) and the possible extension of NGC's TO price control needs to be taken into account.

1.27. Ofgem considers that there are four options in relation to the scope of NGC's SO incentive arrangements from 1 April 2004:

- ◆ **Option1**  
a full review of the external balancing costs that NGC incurs as SO to provide a revised shallow SO incentive scheme lasting for one year; or

<sup>9</sup> Ofgem's open letter can be found at:  
[http://www.ofgem.gov.uk/temp/ofgem/cache/cmsattach/3512\\_Open%20letter%20on%20transmission%20charging.pdf](http://www.ofgem.gov.uk/temp/ofgem/cache/cmsattach/3512_Open%20letter%20on%20transmission%20charging.pdf)

<sup>10</sup> A summary of responses to Ofgem's open letter can be found at:  
[http://www.ofgem.gov.uk/temp/ofgem/cache/cmsattach/4533\\_summary\\_responses\\_open\\_letter.pdf](http://www.ofgem.gov.uk/temp/ofgem/cache/cmsattach/4533_summary_responses_open_letter.pdf)

◆ **Option 2**

a full review of the external balancing costs that NGC incurs as SO to provide a revised and lengthened shallow SO incentive scheme lasting for two or three years (now that Ofgem intends to extend NGC's current price control until March 2007); or

◆ **Option 3**

a full review of the scope and parameters of the current shallow SO incentive and the introduction of an interim enhanced SO incentive scheme, potentially with differing levels of sophistication for entry and exit, whilst reforms to transmission arrangements are ongoing. The shallow elements of the scheme would last for two or three years but the investment elements would need to last for longer to have any effect; or

◆ **Option 4**

a full review of the scope and parameters of the current shallow SO incentive and the introduction of an enhanced SO incentive scheme (based on the SO transmission capacity release incentive previously proposed by Ofgem), that will provide an enduring framework for NGC's incentives. The shallow elements of the scheme would last for two or three years but the investment element would be set on a rolling five-year basis.

- 1.28. Under Options 2, 3 and 4, provision would be made for the incentive to be extended to GB-wide scope following the implementation of BETTA.
- 1.29. Ofgem initially considers that an enhanced, "deeper", external SO incentive scheme running for a period greater than a year would improve the incentives on NGC to operate and develop the transmission system in an efficient, economic and co-ordinated manner.
- 1.30. Ofgem has consistently made clear that it considers that increasing the length of the SO incentive scheme would enhance the incentives on NGC to trade-off investment costs against lower operating costs. With over two years of operational experience under NETA now available, Ofgem's initial view is that it would be appropriate to move to an SO incentive scheme lasting more than one year. Ofgem acknowledges that any scheme that lasts for more than one year

would require the development of a framework to enable the SO incentive to expand to cover GB SO costs after BETTA go-live (scheduled for April 2005). Ofgem considers that it is desirable for there to be the minimum disruption possible to the scheme when extending it to apply GB-wide and is proposing an approach whereby “adjuster parameters” would be put in place ready for BETTA go-live. These would have zero values until BETTA go-live and decisions on their values once BETTA is implemented could be consulted on nearer to BETTA go-live.

- 1.31. Whilst Ofgem considers that an enhanced incentive scheme based around long-term tradable rights (Option 4 above) would provide the strongest incentives and best align the interests of NGC and consumers, it recognises that it may not be practical to introduce such a scheme from April 2004.
- 1.32. However, Ofgem considers that it should be possible to introduce some form of enhanced incentive from April 2004. It may be appropriate to develop separate transmission entry and exit schemes (Option 3 above), recognising that more progress has been made on developing the transmission arrangements for entry than has been achieved for exit. This approach was adopted in developing “deeper” incentives for Transco as the gas SO. Ofgem considers that a simple form of enhanced incentive can be introduced from April 2004. Option 3, therefore, represents Ofgem’s preferred approach for NGC’s SO incentive scheme from 1 April 2004.
- 1.33. Chapter 4 outlines Ofgem’s considerations in respect of enhancing NGC’s SO incentive arrangements from 1 April 2004.

## ***Related issues***

### ***Transmission investment and renewable generation***

- 1.34. In the Government’s Energy White Paper<sup>11</sup>, one of the key goals for energy policy is to tackle the threat of climate change by reducing greenhouse gas emissions. As part of this policy, the Government is committed to stimulating

<sup>11</sup> The Energy White Paper can be found at: <http://www.dti.gov.uk/energy/whitepaper/ourenergyfuture.pdf>

growth in renewable energy sources and aims for renewables to provide 10 per cent of UK electricity supplies by 2010, with the aspiration of this figure rising to 20 percent by 2020.

- 1.35. This policy is likely to produce changes in the geographical distribution of generating capacity. The sites for many renewable technologies may be located in remote locations that may be some way from the existing transmission system and/or electricity customers. For increased levels of renewable generation to be delivered to the market, appropriate transmission infrastructure will need to be put in place. This is likely to entail significant extensions requiring substantial additional investment in the GB transmission networks, including NGCs.
- 1.36. Ofgem has recently consulted on the issues surrounding the appropriate regulatory treatment of any expenditure required to accommodate new renewable generation sources<sup>12</sup>.
- 1.37. The enhanced incentives discussed in this document could provide a funding framework going forward for the transmission network investment required to accommodate new renewable generation sources.

### ***Transco's SO incentives***

- 1.38. Transco's current SO incentives were put in place in April 2002 to run for a 5 year period. However, several of the parameters were set to apply for a shorter duration and are due for review, with the changes to take effect from 1 April 2004. On 13 August 2003 Ofgem wrote to shippers outlining proposals for the scope of the two year review of Transco's NTS SO incentives, which proposed a number of areas for consideration. On 3 November 2003 Ofgem again wrote<sup>13</sup> to shippers highlighting that it intends to publish a proposals document, outlining amendments to the existing scheme shortly. Ofgem expects to publish a decision document in January 2004.

<sup>12</sup> 'Transmission investment and renewable generation, Consultation document', October 2003, Ofgem.

<sup>13</sup> This letter can be found at:

[http://www.ofgem.gov.uk/temp/ofgem/cache/cmsattach/4972\\_Letter\\_re\\_SO\\_incentive\\_review\\_3nov03.pdf](http://www.ofgem.gov.uk/temp/ofgem/cache/cmsattach/4972_Letter_re_SO_incentive_review_3nov03.pdf)

## ***British Electricity Trading and Transmission Arrangements***

- 1.39. Ofgem and the Department of Trade and Industry (DTI) are committed to working towards the introduction of BETTA in accordance with the timetable announced by the DTI. On 15 January 2003, the Government announced its intention to introduce legislation in order to have BETTA in place no later than April 2005<sup>14</sup>. On 17 June 2003, the DTI announced<sup>15</sup> that it would not be possible to introduce the legislation into Parliament in the 2002/3 session and, in view of this, Ofgem announced<sup>16</sup> on 18 June 2003 that the target date for go-live would be April 2005. The implementation of BETTA requires primary legislation and legal certainty regarding the BETTA proposals will not be achieved until this legislation has gained Royal Assent.
- 1.40. In the December 2001 consultation<sup>17</sup> Ofgem noted that one of the principal components of BETTA was the introduction of common independent balancing arrangements across GB, through the creation of a single GB system operator that is separate<sup>18</sup> from generation and/or supply interests. NGC were the sole applicant for the role of GB system operator and on 17 December 2002, the then Minister for Energy and Construction, Mr Brian Wilson, stated in a response to a Parliamentary Question that, "Licensing of the GB system operator cannot take place until the necessary legislation has received Royal Assent. I am minded to accept the recommendation of the GB system operator Selection Panel that the National Grid Company plc's application for the role of GB system operator should be accepted."<sup>19</sup>
- 1.41. This document therefore assumes that NGC will be appointed as GB system operator. Whilst it is intended that the incentive arrangements applying to NGC in England and Wales will be used as a basis for the incentives to apply to the GB system operator under BETTA, it is recognised that it will be necessary to

<sup>14</sup> See Hansard, 15 January 2003, Official Report Column 647W

<sup>15</sup> See Hansard, 17 June 2003, Col. 135, Question reference 119861

<sup>16</sup> Ofgem Press Release R50

<sup>17</sup> "The Development of British Electricity Trading and Transmission Arrangements (BETTA)- A Consultation Paper".

<sup>18</sup> Other than for the purpose of balancing the system under BETTA, the activity of generation or supply in GB, or of trading electricity in GB, or the carrying out of any other relevant activity which may conflict with the carrying out of the activities of the GB system operator in an independent and non-discriminatory manner, should not be undertaken by the party itself nor by any of its affiliates.

<sup>19</sup> See Hansard 17 December 2002, Official Report Column 45WS.

consider modifications to these arrangements in order to reflect the scope of responsibilities between the GB system operator and transmission owners, as defined in the SO-TO Code (STC)<sup>20</sup>, and any financial incentive arrangements that are developed. Since Ofgem is planning to introduce a revised SO incentive scheme in England and Wales from April 2004, before BETTA is introduced, the proposals will have to be developed on an England and Wales basis; although Ofgem will be mindful of the BETTA proposals in developing NGC's SO incentives, particularly if the incentive will last beyond the anticipated go-live date for BETTA. Chapter 4 outlines Ofgem's considerations in respect of developing NGC's SO incentives while being mindful of BETTA.

- 1.42. Ofgem/DTI have published the proposed process and timetable for developing the price controls and incentives under BETTA<sup>21</sup>. This includes the programme of work to develop the controls that will apply from BETTA go-live, and also the programme for developing price controls to apply from 1 April 2005 until BETTA go-live, should it be later than 1 April 2005. This document outlines a possible framework for introducing GB-wide SO incentives, if an SO incentive scheme for NGC from April 2004 is implemented that could last beyond BETTA go-live.

### ***Harmonisation of price control review dates***

- 1.43. Following a report published in May 2002<sup>22</sup> in which Ofgem/DTI indicated that there may be regulatory advantages in carrying out all of the TO price controls to the same timetable, Ofgem published a document<sup>23</sup> in June 2003 which sought views on the harmonisation of price control review dates, and in particular on:
- ◆ Ofgem's proposal to roll forward the Scottish Transmission price controls to align the timing of the full review with the transmission owner price control review in England and Wales, and

<sup>20</sup> The proposed STC will be a new industry code, having both regulatory and contractual force, which will set out the detailed allocation of certain functions to each transmission licensee under BETTA.

<sup>21</sup> 'Price Controls and Incentives Under BETTA, An Ofgem/DTI Consultation', October 2003.

<sup>22</sup> 'The Development of British Electricity Trading and Transmission Arrangements (BETTA): Report on consultation and next steps', Ofgem/DTI, May 2002.

<sup>23</sup> 'Developing network monopoly price controls, Initial consultation', Ofgem, June 2003.

- ◆ whether it would be appropriate to increase the level of harmonisation in review dates between electricity transmission and gas transportation, and, if so, how this should be achieved.
- 1.44. Based on the existing timetables, the current Scottish transmission price controls are due for renewal from 1 April 2005, NGC's TO price control is due for renewal from 1 April 2006 and Transco's TO price control is due for renewal on 1 April 2007. Ofgem consulted on two options. The first option would extend the Scottish electricity price controls by 1 year so that they would expire on 31 March 2006, in line with NGC's TO price control. The second option would extend all electricity price controls such that they expire on 31 March 2007, in line with Transco's existing TO price control. Following consultation and consideration of respondents' views, Ofgem issued an open letter to market participants on 17 November 2003 stating that it intends to align the electricity and gas TO price controls<sup>24</sup>.

## ***Way forward***

### ***Timetable***

- 1.45. The publication of this initial consultation document represents the first stage in the development of a new SO incentive scheme for NGC to apply from 1 April 2004. Taking into account responses to this consultation, Ofgem expects to develop the incentive scheme via:
- ◆ an Initial Proposals document, which will also be subject to consultation; and
  - ◆ a Final Proposals document including a statutory consultation on proposed modifications to NGC's Transmission Licence.
- 1.46. If NGC does not consent to the proposed licence modifications, Ofgem intends to refer the proposed SO incentive scheme modifications to the Competition Commission for final adjudication.

<sup>24</sup> This letter can be found at:  
[http://www.ofgem.gov.uk/temp/ofgem/cache/cmsattach/5115\\_timetable\\_reviews\\_openlet\\_18nov03.pdf](http://www.ofgem.gov.uk/temp/ofgem/cache/cmsattach/5115_timetable_reviews_openlet_18nov03.pdf)



## ***Views invited***

- 1.47. Views are invited in response to the issues raised in this document. Specific issues upon which views are sought are outlined in Chapter 5. Responses should be submitted by 5 January 2004. All responses will normally be published on the Ofgem website and held electronically in the Research and Information Centre unless there are good reasons why they must remain confidential. Consultees should try to put any confidential material in appendices to their responses. Ofgem prefers to receive responses in an electronic form so they can be placed easily on the Ofgem website.
- 1.48. Responses should be submitted by 5 January 2004, either electronically to [tracey.hunt@ofgem.gov.uk](mailto:tracey.hunt@ofgem.gov.uk) or by post addressed to:

Sonia Brown

Director, Electricity Trading Arrangements

Office of Gas and Electricity Markets

9 Millbank

London

SW1P 3GE

- 1.49. If you wish to discuss any aspect of this document, please contact any of the following people who will be pleased to help:
- ◆ Sonia Brown – telephone number: 020 7901 7412, fax number: 020 7901 7452, email [sonia.brown@ofgem.gov.uk](mailto:sonia.brown@ofgem.gov.uk); or
  - ◆ Simon Bradbury – telephone number: 020 7901 7249, fax number: 020 7901 7452, email: [simon.bradbury@ofgem.gov.uk](mailto:simon.bradbury@ofgem.gov.uk) or
  - ◆ David Hunt – telephone number: 020 7901 7429, fax number: 020 7901 7452, email: [david.hunt@ofgem.gov.uk](mailto:david.hunt@ofgem.gov.uk).

## ***Outline of this document***

- 1.50. This document describes Ofgem's framework in relation to NGC's SO incentive scheme to apply from 1 April 2004. In detail, this document is structured as follows. Chapter 2 details the Summary Impact Assessment of the possible options associated with NGC's SO incentive scheme from 1 April 2004. Chapter 3 provides background information in relation to NGC's SO incentive schemes since the implementation of NETA and NGC's performance under these incentive schemes. Chapter 4 contains Ofgem's initial thoughts in relation to NGC's SO incentive scheme from 1 April 2004. Chapter 5 highlights the way forward and next steps for developing NGC's SO incentive scheme to apply from 1 April 2004.
- 1.51. Appendix 1 provides a breakdown of Incentivised Balancing Cost components. Appendix 2 summarises the current regulatory framework within which the SO incentives are set.

