

## National Grid Electricity Transmission and National Grid Gas System Operator Incentives from 1 April 2008

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### Overview:

National Grid Electricity Transmission (NGET) is the System Operator (SO) for the electricity transmission system in Great Britain (GB), and National Grid Gas (NGG) is the SO for the gas transportation system. This document sets out our final proposals for SO incentive schemes for NGET and NGG to apply from April 2008, including statutory licence modification consultations. These proposals include enhancements to the incentive arrangements to sharpen NGET and NGG's focus on the environmental impact of their actions.

If NGET and NGG consent to our final proposals, and subject to responses to this consultation, the incentive schemes would be effective from 1 April 2008. If either NGET or NGG do not consent to the licence modifications, thereby not accepting our final proposals, we would have to decide whether to consult again on revised proposals, to refer the matter to the Competition Commission, or to rely on our existing powers for the purposes of regulating NGET and/or NGG.

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## Context

These proposals form part of our work to regulate monopolies effectively. We consider that it is important for both the gas and electricity markets that the roles of the system operators are correctly identified and that the system operators have the appropriate tools available to them to undertake these roles. Any interventions in the market by the system operators can lead to costs being incurred, both directly by the system operator and more widely by the market as a whole. Since customers ultimately bear these costs it is important to keep them as low as possible. Based on our experience over the past years, we remain of the view that the best way to achieve the lowest costs to customers is to provide the system operators with commercial incentives whereby they share some of the gains (losses) from cost reductions (increases).

## Associated Documents

- National Grid Gas and Electricity System Operator Incentives: Initial Proposals Consultation Report, National Grid, 18 February 2008
- National Grid Gas and Electricity System Operator Incentives: Initial Proposals Consultation, National Grid, 7 December 2007
- National Grid Electricity Transmission and National Grid Gas System Operator External Incentive schemes to apply from 1 April 2008 - Initial Proposals: Open letter, Ofgem, 7 December 2007
- National Grid Electricity Transmission and National Grid Gas System Operator Review - Next steps: Open letter, Ofgem, 1 November 2007
- Review of Electricity and Gas System Operator Role, Functions and Incentives: Initial Thoughts, Ofgem, 8 August 2007
- National Grid Electricity Transmission and National Grid Gas System Operator Review, Ofgem, 18 May 2007
- National Grid Gas System Operator Incentives from 1 April 2007: Final proposals and statutory licence consultation, Ofgem, 21 March 2007
- National Grid Electricity Transmission System Operator Incentives from 1 April 2007: Final proposals and statutory licence consultation, Ofgem, 27 February 2007

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## Summary

In this document we set out our final proposals for the electricity and gas transmission system operator schemes for National Grid Electricity Transmission (NGET) and National Grid Gas (NGG) to apply from 1 April 2008. We consider that our final proposals represent a fair balance of risk and reward between National Grid and its customers.

### Ofgem's Final Electricity SO Proposals

NGET forecast incentivised balancing costs of £544m<sup>1</sup> for 2008/09. As a result of our analysis, we consider that there is sufficient uncertainty in NGET's forecasts costs to warrant the inclusion of a deadband in the incentive scheme target of £15m.

NGET proposed a number of different electricity scheme options. However, we feel that we have not seen convincing evidence to support a significant change to the form of the incentive mechanism. Further, based on responses to NGET's consultation, no consensus has formed in the industry as to the most appropriate scheme option. However, respondents did indicate a preference for equal sharing factors. Given this, and our view of NGET's forecast costs, we propose a scheme with a deadband of £529-£544m and parameters which are slightly sharper than the 2007/08 arrangements. The parameters of our final proposal are set out below<sup>2</sup>.

| IBC Target | Upside (reward to NGET if costs are below target) |          | Downside (payment by NGET if costs are above target) |            |
|------------|---------------------------------------------------|----------|------------------------------------------------------|------------|
| £m         | Sharing factor (%)                                | Cap (£m) | Sharing factor (%)                                   | Floor (£m) |
| 529 - 544  | 25                                                | 15       | 25                                                   | -15        |

### Ofgem's Final Gas SO Proposals

NGG provided forecasts with respect to gas shrinkage volumes and operating margins. Along with a number of respondents to NGG's initial proposals we were particularly concerned about the gas shrinkage volumes forecasts. Following discussions with NGG, which highlighted some inaccuracies in NGG's model, we propose a gas shrinkage volume which is 405GWh lower than NGG's original, or approximately £8m (on a target of £116m).

In relation to the proposed gas scheme options, we feel that we have not seen convincing evidence to support a significant change to the current incentive

<sup>1</sup> This is an increase on the £530m target forecast presented in the 7 December 2007 consultation document.

<sup>2</sup> In addition to this scheme we are also proposing to continue to incentivise NGET in respect of transmission losses, our proposals for losses are discussed further below and in Chapter 2.

mechanisms. We therefore propose to base the new incentives on the existing schemes except in four areas:

- we are proposing to set a quarterly incentive for shrinkage because of the uncertainty in this area. Retaining the existing annual incentive would result in a risk that payments under the scheme hit the cap or collar early in the year, this would reduce the effectiveness of the incentive<sup>3</sup> which could result in increased costs for customers;
- we are proposing to introduce a reference price to incentivise NGG's purchase of electricity for electric compressors;
- we are proposing to modify the Gas Reserve incentive so that NGG is incentivised to optimise both space and utilisation costs; and
- we are proposing to create separate information incentive mechanisms to incentivise NGG to maintain the current level of performance and to enhance the current level of service by upgrading IT systems, respectively. Respondents to the initial proposals consultation generally expressed the view that, whilst the information incentive had been effective at promoting improved performance, the current scheme allowed NGG too much upside.

## Environmental issues

We are proposing a number of enhancements to the incentive arrangements to sharpen National Grid's focus on the environmental impact of its actions. Under the electricity scheme, we are proposing to uplift the price associated with transmission losses to reflect the costs associated with environmental impacts of this lost energy. Under the gas incentive scheme, we are proposing to uplift the price applied to shrinkage volumes to reflect the costs associated with the greenhouse gas emissions associated with shrinkage. We are also planning to introduce an incentive on NGG to reduce methane emissions associated with venting, and include our initial proposals for such an incentive in this document.

## Next Steps

Subject to responses to this consultation, if NGET and NGG consent to these final proposals the licence modifications would be effective from 1 April 2008. If NGET and/or NGG do not consent, we will have to decide whether to consult again on revised proposals, to refer the matter to the Competition Commission, or else rely on direct regulation of NGET's