## 2. Summary impact assessment

### *Issue*

- 2.1. NGC's existing incentive scheme was introduced on 1 April 2003 and is intended to run until 31 March 2004. Therefore, a new incentive scheme needs to be put in place for the period from 1 April 2004 onwards.
- 2.2. NGC has been subject to incentives to control the costs of balancing the system since 1994. Prior to the introduction of incentives, these costs were passed straight through to consumers and, over the course of the four years since Vesting, these costs had doubled in real terms to £509 million. Between April 1994 (when the first incentive scheme was introduced) and the introduction of NETA, NGC reduced the annual costs of system operation by more than £400 million. Since NETA, the incentive schemes have continued to encourage NGC to manage the costs of system operation and this has enabled Ofgem to reduce the incentive scheme target by around £70 million (from approximately £485 million). Thus, the schemes have resulted in real benefits to customers, who ultimately pay the costs of system operation.
- 2.3. Whilst the current structure of incentives has been very successful in encouraging NGC to manage the costs of system operation, Ofgem has identified a number of issues with the current incentive scheme structure where enhancements to the scheme would be in the interests of customers, particularly given developments in the electricity market. These primarily relate to encouraging NGC to be more responsive to the needs of market participants, and ultimately customers.
- 2.4. Issues that Ofgem considers need to be addressed can be demonstrated via comparison with events in the gas industry. In the mid-1990s, there was considerable uncertainty over the timing and size of the development of a significant new gas field, Britannia. Transco was concerned that, given the price control in place, it would not be able to recover all of the considerable investments necessary to be able to land and transport the gas. Moreover, Transco had no commercial incentive to ensure that the investment was delivered on time. In the event, the investment was delivered late and there was

a period in 1998 of significant constraints at the St Fergus terminal. This led to significantly higher gas prices, which an Ofgas investigation concluded were due, in part, to market manipulation. The investigation concluded that longer term indications of market participants' capacity requirements were necessary alongside enhanced incentives under which Transco would have incentives to be more responsive to market participants' requirements.

- 2.5. Enhanced incentives together with long-term auctions of entry capacity were introduced in 2002. Although these enhanced incentives are relatively new, early indications are that Transco is responding to them by delivering greater network capacity from existing assets. There is also some encouraging evidence that the long-term auctions are beginning to send meaningful signals about the need for new investment. Consequently, Transco now has a funding mechanism in place within which to undertake any incremental transportation investment, that was not foreseen when its main price control was set, provided that it can be demonstrated that such capacity is required by its customers.
- 2.6. As with Transco in the mid-1990s, developments in the electricity market have made, and will continue to make, it more difficult for NGC to forecast where and when transmission investment will be required. Generators are increasingly treating their power stations as assets that can be withdrawn from the market and returned as market conditions dictate and this trend has been accelerated by the substantial swings in gas prices that have occurred over recent years. In addition, the government is committed to encouraging the development of renewable generation<sup>25</sup>, much of which is anticipated to be connected to the distribution system thus reducing the information that NGC has available to it and increasing its uncertainty over transmission investment requirements. Even in respect of transmission-connected renewable generation, the timing of its arrival will be uncertain and its development time may be less than the time required to carry out consequential transmission reinforcement. Thus, the need for enhanced incentives for NGC is increasing.

<sup>25</sup> See the Energy White Paper which can be found at:  
<http://www.dti.gov.uk/energy/whitepaper/ourenergyfuture.pdf>

- 2.7. Any deficiencies in transmission network planning and investment will obviously have security of supply implications, so providing a flexible framework for NGC to invest in response to actual demands for transmission capacity will help to enhance security of supply. Moreover, the different access arrangements in gas and electricity and how they are used by the SOs in response to their incentives could lead to actions being taken in the gas market that undermine security of supply in the electricity market.
- 2.8. Ofgem has identified a further issue relating to the current incentive arrangements regarding the provision of innovative transmission access arrangements. For example, some market participants may be willing to accept interruptible transmission access arrangements in return for lower charges. Whilst NGC has limited incentives to innovate under the current incentive arrangements, these would be sharpened if there was a more specific incentive in relation to controlling constraint costs and trading off constraint costs against investment costs.
- 2.9. The appropriate duration of the external SO incentive scheme presents a further issue. Most of NGC's incentive schemes, including the current external SO incentive, have lasted for one year. However, Ofgem has consistently been in favour of moving away from one year incentive schemes towards incentives whose duration matches that of the TO price control. It was not possible to align the duration of the two at the start of the current TO price control, as this occurred almost simultaneously with NETA go-live. Longer duration schemes would give NGC a clearer incentive framework under which to trade-off investment costs against lower operating costs. As a result, this approach would provide NGC with increased freedom and flexibility within which to carry out economically its role as SO and, in doing so, would be expected to reduce SO costs over time, to the benefit of customers.
- 2.10. In summary, the key issues that Ofgem considers need to be taken into account in developing NGC's next incentive scheme are:
- ◆ whether to move to an enhanced, "deeper", SO incentive; and
  - ◆ what is the most appropriate duration for the scheme.

## ***Objective***

- 2.11. The objective of the SO incentive scheme is to create appropriate commercial incentives for the SO to manage the costs of system operation on behalf of customers. The SO incentives are intended to benefit customers in two ways. Firstly, they align the interests of NGC with those of customers and, secondly, they transfer some of the risks associated with higher balancing costs from customers to NGC. In setting a new SO incentive, Ofgem wishes to ensure that these objectives continue to be met and that, as far as is practicable, the incentives on NGC are enhanced.

## ***Policy***

- 2.12. As outlined above, Ofgem is concerned that the transmission access arrangements do not provide NGC with reliable long-term signals of changing patterns of demand for transmission capacity or emerging bottlenecks on the transmission system and the current structure of the incentive scheme would not provide NGC with the incentive to respond to such signals even if they existed. Ofgem also considers that the arrangements do not provide NGC with adequate incentives to invest quickly in response to market participants' changing demand for transmission capacity. Enhanced incentive arrangements would provide NGC with greater flexibility to deal with the increased uncertainties associated with the future use of its transmission system. Ofgem therefore proposes the introduction of an enhanced SO incentives as a means of overcoming these deficiencies.
- 2.13. The main arguments in favour of enhanced SO incentive arrangements are that they would lead to:
- ◆ a quicker response<sup>26</sup> from NGC in terms of releasing capacity on the transmission system in response to market participants' actual requirements for capacity, rather than relying mainly on a planning process based on forecasts of market participants' future requirements. This will directly benefit users of the system seeking to connect. It will

<sup>26</sup> Subject to timely planning approval being obtained.

also facilitate competition in generation by potentially lowering the lead times associated with gaining access to the grid. A quicker response time would avoid under-investment, which could lead to unduly costly system operation, or over-investment, which could lead to capacity requirements being met at excessive cost. Therefore, enhanced SO incentive arrangements would improve the incentives for NGC to respond in an appropriate and timely manner to changing requirements for transmission capacity, which would reduce the overall costs of system operation and would deliver benefits in terms of security of supply;

- ◆ a reduction in constraint costs by enhancing the incentive framework for the SO to trade-off the costs of resolving transmission related constraints against the costs of developing the system to avoid such constraints. This framework has the advantage of providing NGC with more opportunities to make investments that will reduce the overall costs of operating the system, to the benefit of customers who ultimately pay for the costs of system operation; and
- ◆ greater flexibility and an increased commercial incentive for NGC to deal with the increased uncertainties associated with future use of its transmission system including with respect to the impact of the government's support<sup>27</sup> for new renewables and CHP capacity and the development of further interconnectors.

2.14. Ofgem therefore continues to support the introduction of some form of enhanced incentive scheme, whilst recognising that it may be necessary to introduce some transitional arrangements in order for it to be possible to implement them from 1 April 2004.

<sup>27</sup> The government's policy is to increase the contribution of renewable electricity in the United Kingdom to 5 per cent of total available electricity by the end of 2003 and to 10 per cent by 2010. Additionally, in recognition of the important role that Combined Heat and Power (CHP) can play in the achievement of an environmentally sustainable energy system, the government, in 2000, set a target of having at least 10,000 MWe of installed Good Quality CHP capacity by 2010. Good Quality CHP refers to CHP generation that is energy efficient in operation. The CHP Quality Assurance programme (CHPQA) launched in May 2000 determines that quality by providing a practical determinate method for assessing all types and sizes of CHP schemes. Progress towards the 2010 target is monitored continually under CHPQA, which provides robust annual statistics on both planned and installed CHP. Certification under CHPQA is being used to determine the eligibility of schemes for a range of benefits. More information is available at [www.chpqa.com](http://www.chpqa.com)

2.15. Ofgem considers that it might be appropriate for the next incentive scheme to last for longer than one year, given that considerable experience of operating under NETA is now available. As noted above, longer duration schemes would give NGC a clearer incentive framework under which to trade-off investment costs against lower operating costs. However, when BETTA is implemented, assuming that NGC will become GB SO, it will be necessary to set GB SO incentives rather than incentives that only apply to England and Wales. Since BETTA go-live is scheduled for April 2005, any incentive scheme that lasts more than one year will have to include provisions to enable the SO incentive to expand to cover GB after BETTA go-live.

2.16. In the light of these views, Ofgem considers that there are four options in relation to the scope of NGC's SO incentive arrangements from 1 April 2004:

◆ **Option 1**

a full review of the external balancing costs that NGC incurs as SO to provide an enhanced shallow SO incentive scheme lasting for one year; or

◆ **Option 2**

a full review of the external balancing costs that NGC incurs as SO to provide a revised and lengthened shallow SO incentive scheme lasting for two or three years (now that Ofgem intends to extend NGC's current price control until March 2007); or

◆ **Option 3**

a full review of the scope and parameters of the current shallow SO incentive and the introduction of an interim enhanced SO incentive scheme, potentially with differing levels of sophistication for entry and exit, whilst reforms to transmission arrangements are ongoing. The shallow elements of the scheme would last for two or three years but the investment element would need to last for longer to have any effect; or

◆ **Option 4**

a full review of the scope and parameters of the current shallow SO incentive and the introduction of an enhanced SO incentive scheme (based on the SO transmission capacity release incentive previously



proposed by Ofgem), that will provide an enduring framework for NGC's incentives. The shallow elements of the scheme would last for two or three years but the investment element would be set on a rolling five-year basis.

- 2.17. Under Options 2, 3 and 4, provision would be made for the incentive to be extended to GB-wide scope following the implementation of BETTA. The four options are discussed below.

### ***Option 1***

- 2.18. Option 1 would leave the scope of the current SO incentive scheme unchanged but adjust the scheme parameters in light of a full review of balancing costs under NETA. A further shallow incentive scheme would be developed on the basis of over two years of operational experience. This would enable Ofgem to set more effective balancing incentives for NGC to encourage a reduction in the costs of system operation. No account would need to be taken of the impact of BETTA in setting the incentive parameters.
- 2.19. While this option would capture the benefits associated with the review of balancing costs, it would not address the issues of increasing the scope of the incentive scheme to include incremental capacity release, ensuring consistent SO incentives across NGC and Transco and enhancing NGC's incentives by extending the duration of the scheme.

### ***Option 2***

- 2.20. Option 2 would leave the scope of the current SO incentive scheme unchanged but would enhance the effectiveness of the incentive scheme by extending its duration. As for Option 1, the scheme would be developed on the basis of over two years of operational experience under NETA but provision would also have to be made to expand the scheme to cover GB-wide costs following the implementation of BETTA. Ofgem is of the view that, at this stage, it would be sufficient to set the framework for GB-wide arrangements with detailed consideration of the parameter values being the subject of further consultations prior to BETTA go-live.

- 2.21. While this option would capture the benefits of reviewing balancing costs and extending the duration of the incentive scheme, it would not address the issues of increasing the scope of the incentive scheme to include incremental capacity release and ensuring consistent SO incentives across NGC and Transco.

### ***Option 3***

- 2.22. Option 3 would build on Option 2 by expanding the scope of the SO incentive scheme to provide NGC with some incentives to develop the transmission system. In terms of its treatment of electricity and system balancing costs it would be identical to Option 2.
- 2.23. As outlined above, Ofgem continues to consider that an enhanced SO transmission capacity release incentive scheme, and the associated long-term firm tradable transmission capacity rights, should be introduced as soon as possible. Increasing the role of the SO in planning the level of transmission capacity to make available in response to market signals would encourage transmission capacity investment decisions to be made in response to market participants' changing needs, rather than solely as a result of a planning process based on forecasts of market participants' future requirements. Ofgem considers that ongoing reforms to the transmission arrangements will lead to market signals being developed, which, in conjunction with appropriate incentives, will ensure that there are appropriate signals to which NGC can and should respond.
- 2.24. If, however, reforms to the transmission arrangements are not sufficiently advanced to implement this form of enhanced SO incentive scheme from April 2004, Ofgem considers that there is merit in developing a less sophisticated enhanced incentive scheme as an interim measure. It is this view that has led Ofgem to propose Option 3. Ofgem considers that any interim scheme should be designed to evolve alongside the associated reforms to the transmission arrangements and that it would ultimately be superseded by the type of enhanced SO incentive scheme previously proposed by Ofgem.
- 2.25. Ofgem recognises that transmission arrangements are currently more advanced on the entry side than they are for exit and considers that there is merit in developing separate forms of enhanced SO incentive arrangements for entry and exit in recognition of this disparity. These separate enhanced SO incentive

arrangements could also develop at different speeds for entry and exit. Ofgem considers that some form of enhanced SO incentive could be developed for transmission entry based on the entry product already defined. Meanwhile, a less advanced form of incentive could be developed for the exit side based on, for example, boundary capabilities. Ofgem considers that such an approach can be employed to develop transitional enhanced SO incentive arrangements to apply from 1 April 2004. To ensure that NGC is appropriately incentivised to trade-off the costs of investments against constraint costs, Ofgem considers that it would be necessary to separate constraint costs from other balancing costs and create a separate incentive scheme. This approach would have the additional advantage of providing greater transparency regarding constraint costs.

- 2.26. Option 3 would represent a move towards the enhanced, “deeper”, incentive scheme that Ofgem has proposed in the past. However, this option would not deliver all the benefits to customers of a full deep scheme and, although the scheme would be more aligned with Transco’s, significant differences would remain.

#### ***Option 4***

- 2.27. Option 4 would expand the scope of the SO incentive scheme to provide the type of fully-developed enhanced SO incentive scheme that Ofgem has previously outlined<sup>28</sup>. Implementing Option 4 would be contingent on it being possible to develop some mechanism for revealing market participants’ long term capacity requirements.
- 2.28. Option 4 would, for the first time, provide NGC with explicit incentives to respond to market signals of market participants’ requirements for transmission capacity. This is particularly important given the government’s initiatives with regard to renewables and CHP plant and the impact that the strong commercial inducements that the Renewables Obligation Certificates and the Climate Change Levy are likely to have on the growth of such types of plant. More efficient network development should, over the longer-term, reduce the costs of

<sup>28</sup> As under Option 3, this would involve separately incentivising NGC in respect of constraint costs.

adapting the transmission network to meet the changing demand requirements that are likely to be placed upon it.

- 2.29. Alongside enhanced incentives for NGC's operation of the system based on a full review of balancing costs under NETA, the introduction of transmission capacity related incentives would provide a robust and sustainable SO incentive framework for NGC to operate within. This framework has the advantage that NGC would have increased incentives to make investments that will reduce the overall costs of operating the system.
- 2.30. Option 4 would also create an enhanced SO incentive for NGC aligned with Transco's existing enhanced SO incentive scheme, ensuring consistency between the two SO incentive schemes.

### ***Ofgem's initial thoughts***

- 2.31. Of the four options outlined above, Ofgem considers that Option 4 – the implementation of an enhanced, "deeper" SO incentive scheme together with a full review of balancing costs under NETA – would represent the best way forward, if it could be implemented from April 2004. Option 4 improves the incentives on NGC to operate and develop the transmission system in an economic, efficient and co-ordinated manner and should lead to a reduction in the cost of system operation over time.
- 2.32. The introduction of enhanced SO incentive arrangements as envisaged in Option 4 would incentivise NGC to respond efficiently to market signals in respect of participants' requirement for transmission capacity. It would also provide NGC with the ability to efficiently trade-off the costs of system reinforcement against constraint costs, thereby facilitating more efficient operation and development of the transmission system.
- 2.33. There could be a number of consequences associated with failing to introduce investment incentives alongside operational incentives on NGC. Failure by NGC to respond in a timely manner to changing demand requirements could lead to under-investment (either generally or in parts of the transmission system), undesirably low security of supply and unduly costly system operation. Alternatively, it could lead to over-investment, which would mean that demand

requirements were met at excessive cost. Either way, the costs of supplying electricity to customers would be increased.

- 2.34. However, Ofgem recognises that, given the progress of associated reforms to transmission arrangements, implementation of Option 4 from 1 April 2004 may not be practical. While Option 4 remains Ofgem's preferred approach in the long-term, Ofgem considers that a different approach would be more appropriate for implementation from 1 April 2004.
- 2.35. In light of this, Ofgem considers that Option 3 represents the next best option. Developing separate transmission entry and exit schemes, recognising that more progress has been made on developing the transmission arrangements for entry than has been achieved for exit, would be similar to the approach which was adopted in developing "deeper" incentives for Transco as the gas SO. Ofgem considers that a simple form of enhanced incentive can be introduced from April 2004. Option 3 therefore represents Ofgem's preferred approach for NGC's SO incentive scheme from 1 April 2004.
- 2.36. Ofgem views Options 1 and 2 as the least attractive options as they offer no movement towards enhanced SO incentivisation for NGC. Of these two options, Ofgem would favour Option 2 as it would, at least, provide the possibility for increased cost savings as a result of its longer duration.

## 3. NGC's external SO incentive schemes since the implementation of NETA

### *Introduction*

- 3.1. This chapter provides a background on NGC's performance under the various external incentive schemes since the introduction of NETA. A more detailed analysis is provided in Appendix 1.

### *Background*

- 3.2. As explained earlier in this document, under the external SO incentive schemes that have been in place since NETA was introduced, NGC is allowed to recover the actual costs of electricity balancing and system balancing, adjusted by incentive gains or losses relating to these costs. The value of any incentive gains or losses depends upon NGC's performance in relation to a cost target set in advance.
- 3.3. If NGC's costs are below the target, it keeps a proportion (set by the upside sharing factor) of the reduction in costs as an incentive payment. Conversely, if its costs are above the target, NGC is charged a proportion (set by the downside sharing factor) of the costs in excess of the target. NGC's overall gains or losses on its balancing costs are limited by applying a cap on payments and a floor on losses. This type of scheme is called a sliding-scale or profit sharing scheme. In setting incentive scheme targets, sharing factors, caps and floors, Ofgem aims to provide NGC with an appropriate balance of risk and reward in the interests of customers.
- 3.4. NGC's SO incentive scheme gain or loss is determined by the level of its Incentivised Balancing Costs (IBC) at the end of the incentive period. IBC are calculated from a number of different components:
- ◆ the cost of bids and offers in the Balancing Mechanism accepted in the relevant period less the total non-delivery charge for that period. This is

referred to as Daily System Operator Balancing Mechanism Cashflow (CSOBM);

- ◆ the costs of contracts for the availability or use of balancing services, excluding costs within CSOBM (but including charges made by the SO for the provision of balancing services to itself), i.e. this component consists of the costs of balancing services not procured through the Balancing Mechanism;
- ◆ the volume of transmission losses multiplied by the Transmission Losses Reference Price (TLRP) for each Settlement Period, summed across all Settlement Periods;
- ◆ the system imbalance volume multiplied by the Net Imbalance Volume Reference Price (NIRP) for each Settlement Period, summed across all Settlement Periods. This factor, the Net Imbalance Adjustment (NIA), is deducted from CSOBM to reflect the fact that NGC has little control over the extent to which participants choose not to balance their positions;
- ◆ the revenue from the provision of balancing services to others (OM) during relevant incentive period; and
- ◆ the amount of any allowed income adjustment (RT) during relevant incentive period.

### ***Details of the external SO incentive schemes under NETA***

- 3.5. There have been three external SO incentive schemes under NETA. The initial incentive scheme ran from 27 March 2001 (the go-live date for NETA) to 31 March 2002 and the second ran from 1 April 2002 to 31 March 2003. The current SO incentive scheme started on 1 April 2003 and is due to expire on 31 March 2004. The parameters of all three external incentive schemes are outlined in Table 3.1.

**Table 3.1 – SO external incentive parameters since Go-Live (money of the day)**

<b>Parameter</b>	<b>Initial scheme<sup>29</sup></b>	<b>Second scheme</b>	<b>Current Scheme</b>
Target	£484.6 million to £514.4 million	£460 million	£416 million
Upside sharing factor	40%	60%	50%
Downside sharing factor	12%	50%	50%
Cap	£46.3 million	£60 million	£40 million
Floor	-£15.4 million	-£45 million	-£40 million

- 3.6. The lower target for the current incentive scheme (£416 million for 2003-04 compared to £460 million for 2002-03) reflects both NGC's improved management of IBC and its understanding of operating the system under NETA. The current incentive scheme has symmetrical upside and downside sharing factors and symmetrical cap and floor values, to reflect an appropriate balance of risk and reward between the interests of customers and NGC.

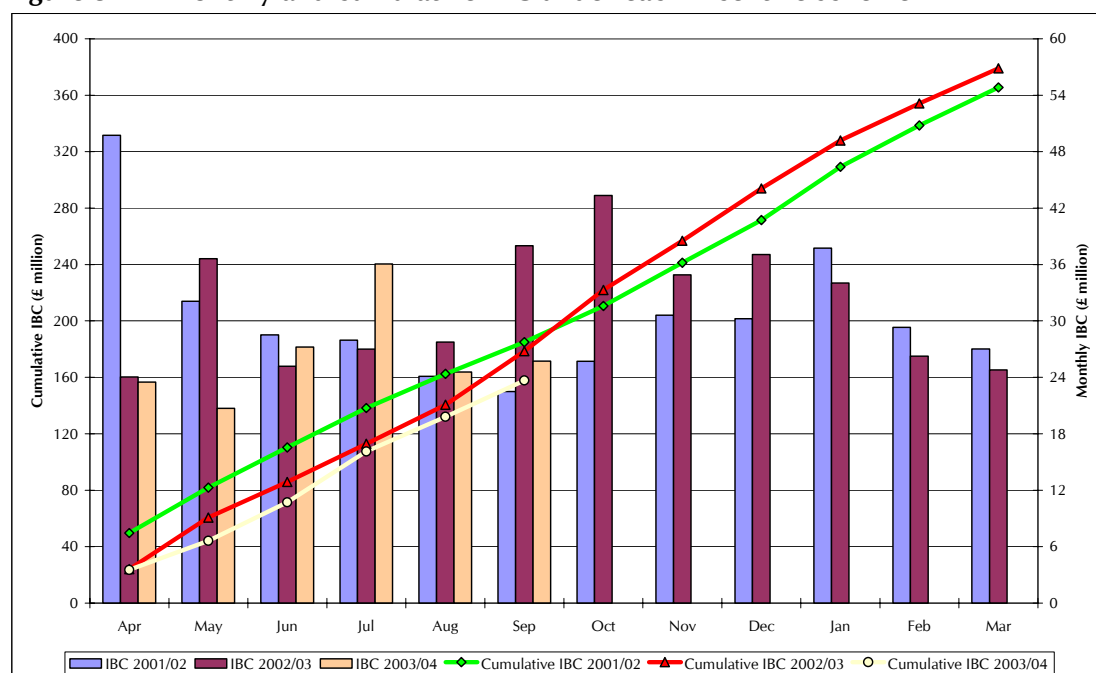
### ***NGC's performance under the SO incentive schemes since the implementation of NETA***

- 3.7. NGC's total IBC, on a monthly and cumulative basis, under each incentive scheme are shown in Figure 3.1.

<sup>29</sup> The figures presented in relation to the initial incentive scheme represent the finalised parameters for the scheme following adjustments to reflect that the scheme was 370 days in duration, not 365 days, and inflation indexation at 1.5%.



**Figure 3.1 – Monthly and cumulative IBC under each incentive scheme<sup>30</sup>**



- 3.8. In the initial incentive period under NETA, IBC totalled approximately £366 million. As a result, NGC received the maximum (cap) payment of £46.3 million under its SO external incentive.
- 3.9. As a result of the substantial reduction in SO balancing costs, Ofgem was able to set the target for the second SO external incentive around £25 million lower than the original incentive scheme target. In the second incentive period, IBC totalled £384.3 million by year end but was reduced by £5.3 million to stand at £379 million as a result of an approved Income Adjusting Event (IAE)<sup>31</sup>. NGC's incentive payment was £48.6 million for the second incentive period. This incentive payment was just over £11 million below the scheme cap.
- 3.10. Whilst experiencing some increased costs associated with the high levels of demand during the unseasonably warm summer weather and a reduction in generation availability, NGC has continued to perform well against its SO incentive. However, as demand increases during the winter months, NGC might be expected to face higher costs.

<sup>30</sup> Data for March 2001 is added to data for April 2001 in this graph.

<sup>31</sup> See 'Income adjusting event under NGC's 2002/03 system operator incentive scheme: A consultation document', Ofgem, May 2003 and 'Income adjusting event under NGC's 2002/03 system operator incentive scheme: A decision document', Ofgem, June 2003.

## ***Conclusions***

- 3.11. NGC has made good progress in reducing the overall level of SO costs since NETA go-live. This is likely, at least in part, to reflect NGC's improved understanding of operating the system under NETA and its response to the incentives.
- 3.12. In the first year of NETA, IBC totalled approximately £366 million and NGC received the maximum incentive payment of £46.3 million. The second incentive scheme set a lower target and higher upside sharing factor, with IBC summing to £379 million (after the approved IAE) compared to a target of £460 million. Consequently, NGC received a payment of £48.6 million. NGC has, so far this year, continued to reduce SO external costs.

## 4. Ofgem's initial thoughts

### *Introduction*

4.1. This chapter provides an outline of Ofgem's initial thoughts in respect of NGC's SO incentive scheme to apply from 1 April 2004. The main issues focused on in this chapter include:

- ◆ the proposal to enhance NGC's SO incentive arrangements;
- ◆ the duration of the scheme;
- ◆ the form of the scheme; and
- ◆ the impact of BETTA.

### *Enhancing NGC's SO incentives*

4.2. When developing NGC's current external SO incentive scheme, Ofgem proposed that the scope of NGC's incentive scheme should be extended to cover not only its operation of the transmission system, but also some aspects of the development of the transmission system (so called "deep" incentives). Ofgem continues to be of the view that it would be appropriate to introduce enhanced incentives for NGC and, consequently, is considering whether and, if so, how to introduce enhanced, "deeper", incentives to apply from 1 April 2004.

4.3. In Chapter 2, Ofgem set out that there are currently a number of issues, which it considers need to be addressed, that result from a lack of incentives upon NGC in particular areas – incremental transmission capacity release and buy-back of transmission capacity. Ofgem considers that NGC should have strong financial incentives to invest in the transmission system, where it is efficient to do so, in response to signals of market participants' changing needs for transmission capacity. Chapter 2 explains fully why Ofgem believes enhancing NGC's SO incentives is consistent with its primary statutory duty to protect customers. In summary, the benefits of such an approach would include:

- ◆ reducing the costs that customers pay by extending the incentives on NGC to manage and, where possible, reduce the overall costs of system operation (e.g. making a trade-off between the costs of resolving transmission related constraints and the costs of developing the system to avoid such constraints);
- ◆ improving security of supply for customers by providing stronger incentives for NGC to deliver additional transmission capacity (where this is possible) in response to customers' increased demand, including, for example, access to NGC's network via new interconnectors;
- ◆ increasing competition in the generation and supply of electricity by improving the incentives on NGC to shorten the time it takes to deliver additional transmission entry and exit capacity since the commercial advantages of making the capacity available will be enhanced; and
- ◆ providing NGC with increased flexibility to accommodate new renewable energy sources, including offshore wind.

### ***The enhanced SO incentive arrangements previously proposed by Ofgem***

- 4.4. As explained in Chapter 1, Ofgem has previously proposed the introduction of a SO transmission capacity release scheme in association with the introduction of long-term firm tradable transmission capacity rights. Ofgem envisaged a SO transmission capacity release incentive which would provide incentives to trade-off the costs of resolving transmission related constraints against the costs of releasing incremental transmission capacity. Incremental transmission capacity would be defined as transmission capacity in excess of the baseline transmission capacities agreed as part of the TO price control. Ofgem anticipated that baseline and incremental capacity levels would be defined in terms of volumes of entry and exit access rights. This would provide a direct link between the SO transmission capacity release incentive and market participants' requirements for transmission capacity as they emerge from long-term sales. Ofgem envisaged that users of the transmission system would be able to purchase long-term, contractually firm, tradable entry and exit transmission capacity rights, therefore

requiring associated reforms to the transmission arrangements. Signals of market participants' requirements for transmission capacity would be provided via the purchase and trade of such transmission capacity rights by market participants.

- 4.5. Alongside a SO transmission capacity release incentive, Ofgem proposed the introduction of a SO transmission capacity buy-back incentive to cover the costs that NGC incurs in buying-back (purchasing) firm transmission capacity that it has previously sold but cannot physically deliver. Ofgem considered that the transparency of any actions by NGC to resolve constraints would be enhanced if NGC had to buy-back defined transmission capacity rights. In order to ensure that NGC is incentivised to trade-off the costs of making more transmission capacity available against the costs of buying back transmission access rights, Ofgem considered it to be important for the transmission capacity release incentive and the transmission capacity buy-back incentive to be properly co-ordinated.
- 4.6. In the Final Proposals document relating to the current SO incentive scheme<sup>32</sup>, Ofgem outlined a phased approach for implementing such an enhanced, SO incentive scheme. The first phase entailed a further one year long shallow incentive scheme, intended to run from 1 April 2003 until 31 March 2004. The second phase involved the introduction of enhanced SO incentive arrangements on 1 April 2004, subject to appropriate development of the transmission access regime having taken place.
- 4.7. As outlined in Chapter 1, within the scope of this phased approach NGC committed to use all reasonable endeavours to review and, if appropriate, bring forward proposals for reform of the contractual framework and charging methodologies, for implementation in April 2004. In considering whether an enhanced incentive can be implemented from April 2004, it is therefore necessary to review NGC's progress in respect of the commitments it made with regard to reviewing and, if appropriate, amending the transmission arrangements.

<sup>32</sup> 'NGC system operator incentive scheme from 1 April 2003 – 31 March 2004 - Final Proposals and Statutory Licence Conditions', Ofgem, March 2003.

## ***NGC's progress in relation to its commitments***

- 4.8. Since making these commitments NGC has conducted a review of the transmission arrangements and the progress made by NGC in relation to its commitments is outlined in Table 4.1.

**Table 4.1 – NGC's progress against its commitments**

<b>NGC's commitments to review and amend the following areas...</b>	<b>NGC's progress...</b>
<ul style="list-style-type: none"> <li>○ the charges for the provision of a connection to the transmission system that represent the cost of connection attributable to a single user, and that encourage competition in the provision of connections</li> </ul>	<ul style="list-style-type: none"> <li>○ NGC has proposed a 'plug' model for connection to the transmission system. NGC's consultation closed on 10 October 2003. This proposal has been formally raised by NGC with the Authority, who has until 19 December to decide whether to veto it. Ofgem has published an associated consultation document (consultation now closed)<sup>33</sup> and an associated statutory licence change consultation<sup>34</sup></li> </ul>
<ul style="list-style-type: none"> <li>○ the investment cost signals given by Transmission Network Use of System (TNUoS) charges, specifically looking at the marginal costing method and the locational signals provided by the charges</li> </ul>	<ul style="list-style-type: none"> <li>○ following consideration of the investment signals provided by TNUoS charges, NGC has proposed an alternative DC load flow modelling approach<sup>35</sup>. NGC's consultation closed on 10 October 2003. This proposal has been formally presented by NGC to the Authority</li> </ul>
<ul style="list-style-type: none"> <li>○ the time period over which TNUoS charges apply, looking specifically at charges applicable to periods of less than one year and greater than one year</li> </ul>	<ul style="list-style-type: none"> <li>○ NGC has formally consulted on a modification relating to within year charging<sup>36</sup> and informally consulted on proposals relating to charging for up to three years<sup>37</sup>. NGC's consultation closed on 10 October 2003. This proposal has not been presented by NGC to the</li> </ul>

<sup>33</sup> 'Potential changes to NGC's transmission licence consequential to possible changes to its transmission charging methodology, A consultation document', Ofgem October 2003.

<sup>34</sup> 'Modification to the National Grid Company's Transmission Licence: Consequential changes following a possible change to its transmission charging methodology, Consultation under section 11(2) of the Electricity Act 1989', Ofgem, November 2003.

<sup>35</sup> UoSCM-M-10: "Proposal to amend the methodology for calculation of locational TNUoS tariffs" was issued on the 12 September 2003.

<sup>36</sup> NGC issues "Use of System Charging Review – Consultation on Potential Within Year Tariff Regime" on 2 June 2003

<sup>37</sup> NGC issued "Use of System Charging Review- Consultation on Long Term Tariff Contracts" on 24 April 2003.

NGC's commitments to review and amend the following areas...	NGC's progress...
	Authority
<ul style="list-style-type: none"> <li>○ the treatment of competing requests for new transmission capacity in the offer and modification processes set out in the CUSC</li> </ul>	<ul style="list-style-type: none"> <li>○ a proposal has been raised regarding the treatment of competing requests for new transmission capacity under the modification processes set out in the CUSC<sup>38</sup></li> </ul>
<ul style="list-style-type: none"> <li>○ the treatment of licence exempt embedded generators (LEGs) and the appropriate recovery of costs which they impose on the transmission system, against the background of policies designed to encourage the development of such generation</li> </ul>	<ul style="list-style-type: none"> <li>○ NGC has continued to review the treatment of LEGs, but has not identified any further proposals.</li> </ul>
<ul style="list-style-type: none"> <li>○ the provision of firm transmission rights, compensation for disconnection and remedies for breach of access rights</li> </ul>	<ul style="list-style-type: none"> <li>○ the TASG has discussed the form and firmness of capacity rights and a number of amendment proposals have been put forward. CAP043<sup>39</sup> clarified the definition of generation rights and CAP048<sup>40</sup>, which is currently with the Authority, seeks to address compensation to generators following disconnection. NGC is considering possible methodologies for treating breaches of access rights, but has not yet submitted any proposals.</li> </ul>
<ul style="list-style-type: none"> <li>○ the charging base upon which to levy demand TNUoS charges</li> </ul>	<ul style="list-style-type: none"> <li>○ debate on the charging base upon which to levy demand TNUoS charges surrounded which parties should be responsible for the payment of demand TNUoS charges. NGC identified that the only alternative would be for the charges to be levied on Distribution Network Operators rather than suppliers. However, NGC's view was that this did not better facilitate the relevant objectives and, consequently it decided not to proceed with any formal consultation.</li> </ul>
<ul style="list-style-type: none"> <li>○ the basis for the calculation of demand TNUoS charges</li> </ul>	<ul style="list-style-type: none"> <li>○ no changes have been made to the calculation of demand TNUoS</li> </ul>

<sup>38</sup> CAP068: "Competing Requests for TEC".

<sup>39</sup> CAP043: "Transmission Access – Definition"

<sup>40</sup> CAP048: "Firm Access and Temporary Physical Disconnection".

NGC's commitments to review and amend the following areas...	NGC's progress...
	charging. However, an amendment relating to Triad charging methodology (UoSCM-M-08) <sup>41</sup> was submitted and subsequently withdrawn

- 4.9. Ofgem's current thoughts in relation to NGC's progress against its commitments are outlined below. These considerations are provided without fettering Ofgem's discretion with regard to the decisions that it will have to reach in respect of the charging methodology modifications and CUSC amendment proposals that NGC has brought forward.
- 4.10. Ofgem considers that there has been, and continues to be, positive progress in respect of reforms to the entry side of the transmission arrangements. For example, a better defined entry product – the Transmission Entry Capacity (TEC) – has been introduced and progress is being made towards within-year charging. There are areas where Ofgem considers further reform to be required, such as the development of a longer-term duration entry product and the development of tradable entry products. However, the issues have been considered at length by NGC and the TASG, although no formal proposals have been made in relation to reforms of the exit arrangements. Ofgem considers that the main shortcoming on exit is that there is no defined capacity product.
- 4.11. Therefore, Ofgem considers that there are a number of areas in which substantial progress has yet to be made. Ofgem recognises that this potentially limits the extent to which the type of enhanced incentive scheme previously proposed could be implemented from 1 April 2004. Whilst such an approach remains Ofgem's preferred approach, it considers that there is merit in exploring whether an alternative approach to introducing an enhanced incentive scheme, as a transitional measure, might be possible for implementation from April 2004.
- 4.12. Given that reforms to the transmission arrangements are more advanced for entry than exit, and that the differences that will inevitably exist between the

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<sup>41</sup> UoSCM-M-08: "Proposal for new winter peak 'capacity' proxy for half-hourly metered demand TNUoS charges".



two, Ofgem considers that there is merit in separately developing enhanced SO entry and exit incentive arrangements. Ofgem considers that some form of enhanced SO incentive can be developed for transmission entry based on the entry product already defined.

- 4.13. For example, in setting the TO price control output measures, NGC used assumptions on the level of available generation at peak for the five years from April 2001 to March 2006. Since then the concept of Transmission Entry Capacities (TECs) has been developed for generators and Ofgem considers that it should be possible to develop some form of enhanced incentive scheme that compares TECs against the assumptions used by NGC in deriving the TO output measures. In this way, a zonal measure of incremental capacity commitments could be built up and used as the basis for entry capacity investment payments. This would replace the allowance for additional generation capacity already included in the TO price control, which simply uses a generic transmission system investment cost of £23/kW. On the exit side, where there is not a well defined capacity product, it might still be possible to develop some form of enhanced incentive based, for example, on boundary capabilities. Since boundary capabilities depend on net flows, some representation of entry consistent with the entry incentive would need to be included. Ofgem considers that, if such an approach is considered appropriate, some form of enhanced SO incentive arrangements can be implemented from 1 April 2004.
- 4.14. NGC has previously come forward with four models for an enhanced SO incentive framework. Ofgem considers that these models may provide a useful basis for an enhanced SO incentive on the exit side. These models, which are outlined in the next section, are currently being analysed by Ofgem.
- 4.15. Ofgem considers that further progress can be made in relation to a capacity buy-back incentive. Ofgem considers that such an incentive would incentivise NGC to efficiently minimise instances where it is not possible to deliver capacity, delivering benefits in terms of security of supply and that it would enhance the transparency of NGC's actions to resolve constraints. Ofgem notes that CAP048 ("Firm Access and Temporary Physical Disconnection") seeks to address

compensation to generators following disconnection and so is relevant to developments associated with a capacity buy-back incentive.

### ***NGC's suggested models for enhanced incentives***

- 4.16. In response to last year's initial consultation, NGC proposed a number of models for enhanced incentives. NGC's models have all been developed taking into account the baseline capacity that form part of its TO price control. These baseline capacities are measured in terms of specified boundary capabilities. The boundary capabilities represented the maximum flows that could be accommodated at peak demand without network reinforcement. They were derived from "required transfer" estimates, which are a measure of the flows defined in NGC's Security Standard that must be secured at peak demand. In defining boundaries, NGC seeks to represent:
- ◆ significant "pinch-points" on the network that are likely to persist; and
  - ◆ divisions between areas in which increased generation (or decreased demand) and those in which decreased generation (or increased demand) would cause constraints to arise on the system.
- 4.17. The output measures for the TO price control are boundary capabilities at times of peak demand for 11 boundaries in 2001/02, 2003/04 and 2005/06 (but not for 2002/03 and 2004/05).
- 4.18. NGC's models for enhanced incentives all involve determining incremental capacities for incentivisation by comparing out-turn values against these baseline capabilities or parameters derived from them. The first two methods use the baseline capabilities directly whereas the last two derive zonal baseline values from them.
- 4.19. **Method 1** would compare the out-turn required transfer (at peak demand) for each boundary with the baseline boundary capabilities. The out-turn required transfers would be calculated from actual available capacity and actual demand. Any increase in the out-turn required transfers above the baseline boundary capabilities would be counted as incremental capacity. NGC argues that this method is consistent with how the TO baseline was set and reflects peak

boundary flows, which are generally the main driver behind incremental release but accepts that required transfers are not directly observable, which may lead to transparency concerns.

4.20. **Method 2** would compare out-turn half hourly flows across each boundary with its baseline capability. This is similar to method 1, but enables comparisons to be made on a half-hourly basis rather than just at peak demand. If the flows in any half-hour exceed the baseline boundary capability, incremental capacity would be deemed to have been delivered. The incremental capacity could be measured as either the maximum amount by which the flows exceeded the boundary capability or the average of the excesses. A problem with this method noted by NGC is that out-turn flows would already take account of constraints and hence it would be more appropriate to calculate what the unconstrained flows would have been. However, adopting such an approach might be overly complex and would not be transparent.

4.21. **Method 3** would compare out-turn generation capacities and peak demand with the baseline zonal entry and exit capacities. Under this method, the baseline boundary capabilities would be restated in terms of zonal entry and exit capacities. The zonal entry (exit) capacity for a zone would be the amount of generation capacity (demand) that could be accommodated in the zone at peak demand. If the out-turn generation capacity (demand) in an export (import) constrained zone at peak demand exceeded the baseline zonal entry (exit) capacity, this would be considered to be incremental capacity. This method would allow a direct comparison to be made between out-turn values and the (restated) baseline capacity but NGC argued that entry and exit capacities do not directly drive investment costs.

4.22. The final method, **Method 4**, would compare out-turn zonal transfers with baseline zonal transfers. Baseline zonal transfers would be defined such that for each exporting zone, the zonal transfer was the sum of the registered generating capacity in the zone minus the zonal peak demand (for importing zones, the zonal transfer would be equal to the zonal peak demand minus the sum of the registered capacities in the zone). Where out-turn zonal transfers (calculated in the same way from out-turn values at peak demand) exceed the baseline zonal transfer, this would be considered to be incremental capacity. NGC points out

that there could be problems mapping between boundary capabilities and zonal transfer capabilities.

### ***Ofgem's initial thoughts***

- 4.23. For the reasons outlined above, Ofgem continues to consider that it would be appropriate for NGC to operate under an enhanced SO incentive framework thus aligning its interests with those of consumers in respect of both the operation and development of the transmission system.
- 4.24. Ofgem considers that the SO transmission capacity release incentive scheme, as previously proposed, is the most appropriate form of enhanced SO incentive scheme for NGC. However, in recognition of the fact that it is not likely to be possible to implement such a scheme for 1 April 2004, Ofgem considers that there is merit in developing an interim enhanced SO incentive scheme to deliver some of its benefits. If such an approach is adopted, Ofgem considers that there is scope to develop a more sophisticated scheme in relation to transmission entry, based on the existing TEC product, and a less advanced solution in respect of transmission exit, possibly based on measures such as boundary capabilities. In conjunction with these capacity release related incentives, Ofgem considers that it would be desirable to create a separate constraint cost incentive. In this way, NGC's incentive to trade-off investment costs against constraint costs would be clarified and sharpened, so as to meet participant's access requirements at least cost. It would also have the advantage of providing greater transparency regarding constraint costs.
- 4.25. Ofgem recognises that NGC has previously suggested other models for enhanced SO incentives. Ofgem considers that these proposals may be worthy of consideration in relation to an interim arrangement focused on exit. Ofgem has examined NGC's models and has some concerns as to how appropriate they would be. The main issue with all of these methods is that they are all backward looking – that is incremental capacity is measured after the event. Additionally, most of the methods are likely to give rise to "transient" incremental capacity – incremental capacity that may appear one year and disappear the next. This is particularly true for Method 2, which relies on actual flows across the boundaries defining incremental capacity. Finally, none of the methods provide

a clear link between the incremental capacity calculated and the investment that NGC would have to undertake. NGC actually points this out in relation to Methods 3 and 4 but it is not obvious, for example, that just because a boundary capability has been exceeded in Methods 1 and 2 that investment is required.

- 4.26. Nonetheless, Ofgem considers that it is worthwhile exploring whether any of these models could be developed to provide an interim enhanced incentive scheme on the exit side for implementation from 1 April 2004.

### ***Views invited***

- 4.27. Ofgem welcomes views on the following issues:

- ◆ whether it is appropriate to introduce some form of enhanced SO incentives from April 2004;
- ◆ whether it is appropriate to aim to implement the SO transmission capacity release incentive previously envisaged or whether an interim form of SO incentive arrangement is more suitable at this stage;
- ◆ if an interim SO incentive scheme is considered to be appropriate, whether a more sophisticated incentive should be developed for entry (based on the existing TEC) with a less advanced model being developed for exit (possibly based on a measure such as boundary capabilities);
- ◆ whether enhanced incentives in respect of transmission capacity release necessitate the development of a constraint cost incentive; and
- ◆ whether any of the models proposed by NGC form an appropriate basis for measuring incremental capacity on the exit side.

### ***Duration of NGC's incentive scheme to apply from 1 April 2004***

- 4.28. Most of NGC's incentive schemes, including the current external SO incentive, have lasted for one year. However, Ofgem has previously suggested that, over the longer-term, the duration of NGC's SO incentive schemes should be lengthened and made consistent with the duration of NGC's TO price control.

- 4.29. Longer duration schemes would give NGC a clearer incentive framework under which to operate and would enhance its ability to consider undertaking investments for its SO activity that would only reduce costs over the course of several years. As a result, this approach would provide NGC with increased freedom and flexibility within which to carry out economically its role as SO and in doing so would be expected to reduce SO costs over time, to the benefit of customers.
- 4.30. Ofgem is of the view that it is appropriate to consider implementing an external SO incentive scheme of longer than one year in duration from 1 April 2004. In the sections below, Ofgem outlines the relative advantages and disadvantages of implementing a one year scheme, a two year scheme and a scheme of more than two years in duration. It should be noted that this discussion relates to the shallow elements of any incentive, any investment related incentive will have to last for at least three years to have any effect. The interactions between an incentive scheme lasting longer than one year and BETTA is discussed later in this chapter.

### ***Ofgem's initial thoughts***

#### **One year scheme**

- 4.31. Ofgem considers that a one year scheme has the following advantages:
- ◆ it would continue with the existing effective annual incentivisation under which NGC has operated since 1994; and
  - ◆ if a shallow scheme is implemented for 1 April 2004, it would be possible to implement enhanced SO incentivisation after one year.
- 4.32. However, Ofgem considers that a one year scheme has the following disadvantage:
- ◆ it does not provide any movement towards delivering the benefits of longer term incentivisation.

## **Two year scheme**

- 4.33. Ofgem considers that a two year scheme has the following advantages:
- ◆ it would provide some progress towards the aim of developing longer term incentivisation; and
  - ◆ it would provide experience of setting longer term incentives which would be valuable for future use.

- 4.34. However, Ofgem considers that a two year scheme has the following disadvantages:
- ◆ if a shallow scheme is implemented as of 1 April 2004, the move to enhanced SO incentivisation would only be possible after a further two years; and
  - ◆ assuming that NGC's price control is extended as Ofgem intends, it would be necessary thereafter to introduce a one year scheme to run until the end of the TO price control.

## **A scheme of longer than two years**

- 4.35. As discussed in Chapter 1, Ofgem has announced that it intends to extend the NGC TO price control by one year so that it ends at the same time as Transco's price control (31 March 2007). Consequently, it would be possible to set a 3 year incentive scheme from 1 April 2004.
- 4.36. Ofgem considers that a scheme of more than two years has the following advantage:
- ◆ it would be consistent with developing longer-term incentivisation;
- 4.37. However, Ofgem considers that a scheme of more than two years in duration has the following disadvantage:
- ◆ if a shallow scheme is implemented as of 1 April 2004, the move to enhanced SO incentivisation would be further delayed.

- 4.38. At this stage, Ofgem considers that it is appropriate to implement a SO incentive scheme starting on 1 April 2004 which is intended to last for at least two years.

### ***Views invited***

- 4.39. Ofgem welcomes views on the following issues:
- ◆ whether a duration of longer than one year is appropriate for the shallow elements of the incentive beginning on 1 April 2004 and, if so, whether it should last for two or three years.

### ***Form of NGC's incentive scheme to apply from 1 April 2004***

- 4.40. As outlined earlier in this document, NGC's current SO incentive scheme is a sliding-scale or profit sharing scheme with an appropriate target, cap, floor and sharing factors. This form of incentive has been successfully employed since 1994/95 for NGC's SO incentives scheme.

### ***Ofgem's initial thoughts***

- 4.41. Ofgem considers that a sliding-scale incentive, with appropriate target, cap, floor and sharing factor values, remains the most appropriate form for NGC's external SO incentive scheme. Furthermore, Ofgem continues to consider that, in the absence of clear evidence of asymmetric cost distributions, there should be symmetry between the sharing factors and between cap and floor values as this reflects an appropriate balance between the interests of customers and NGC. Symmetry was introduced for the first time under NETA in the current incentive and Ofgem considers that this should be maintained.
- 4.42. Additionally, Ofgem has previously stated that, in order to ensure consistency between NGC's internal and external SO incentive schemes, both schemes should have the same sharing factors<sup>42</sup>. Ofgem considers that setting the same sharing factors for the internal and external SO incentives ensures that NGC's

<sup>42</sup> The other parameters of the internal cost incentive (targets, caps and floors) have been set until March 2006.



interests are aligned with those of consumers by incentivising NGC to aim to reduce the total costs of system operation rather than arbitraging its position between different incentive schemes.

- 4.43. In respect of any incremental capacity release incentives, Ofgem has previously proposed that there should be 100 per cent sharing factors together with a cap and floor set by reference to allowed rates of return. Upside would be provided by allowing NGC to earn a rate of return higher than its regulated rate of return (6.25 per cent) on incremental transmission capacity it releases and downside created by setting the floor equal to a lower rate of return. Within this cap and floor, NGC would be allowed to retain any revenues that it earned from the sale of incremental transmission capacity. Further consideration will need to be given to the appropriate form of the enhanced SO incentive arrangements depending upon the approach taken, including (as discussed earlier) whether it will be desirable to create a separate constraint costs incentive.

### ***Views invited***

- 4.44. Ofgem welcomes views on the following issues:
- ◆ whether market participants consider that a sliding-scale incentive continues to be appropriate for NGC's external SO incentive scheme;
  - ◆ whether market participants consider that it is appropriate to have symmetrical cap and floor values and sharing factors; and
  - ◆ whether market participants consider that it is appropriate for the sharing factors of NGC's internal and external schemes to be aligned.

### ***Impact of BETTA***

- 4.45. Based on the assumption that NGC will become GB SO as of BETTA go-live, NGC will continue to be incentivised in its role as GB SO. The GB-wide SO incentive arrangements will be based on the prevailing England and Wales arrangements at the time of BETTA go-live. Therefore, in developing the England and Wales SO incentive scheme to apply from 1 April 2004, it is important to consider how the scheme can be amended at BETTA go-live for GB-

wide application. This must be undertaken in the absence of complete certainty as to the BETTA go-live date.

### ***Ofgem's initial thoughts***

- 4.46. The intended duration of the England and Wales SO incentive scheme to apply from 1 April 2004 is an important factor in the extent to which arrangements for GB SO incentive arrangements need to be developed at this stage. If the England and Wales SO incentive scheme only applies for one year (until 31 March 2005), consideration of the appropriate arrangements post-BETTA go-live can be largely handled during the development of the incentive scheme to apply from 1 April 2005. If, however, the England and Wales scheme from 1 April 2004 runs for a period greater than one year (as discussed above), then consideration must now be given to what amendments should be put in place to enable the SO incentive to expand to cover GB after BETTA go-live.
- 4.47. In the event that the England and Wales incentive scheme were to extend beyond BETTA go-live, Ofgem considers that it would be desirable for there to be the minimum disruption possible to the scheme when extending it to apply GB-wide. Ofgem considers that one possible approach for setting an incentive scheme from April 2004 that could extend beyond BETTA go-live is as follows:
- ◆ for each relevant year within the intended incentive period, define the SO incentive scheme parameters to apply for the England and Wales SO incentive scheme;
  - ◆ for each relevant year within the intended incentive period from 1 April 2005 (the intended BETTA go-live date) onwards, define additional "adjuster" parameters to amend the England and Wales SO incentive scheme parameters from BETTA go-live;
  - ◆ the adjuster parameters would be assigned annual values to reflect the changes to the England and Wales SO incentive scheme parameters considered appropriate in light of the switch to GB-wide application. These values would not need to be determined now but could be set in the run-up to BETTA go-live, following the normal consultation process; and

- ◆ the adjuster parameters would have a zero value until BETTA go-live occurs. If BETTA go-live were to occur after the start of a relevant year (i.e. not on 1 April) within the intended incentive period duration, the annual adjuster parameters would be pro-rated accordingly.
- 4.48. Ofgem considers that the approach outlined above offers a practical way to make appropriate adjustments to the England and Wales SO incentive scheme as of BETTA go-live to enable GB application in the event that NGC's SO incentive scheme from 1 April 2004 has an intended duration of over one year.
- 4.49. In the event that the incentive scheme for England and Wales to apply from 1 April 2004 is longer than one year in duration, Ofgem expects that work will be undertaken during summer 2004 in relation to the developments needed to extend the scheme to apply GB-wide. This work would need to focus on identifying appropriate adjustments required to take account of changes to the balancing costs that the GB SO would incur and the manner in which the enhanced elements of the England and Wales scheme could be extended to apply GB-wide. Work would need to be undertaken to ensure that an enhanced SO incentive is compatible with the Scottish TOs' price controls and to ensure that incremental capacity in Scotland can be assessed on a consistent basis with the arrangements put in place in England and Wales from April 2004. It is important that this work is undertaken in conjunction with the TO incentives work being carried out as part of the BETTA<sup>43</sup> project.

### ***Views invited***

- 4.50. Ofgem welcomes views on the following issues:
- ◆ whether, in the event of a one year England and Wales SO incentive scheme from 1 April 2004, the appropriate arrangements post-BETTA go-live can be addressed during the development of the incentive scheme to apply from 1 April 2005; and

<sup>43</sup> TO incentives under BETTA are set of financial arrangements to be put in place to make changes to the allowable revenues of the transmission owners that correspond with changes to the amounts of transmission services provided to the GB system operator.  
See 'Price controls and incentives under BETTA, An Ofgem/DTI consultation', October 2003, Ofgem.

- ◆ whether, in the event of an England and Wales SO incentive scheme from 1 April 2004 of more than one year in duration, the potential approach outlined above for amending the scheme for GB-application is practical and appropriate or, if not, what approach would be appropriate.

## ***Summary***

4.51. This chapter has provided an outline of Ofgem's initial thoughts in respect of the SO incentive scheme to apply from 1 April 2004. A summary of these thoughts is provided below:

- ◆ Ofgem considers that the SO transmission capacity release incentive scheme, as previously proposed, is the most appropriate form of enhanced SO incentive scheme for NGC. However, in recognition of the fact that it is not likely to be practical to implement such a scheme for 1 April 2004, Ofgem considers that there is merit in developing an interim enhanced SO incentive scheme to deliver some of its benefits. If such an approach is adopted, Ofgem considers that there is scope to develop a more sophisticated scheme in relation to transmission entry, based on the existing TEC product, and a less advanced solution in respect of transmission exit, possibly based on measures such as boundary capabilities;
- ◆ at this stage Ofgem considers that it is appropriate to implement a SO incentive scheme starting on 1 April 2004 to last for at least two years (with any investment element lasting for longer so as to have time to take effect);
- ◆ Ofgem considers that a sliding-scale incentive, with appropriate target, cap, floor and sharing factor values, is the most appropriate form for NGC's external SO incentive scheme. Ofgem continues to consider that, in the absence of clear evidence of asymmetric cost distributions, there should be symmetry between the sharing factors and between cap and floor values as this reflects an appropriate balance between the interests of customers and NGC;

- ◆ in the event that the England and Wales incentive scheme were to extend beyond BETTA go-live, as proposed, Ofgem considers that it would be desirable for there to be the minimum disruption possible to the scheme when extending it to apply GB-wide. Ofgem considers that this can be achieved by defining a number of additional “adjuster” parameters, the values of which could be consulted on at a later date, to amend the England and Wales SO incentive scheme from BETTA go-live would best achieve this objective.

4.52. A summary of the views invited is contained in the next chapter.

## 5. Way forward

### *Summary of views invited*

- 5.1. Ofgem invites views on any of the issues raised in this document. Responses should be submitted by 5 January 2004. In particular, Ofgem invites views on:

### *Enhanced SO incentive arrangements for NGC*

- ◆ whether it is appropriate to introduce some form of enhanced SO incentive from April 2004;
- ◆ whether it is appropriate to aim to implement the SO transmission capacity release incentive previously envisaged or whether an interim form of SO incentive arrangement is more suitable at this stage;
- ◆ if an interim SO incentive scheme is considered to be appropriate, whether a more sophisticated incentive should be developed for entry (based on the existing TEC) with a less advanced model being developed for exit (possibly based on a measure such as boundary capabilities);
- ◆ whether enhanced incentives in respect of transmission capacity release necessitate the development of a constraint cost incentive; and
- ◆ whether any of the models proposed by NGC form an appropriate basis for measuring incremental capacity on the exit side.

### *Duration of NGC's incentive scheme to apply from 1 April 2004*

- ◆ whether a duration of longer than one year is appropriate for the shallow elements of the incentive beginning on 1 April 2004 and, if so, whether it should last for two or three years.

### ***Form of NGC's incentive scheme to apply from 1 April 2004***

- ◆ whether market participants consider that a sliding-scale incentive continues to be appropriate for NGC's external SO incentive scheme;
- ◆ whether market participants consider that it is appropriate to have symmetrical cap and floor values and sharing factors; and
- ◆ whether market participants consider that it is appropriate for the sharing factors of NGC's internal and external schemes to be aligned.

### ***Impact of BETTA***

- ◆ whether, in the event of a one year England and Wales SO incentive scheme from 1 April 2004, the appropriate arrangements post-BETTA go-live can be addressed during the development of the incentive scheme to apply from 1 April 2005; and
- ◆ whether, in the event of an England and Wales SO incentive scheme from 1 April 2004 of more than one year in duration, the potential approach outlined above for amending the scheme for GB-application is practical and appropriate or, if not, what approach would be appropriate.

### ***Next steps***

- 5.2. Following consideration of respondents' views to this initial consultation, Ofgem expects to publish its next document in relation to NGC's SO incentive scheme from 1 April 2004 in early 2004.

# Appendix 1 Incentivised Balancing Cost component breakdown

## ***Balancing Mechanism Costs (CSOBM)***

### ***Licence definition***

- 1.1 Under NGC's Transmission Licence CSOBM<sub>t</sub> is defined as the cost to the licensee of bids and offers in the Balancing Mechanism accepted by the licensee in relevant period t<sup>44</sup> less the total non-delivery charge for that period. CSOBM<sub>t</sub> is the sum across the relevant period of the values of CSOBM<sub>j</sub> (being the Daily System Operator Balancing Mechanism Cashflow as defined in Table X-2 of Section X of the BSC in force immediately prior to 1 April 2001).

### ***Performance to date<sup>45</sup>***

- 1.2 CSOBM<sub>t</sub> over the period from 01 April 2002 until 31 March 2003 totalled £58.51 million. Cumulative daily CSOBM from 1 April 2003 until 30 September 2003 was £34.04 million. Figure A1.1 shows daily CSOBM, monthly average CSOBM and a 4 week rolling average of CSOBM for the period up until 30 September 2003.

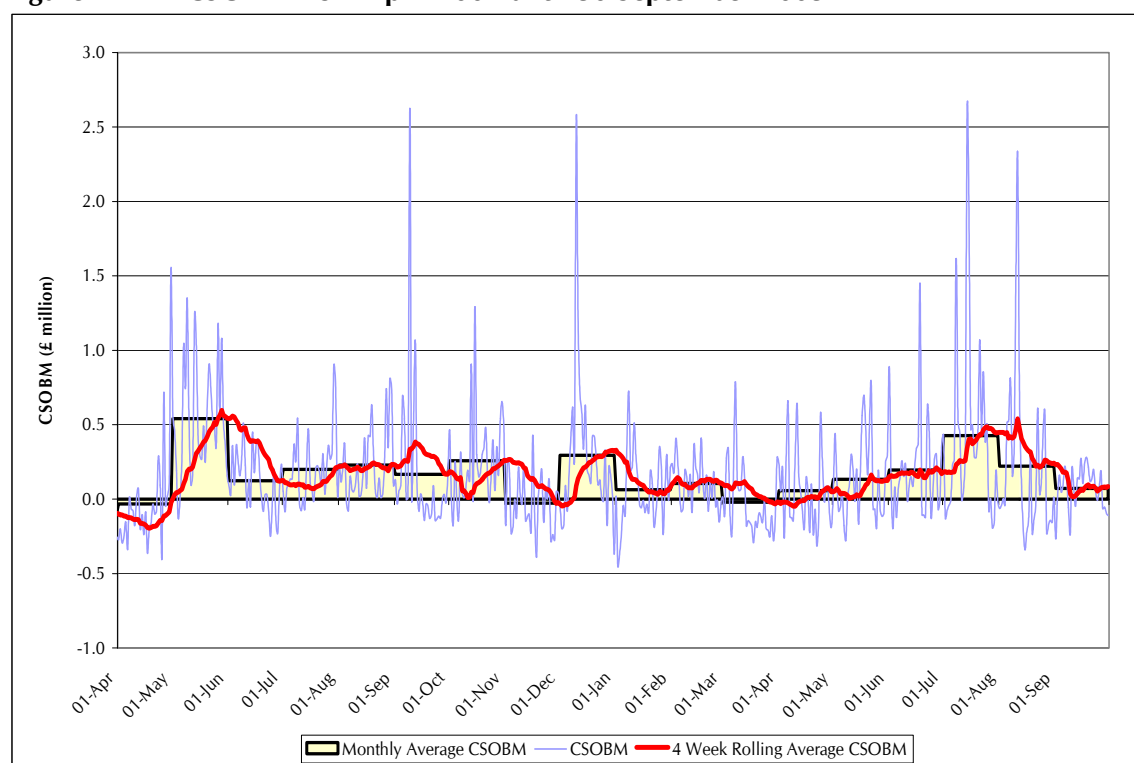
<sup>44</sup> The transmission licence defines "relevant period t" as that period for the purposes of which any calculation falls to be made commencing on Go-Live and ending on 31 March 2002 and thereafter shall have the same meaning as "relevant year t" where "relevant year t" means that relevant year for the purposes of which any calculation falls to be made.

<sup>45</sup> Similar analysis and commentary for the period prior to 1 April 2002 can be found in "NGC system operator incentive scheme from 1 April 2003 – 31 March 2004, final proposals and statutory licence conditions", March 2003, Ofgem, at the following address:

[http://www.ofgem.gov.uk/temp/ofgem/cache/cmsattach/2545\\_16so\\_incentives.pdf](http://www.ofgem.gov.uk/temp/ofgem/cache/cmsattach/2545_16so_incentives.pdf)



**Figure A1.1 – CSOBM from April 2002 until 30 September 2003**



1.3 During the first year of NETA, CSOBM fell consistently in response to a number of factors, amongst which were NGC's and market participants' growing experience of the new arrangements. CSOBM was much more volatile during the second year of NETA, with the first two months of the financial year totalling -£0.93 million and £16.80 million for April 2002 and May 2002 respectively. Further CSOBM spikes occurred in July 2003, reaching the third highest monthly total since Go-Live at £13.28 million. During this month, daily CSOBM exceeded £1 million on four separate days. More detailed statistics concerning CSOBM can be found in Table A1.1.

**Table A1.1 – Monthly CSOBM statistics (£ million, money of the day)<sup>46</sup>**

Month	Sum	Average	Min	Max	Standard deviation
<b>Apr-02</b>	-0.93	-0.03	-0.39	1.55	0.37
<b>May-02</b>	16.80	0.54	-0.13	1.35	0.38
<b>Jun-02</b>	3.73	0.12	-0.25	0.51	0.20
<b>Jul-02</b>	6.19	0.20	-0.08	0.90	0.23
<b>Aug-02</b>	7.10	0.23	-0.08	0.81	0.24
<b>Sep-02</b>					
	5.01	0.17	-0.14	2.62	0.54

<sup>46</sup> For tables A1.1 to A1.4, each IBC component shows total cashflow for the month, average daily cashflow and minimum, maximum and standard deviation figures over the course of each month.

Month	Sum	Average	Min	Max	Standard deviation
Oct-02	7.99	0.26	-0.17	1.29	0.31
Nov-02	-0.80	-0.03	-0.39	0.43	0.19
Dec-02	9.12	0.29	-0.37	2.57	0.53
Jan-03	1.98	0.06	-0.45	0.73	0.25
Feb-03	2.95	0.11	-0.15	0.41	0.15
Mar-03	-0.64	-0.02	-0.29	0.79	0.24
Apr-03	1.70	0.06	-0.32	0.65	0.26
May-03	4.12	0.13	-0.27	0.78	0.27
Jun-03	5.87	0.20	-0.20	1.45	0.34
Jul-03	13.28	0.43	-0.19	2.62	0.64
Aug-03	6.90	0.22	-0.34	2.31	0.56
Sep-03	2.18	0.07	-0.27	0.28	0.14

## ***Balancing Services Contract Costs (BSCC)***

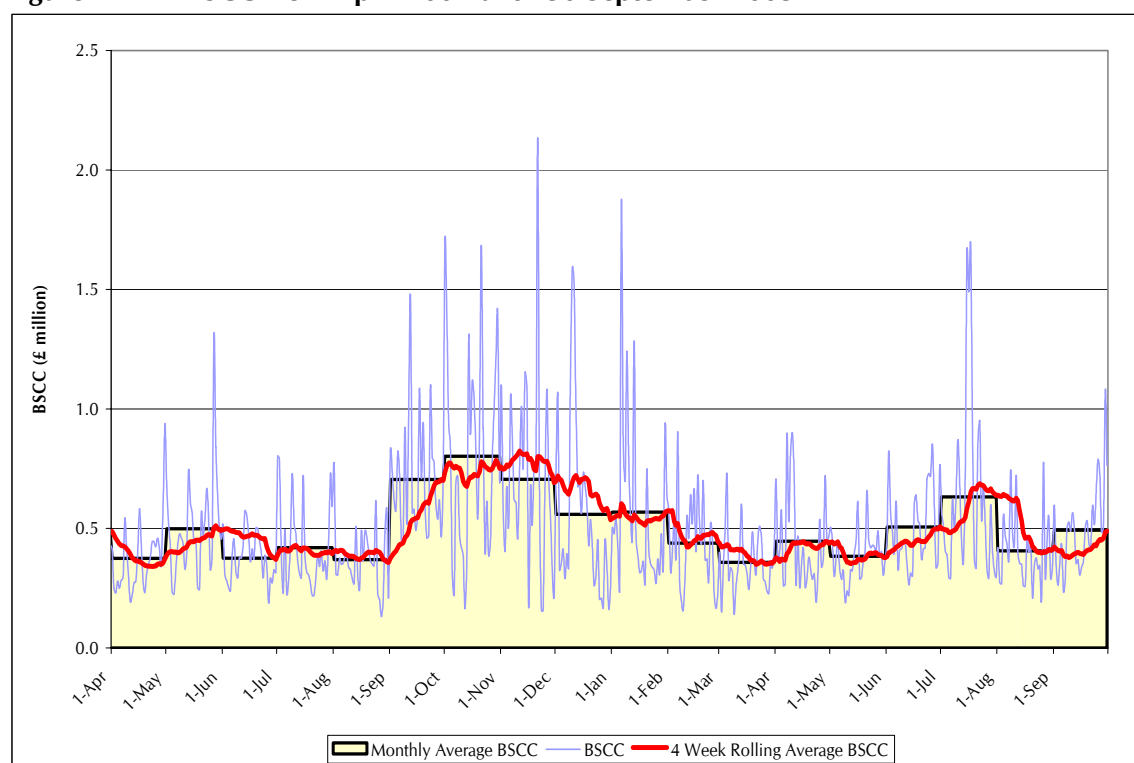
### ***Licence definition***

- 1.4 Under NGC's Transmission Licence,  $BSCC_t$  is defined as the costs to the licensee of contracts for the availability or use of balancing services during the relevant period  $t$ , excluding costs within  $CSOBM_t$  but including charges made by the licensee for the provision of balancing services to itself in the relevant period  $t$ .
- 1.5  $BSCC_t$  are the costs of the payments that NGC makes under contract to the providers of balancing services excluding any costs paid through the Balancing Mechanism. This includes costs associated with the procurement of energy, reserve, frequency response, some transmission constraints, black start and reactive power. All these costs are bundled together as BSCC for the purposes of the IBC calculation.

### ***Performance to date***

- 1.6  $BSCC_t$  over the period from 01 April 2002 to 31 March 2003 totalled £188.06 million. Cumulative daily BSCC from 1 April 2003 until 30 September 2003 was £87.53 million. Figure A1.2 shows daily BSCC, monthly average BSCC and a 4 week rolling average of BSCC for the period up until 30 September 2003.

**Figure A1.2 – BSCC from April 2002 until 30 September 2003**



1.7 As was the case for the year from Go-Live, total monthly BSCC fluctuated over the first half of the financial year 2002/2003. Between August 2002 and September 2002, total monthly BSCC almost doubled from £11.46 million to £21.17 million. Monthly total BSCC climbed to a peak of £24.88 million in October 2002. BSCC remained high over the winter period before slowly falling to £11.12 million in March 2003. During the first half of the current financial year 2002/2003, BSCC continued to fluctuate before rising again to £19.60 million in July 2003. By September 2003, this figure had fallen by £4.79m to £14.81m. More detailed statistics concerning BSCC are presented in Table A1.2.

**Table A1.2 – Monthly BSCC statistics (£ million, money of the day)**

Month	Sum	Average	Min	Max	Standard deviation
Apr-02	11.25	0.38	0.19	0.94	0.15
May-02	15.49	0.50	0.22	1.31	0.21
Jun-02	11.26	0.38	0.19	0.57	0.10
Jul-02	13.02	0.42	0.22	0.80	0.17
Aug-02	11.46	0.37	0.13	0.77	0.13
Sep-02	21.17	0.71	0.44	1.47	0.24
Oct-02	24.88	0.80	0.17	1.70	0.42
Nov-02					
Dec-02	21.17	0.71	0.16	2.13	0.39
	17.34	0.56	0.16	1.59	0.37

Month	Sum	Average	Min	Max	Standard deviation
Jan-03	17.61	0.57	0.25	1.87	0.36
Feb-03	12.29	0.44	0.16	0.90	0.18
Mar-03	11.12	0.36	0.14	0.73	0.12
Apr-03	13.41	0.45	0.19	0.90	0.20
May-03	11.90	0.38	0.19	0.66	0.10
Jun-03	15.19	0.51	0.27	0.85	0.16
Jul-03	19.60	0.63	0.29	1.68	0.38
Aug-03	12.61	0.41	0.21	0.78	0.14
Sep-03	14.81	0.49	0.23	1.08	0.18

## ***Transmission Losses (TL) and Transmission Losses Reference Price (TLRP)***

### ***Licence definition***

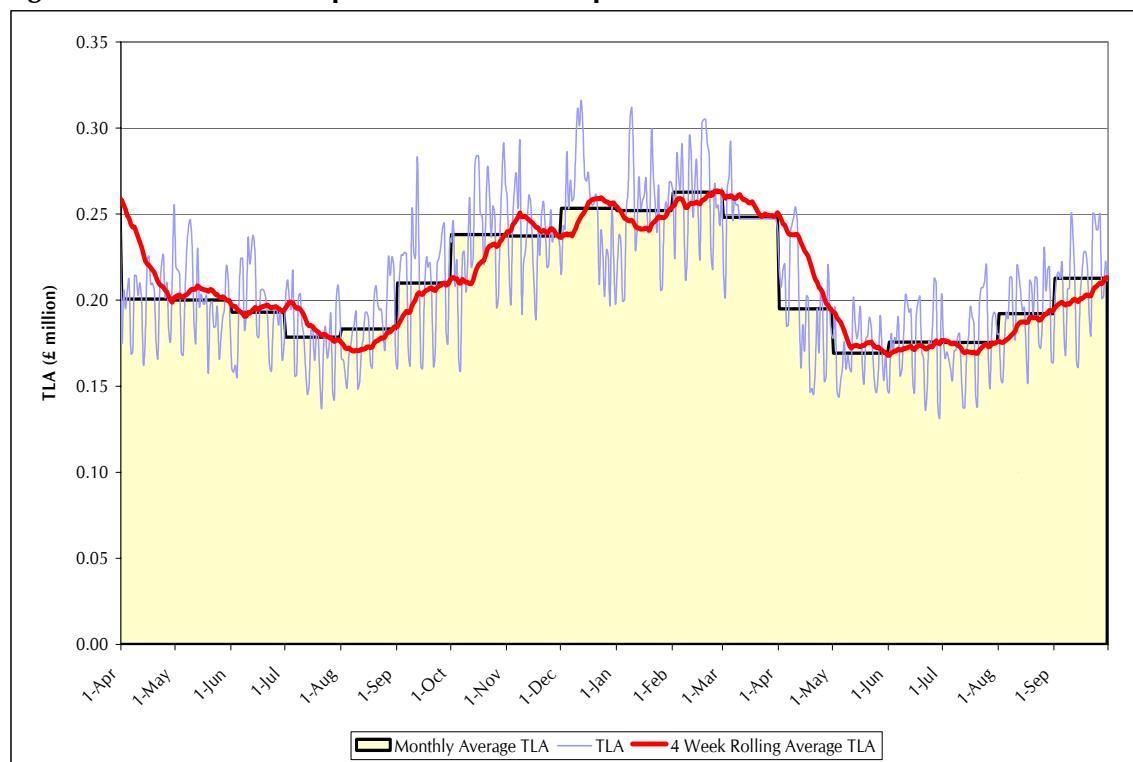
- 1.8 Under NGC's Transmission Licence,  $\sum_{it}(TL_i[TLRP_i])$ , referred to as the Transmission Losses Adjustment (TLA), is defined as the volume of Transmission Losses (TL<sub>i</sub>) multiplied by the Transmission Losses Reference Price (TLRP<sub>i</sub>) for each Settlement Period, summed across all Settlement Periods in the relevant period t. It is the difference between the quantities of electricity delivered to the licensee's transmission system and the quantity taken from the licensee's transmission system during that Settlement Period, but excluding all generator transformer losses.
- 1.9 NGC is incentivised to reduce the overall volume of losses and a reference price (TLRP) is required to allow a cost target to be included in IBC. TLRP<sub>i</sub> has the value specified for each Settlement Period set out in paragraph B3 of Part B of Schedule A of NGC's Transmission Licence. During the period from 27 March 2001 until 31 March 2002, TLRP was fixed at £20.30/MWh (after indexation). It was reduced to £18.50/MWh for the period from 1 April 2002 until 31 March 2003. For the period between 01 April 2003 and 31 March 2004, TLRP was further reduced to £17.00/MWh.

### ***Performance to date***

- 1.10 Over the period from 01 April 2002 until 31 March 2003, TLA<sub>t</sub> totalled £80.76 million. Cumulative daily TLA from 1 April 2003 until

30 September 2003 was £34.15 million. Figure A1.3 shows daily TLA, monthly average TLA and a 4 week rolling average of TLA for the period up until 30 September 2003.

**Figure A1.3 – TLA from April 2002 until 30 September 2003**



- 1.11 Historically, TLA has been the least volatile of the IBC components because of the annually fixed nature of the transmission losses reference price. Moreover, the value of TLA depends only on the volume of transmission losses in any given period. As the transmission losses volume is a function of the volume of electricity generated (or demanded), there is a clear correlation between seasonal demand patterns and the value of TLA.
- 1.12 The value of TLRP itself is constantly under review, and altered on an annual basis. As a result of alterations to TLRP, the value of TLA has changed slightly year-on-year. For incentive scheme period 2002/2003 the spread between maximum daily TLA and minimum daily TLA was £0.18 million, whilst for the current scheme this figure has fallen to £0.12 million. More detailed statistics concerning TLA are presented in Table A1.3.

**Table A1.3 – Monthly TLA statistics (£ million, money of the day)**

Month	Sum	Average	Min	Max	Standard deviation
Apr-02	6.02	0.20	0.16	0.26	0.02
May-02	6.20	0.20	0.16	0.25	0.02
Jun-02	5.79	0.19	0.16	0.24	0.03
Jul-02	5.53	0.18	0.14	0.22	0.02
Aug-02	5.68	0.18	0.15	0.23	0.02
Sep-02	6.30	0.21	0.16	0.28	0.03
Oct-02	7.38	0.24	0.16	0.29	0.03
Nov-02	7.12	0.24	0.19	0.29	0.02
Dec-02	7.86	0.25	0.20	0.32	0.03
Jan-03	7.81	0.25	0.20	0.31	0.03
Feb-03	7.36	0.26	0.21	0.31	0.03
Mar-03	7.70	0.25	0.20	0.29	0.01
Apr-03	5.85	0.20	0.15	0.25	0.03
May-03	5.25	0.17	0.14	0.20	0.02
Jun-03	5.27	0.18	0.13	0.21	0.02
Jul-03	5.44	0.18	0.14	0.22	0.02
Aug-03	5.96	0.19	0.15	0.23	0.02
Sep-03	6.38	0.21	0.16	0.25	0.03

## ***Total Net Energy Imbalance Volume (TQEI) and the Net Imbalance Volume Reference Price (NIRP)***

### ***Licence definition***

- 1.13 Under NGC's Transmission Licence,  $\sum_{jt}(TQEI_j[NIRP_j])$ , referred to as the Net Imbalance Adjustment (NIA), is defined as the Total Net Imbalance Volume<sup>47</sup> ( $TQEI_j$ ), as defined in the BSC in force immediately prior to 1 April 2001, multiplied by the Net Imbalance Volume Reference Price ( $NIRP_j$ ) for each Settlement Period, summed across all Settlement periods in the relevant period  $t$ .  $\sum_{jt}(TQEI_j[NIRP_j])$ .
- 1.14  $NIRP_j$  has the value specified for each Settlement Period set out in paragraph B4 of Part B of Schedule A of NGC's Transmission Licence. During the period from 27 March 2001 until 31 March 2002,  $NIRP_j$  was based on imbalance prices using the definitions of System Buy Price (SBP) and System Sell Price (SSP) included in the version of the BSC in force immediately prior to 1 April 2001.

<sup>47</sup> The total net imbalance volume is the sum of all imbalance volumes over all energy accounts other than

Whether SBP or SSP applied was dependent upon TQEI. NIRP was set to be equal to SBP when the system was short, i.e.  $TQEI < 0$ , SSP when the system was long, i.e.  $TQEI > 0$ , and zero when the system was in balance.

- 1.15 The definition of NIRP was changed for the current incentive scheme. The first stage in deriving  $NIRP_j$  is now to calculate the Single Price Net Imbalance Volume Reference Price for the settlement period ( $SPNIRP_j$ ). This is a market based reference price calculated from a basket of power exchange prices (the United Kingdom Power Exchange and United Kingdom Automated Power Exchange). A variable price adjustment is then applied to  $SPNIRP_j$  to give  $NIRP_j$ . When the system is long  $SPNIRP_j$  is multiplied by 0.5 whereas when the system is short it is multiplied by 2.5.

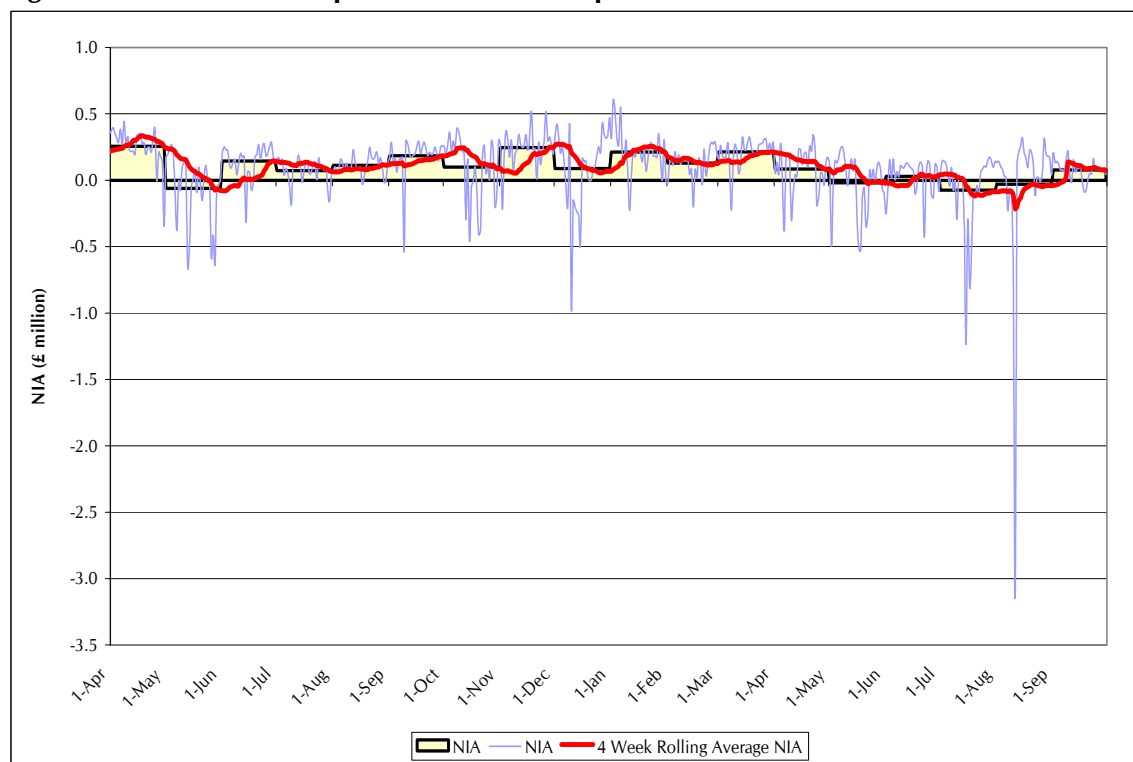
### ***Performance to date***

- 1.16  $NIA_t$  over the period from 01 April 2002 until 31 March 2003 totalled £51.66 million. Cumulative daily NIA from 1 April 2003 until 30 September 2003 was £2.06 million. Figure A1.4 shows daily NIA, monthly average NIA and a 4 week rolling average of NIA for the period up until 30 September 2003.

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energy accounts held by the Transmission Company.

**Figure A1.4 – NIA from April 2002 until 30 September 2003**



1.17 Over the first two incentive scheme periods, NIA has been predominantly positive, reaching a peak of £8.77 million in total for November 2001. Over the last six months of financial year NETA Go-Live to 31 March 2002, NIA summed to £48.32 million. This is over 43 per cent of total NIA from NETA Go-Live to 30 September 2003 (which sums to £111.61 million).

1.18 For the most part, NIA has been positive because the system has tended to be long. This means that the TQEI element of NIA has been positive and contributes to the magnitude of IBC. Over time, the tendency to be long has lessened, and fell substantially upon implementation of BSC Modification P78<sup>48</sup> on 11 March 2003.

1.19 For a number of months under each incentive scheme period, average monthly NIA has actually been negative. This does not necessarily mean that the system has been short as the value of the Net Imbalance Reference Price is greater when the system is short than when it is long. With this in mind, the system has been

<sup>48</sup> Information concerning BSC Modification P78 "Revised definitions of system buy price and system sell price" can be found on ELEXON's website at [http://www.elexon.co.uk/ta/modifications/mods\\_docs.html](http://www.elexon.co.uk/ta/modifications/mods_docs.html)



considerably shorter over the current incentive scheme period, with NIA being negative for 28 per cent of all the days during the period (51 days out of 183 days). From NETA Go-Live to 31 March 2003, this figure was just 15 per cent (110 days out of 735 days). More detailed statistics concerning NIA are presented in Table A1.4.

**Table A1.4 – Monthly NIA statistics (£ million, money of the day)**

Month	Sum	Average	Min	Max	Standard deviation
Apr-02	7.71	0.26	-0.34	0.44	0.15
May-02	-1.87	-0.06	-0.65	0.27	0.25
Jun-02	4.40	0.15	-0.32	0.29	0.12
Jul-02	2.25	0.07	-0.18	0.19	0.09
Aug-02	3.51	0.11	-0.03	0.25	0.07
Sep-02	5.53	0.18	-0.54	0.30	0.15
Oct-02	3.07	0.10	-0.46	0.39	0.24
Nov-02	7.40	0.25	-0.22	0.52	0.14
Dec-02	2.74	0.09	-0.98	0.47	0.31
Jan-03	6.62	0.21	-0.23	0.60	0.16
Feb-03	3.67	0.13	-0.20	0.29	0.11
Mar-03	6.63	0.21	-0.22	0.33	0.11
Apr-03	2.55	0.09	-0.38	0.34	0.17
May-03	-0.57	-0.02	-0.53	0.25	0.22
Jun-03	0.90	0.03	-0.43	0.16	0.13
Jul-03	-2.27	-0.07	-1.23	0.17	0.31
Aug-03	-0.90	-0.03	-3.14	0.32	0.61
Sep-03	2.35	0.08	-0.09	0.22	0.07

## ***Other Allowed Income (RT) and Balancing Services provided to others (OM)***

### ***Licence definition***

- 1.20 Under NGC's Transmission Licence,  $RT_t$  is defined as the amount of any allowed income adjustment, given by paragraph 12(b) of special condition AA5A, in respect of relevant period  $t$ .
- 1.21 NGC's Transmission Licence defines  $OM_t$  as the amount representing the revenue from the provision of balancing services to others during relevant period  $t$ , calculated in accordance with paragraph 7 of special condition AA5A.

## ***Performance to date***

1.22 From the introduction of NETA to date, OM has been zero, whilst RT has been non-zero for one event. RT can only be non-zero if Ofgem agrees to a change to the incentive scheme target as a result of an Income Adjusting Event (IAE). To date, NGC is the only party to have issued a notice to the Authority outlining costs or expenses incurred or saved which it considered to relate to an Income Adjusting Event. In March 2003, NGC gave notice to Ofgem that it considered an IAE had occurred during November 2002. The Authority approved the proposed IAE in June 2003 and RT was assigned a value of £5.34 million (and so reduced IBC by £5.34 million)<sup>49</sup>.

## ***Contribution of components to IBC***

1.23 In addition to examining the trends of the individual components of IBC, an examination of each component's relative contribution to IBC throughout the period is set out below. Tables A1.5 and A1.6 provide a breakdown of average monthly IBC component totals and their contributions to IBC.

**Table A1.5 – Average monthly IBC component totals (£ million, money of the day)<sup>50</sup>**

<b>Period</b>	<b>CSOBM</b>	<b>BSCC</b>	<b>TLA</b>	<b>NIA</b>	<b>IBC</b>
<b>Go-Live to Sep-03</b>	5.10	13.75	6.65	3.60	29.11
<b>Go-Live to Mar-02</b>	5.05	11.59	7.03	4.45	28.12
<b>Apr-02 to Mar-03</b>	4.88	15.67	6.73	4.31	31.58
<b>Apr-03 to Sep-03</b>	5.67	14.59	5.69	0.34	26.30

**Table A1.6 – Average monthly IBC components as proportion of IBC<sup>51</sup>**

<b>Period</b>	<b>CSOBM</b>	<b>BSCC</b>	<b>TLA</b>	<b>NIA</b>
<b>Go-Live to Sep-03</b>	18%	47%	23%	12%
<b>Go-Live to Mar-02</b>	18%	41%	25%	16%
<b>Apr-02 to Mar-03</b>	15%	50%	21%	14%
<b>Apr-03 to Sep-03</b>	22%	55%	22%	1%

1.24 Monthly total CSOBM averaged £4.88 million for the period from 1 April 2002 until 31 March 2003 equating to a contribution of 15 per cent to overall IBC

<sup>49</sup> Full details can be found in "Income adjusting event under NGC's 2002/03 system operator incentive scheme, a decision document", June 2003, Ofgem at the following address:  
[http://www.ofgem.gov.uk/temp/ofgem/cache/cmsattach/3775\\_Drax\\_IAE\\_DecisionvFINAL1.pdf](http://www.ofgem.gov.uk/temp/ofgem/cache/cmsattach/3775_Drax_IAE_DecisionvFINAL1.pdf)

<sup>50</sup> This table shows monthly sums for each IBC component and averaged for each time period.

<sup>51</sup> This table shows monthly sums for each IBC component, averaged per time period as a proportion of the

over this period. This has risen to £5.67 million for the current incentive scheme period to 30 September 2003, accounting for 22 per cent of IBC. Over the entire period since Go-Live, CSOBM has accounted for 18 per cent of IBC, averaging £5.10 million each month.

- 1.25 Monthly total BSCC averaged £15.67 million for the period from 1 April 2002 until 31 March 2003, which is almost £4.1 million higher than average BSCC under the initial incentive scheme post NETA Go-Live. Under the current incentive scheme period to 30 September 2003, average monthly BSCC fell to £14.59 million. Although in absolute terms this is a reduction, in relative terms it is an increase as the share of IBC that this accounts for has risen from 50 per cent for financial year 2002/2003 to 55% for financial year 2003/2004. BSCC continues to make the largest contribution to IBC of all its components.
- 1.26 Monthly total TLA averaged £6.73 million for the period from 1 April 2002 until 31 March 2003, accounting for 21 per cent of IBC. Over the current incentive scheme period to 30 September 2003, monthly total TLA has averaged £5.69 million, representing 22 per cent of IBC. TLA has accounted for around 23 per cent of total IBC costs over the entire period from Go-Live until 30 September 2003.
- 1.27 Monthly total NIA averaged £4.31 million for the period from 1 April 2002 until 31 March 2003, accounting for 14 per cent of IBC. Total monthly NIA has averaged £0.34 million from the period for the current period, between 1 April 2003 and 30 September 2003. This is equivalent to just 1 per cent of average monthly IBC over this period.
- 1.28 Additional detail is provided in the tables below. Table A1.7 presents the monthly values of each of the components of IBC, while Table A1.8 shows each component's monthly percentage contribution to IBC.

**Table A1.7 – Monthly IBC component totals (£ million, money of the day)**

Month	CSOBM	BSCC	TLA	NIA	IBC
Apr-02	-0.93	11.25	6.02	7.71	24.05
May-02	16.80	15.49	6.20	-1.87	36.62
Jun-02					
	3.73	11.26	5.79	4.40	25.19

sum of IBC per month, averaged over each time period.

Month	CSOBM	BSCC	TLA	NIA	IBC
Jul-02	6.19	13.02	5.53	2.25	27.00
Aug-02	7.10	11.46	5.68	3.51	27.75
Sep-02	5.01	21.17	6.30	5.53	38.01
Oct-02	7.99	24.88	7.38	3.07	43.33
Nov-02	-0.80	21.17	7.12	7.40	34.90
Dec-02	9.12	17.34	7.86	2.74	37.05
Jan-03	1.98	17.61	7.81	6.62	34.02
Feb-03	2.95	12.29	7.36	3.67	26.27
Mar-03	-0.64	11.12	7.70	6.63	24.80
Apr-03	1.70	13.41	5.85	2.55	23.51
May-03	4.12	11.90	5.25	-0.57	20.70
Jun-03	5.87	15.19	5.27	0.90	27.23
Jul-03	13.28	19.60	5.44	-2.27	36.05
Aug-03	6.90	12.61	5.96	-0.90	24.57
Sep-03	2.18	14.81	6.38	2.35	25.73

**Table A1.8 – Monthly IBC components as proportion of IBC**

Month	CSOBM	BSCC	TLA	NIA
Apr-02	-4%	47%	25%	32%
May-02	46%	42%	17%	-5%
Jun-02	15%	45%	23%	17%
Jul-02	23%	48%	20%	8%
Aug-02	26%	41%	20%	13%
Sep-02	13%	56%	17%	15%
Oct-02	18%	57%	17%	7%
Nov-02	-2%	61%	20%	21%
Dec-02	25%	47%	21%	7%
Jan-03	6%	52%	23%	19%
Feb-03	11%	47%	28%	14%
Mar-03	-3%	45%	31%	27%
Apr-03	7%	57%	25%	11%
May-03	20%	57%	25%	-3%
Jun-03	22%	56%	19%	3%
Jul-03	37%	54%	15%	-6%
Aug-03	28%	51%	24%	-4%
Sep-03	8%	58%	25%	9%

# Appendix 2 The regulatory framework

## ***Introduction***

- 2.1 This appendix summarises the current regulatory framework for the electricity industry. It outlines the current legislative, licensing and regulatory regimes and describes the relationship between the Electricity Act 1989, the Utilities Act 2000, licences and industry agreements.

## ***The Electricity Act 1989 (the “Electricity Act”)***

- 2.2 The Electricity Act, as amended by the Utilities Act 2000, provides the framework for the functions of the Gas and Electricity Markets Authority (the “Authority”) and sets out the licensing regime in relation to the supply, distribution, generation and transmission of electricity.
- 2.3 Under section 9(2) of the Electricity Act, holders of Transmission Licences are obliged to develop and maintain an efficient, co-ordinated and economical system of electricity transmission and to facilitate competition in the supply and generation of electricity.

## ***The Utilities Act 2000 (the “Utilities Act”)***

- 2.4 The Utilities Act received Royal Assent on 28 July 2000. It introduced a new principal objective for the Authority, as defined in Section 3A of the Electricity Act. The Authority’s principal objective 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”.

## ***NGC’s Electricity Transmission Licence***

- 2.5 NGC owns and operates the national grid in England and Wales, which transports electricity at high voltage from the generators to the local distribution networks and to customers connected directly to the transmission system. The

Secretary of State granted, under section 6(1) of the Electricity Act, an Electricity Transmission Licence to NGC. NGC is the sole possessor of an Electricity Transmission Licence in England and Wales.

### ***Special condition AA4***

2.6 NGC's transmission licence contains several provisions relating to information provision and transparency:

- ◆ special condition AA4 (1) requires the licensee to operate the licensee's transmission system in an efficient, economic and co-ordinated manner; and
- ◆ special condition AA4 (2) prohibits the licensee from discriminating as between any persons or classes of persons in its procurement or use of balancing services.

2.7 NGC is required to procure any balancing services competitively and via transparent processes. In order to fulfil this requirement, NGC is obliged under special condition AA4 of the transmission licence to have in place two documents<sup>52</sup>:

- ◆ the Procurement Guidelines (PGs), which detail the types of balancing services that NGC may be interested in purchasing, together with the mechanisms envisaged for purchasing such balancing services. Table 3 within Part E of the PGs outlines NGC's approach to providing information relating to its procurement of balancing services in order to provide market participants and other interested parties with sufficient information without compromising the commercial position of any contracting party. Table 3<sup>53</sup> is reproduced in Appendix 7 of the Initial Proposals; and
- ◆ the Balancing Principles Statement (BPS), which defines the broad principles and criteria by which NGC will determine, at different times

<sup>52</sup> Details of the PGs, BPS and the BSAD Methodology Statement can be found at NGC's website [www.nationalgrid.com/uk/indinfo](http://www.nationalgrid.com/uk/indinfo).

<sup>53</sup> The version of Table 3 reproduced is that which will apply from 25 February 2003 following the recent

and in different circumstances, which balancing services it will use to assist in the operation of the transmission system.

### ***Special condition AA5***

- 2.8 Special condition AA5A sets restrictions on the revenues that NGC is allowed to earn from its Transmission Business. For this purpose, NGC's activities are split between its Transmission Network Services (TNS) and its Balancing Services Activity (BSA).
- 2.9 The TNS activities are defined as including all NGC's authorised activities relating to the planning, development, construction and maintenance of the transmission system (except for its BSA and excluded services). The BSA covers procuring and using balancing services for the purpose of balancing the licensee's transmission system. As such, the TO carries out the TNS activities whilst the SO carries out the BSA activity.
- 2.10 Part 1 of special condition AA5A outlines the revenue restriction in relation to NGC's TNS, while Part 2 outlines the revenue restriction in relation to its BSA.
- 2.11 The TNS revenue restriction is in the form of an RPI-X price control. The current restriction started on 1 April 2001 and is due to finish on 31 March 2006.<sup>54</sup> The BSA revenue restriction consists of a profit-sharing (sliding-scale) incentive scheme, which has separate targets for NGC's internal and external SO costs.

## ***Industry Codes***

### ***The Balancing and Settlement Code (the "BSC")***

- 2.12 The BSC's scope is defined in general terms in the Transmission, Generation and Supply licences. The BSC is a code that sets out the rules for the Balancing Mechanism and imbalance settlement process under NETA and it is maintained by NGC under supplementary standard condition C3 of its Transmission Licence.

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conclusion of a PGs consultation.

<sup>54</sup> Details of the current revenue restriction can be found in 'The transmission price control review of the National Grid Company from 2001: transmission asset owner, Final proposals', Ofgem, September 2000.

- 2.13 The BSC sets down the arrangements in respect of:
- ◆ 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.
- 2.14 A BSC Panel has been created and charged with overseeing the management, modification and implementation of the BSC rules, as specified in Section B of the BSC. The Panel has twelve representatives made up from industry members, consumer representatives, independent members and NGC. The Authority appoints the Chairman of the Panel.
- 2.15 The Balancing and Settlement Code Company (ELEXON<sup>55</sup>) supports the BSC Panel. The primary purpose of ELEXON is to provide or procure a range of operational and administrative services (both directly and through contracts with service providers) and to implement the provisions of the BSC and modifications to it.
- 2.16 The details of the modification procedures are contained in Section F of the BSC. They are designed to ensure that the process is as efficient as possible whilst enabling as many parties as possible to propose modifications and have the opportunity to comment on modification proposals. Whilst Ofgem cannot initiate any modifications, it is required to approve or reject all modifications to the BSC, according to defined criteria.

### ***The Connection and Use of System Code (the "CUSC")***

- 2.17 NGC is required under supplementary standard condition C7F of the Transmission Licence to prepare the CUSC. The CUSC is a licence-based code, setting out the principal rights and obligations in relation to connection to and/or use of the Transmission System and to the provision of certain balancing

<sup>55</sup> The Balancing and Settlement Code Company was named ELEXON Limited on 7 June 2000.



services. The CUSC was designated by the Secretary of State on 25 June 2001 and came into effect on 18 September 2001.

- 2.18 A CUSC Panel has been charged with overseeing the CUSC amendment process as specified in Section 8 of the CUSC. The Panel has representatives made up from industry members, consumer representatives, independent members and NGC. The Chairman of the Panel is appointed by NGC and must be a senior employee of NGC. NGC is responsible for implementing or supervising the implementation of Approved Amendments as outlined in paragraph 8.2.3.3 of the CUSC. As with the BSC, while Ofgem cannot initiate amendments, it is required to approve or reject all amendments to the Code, according to defined criteria.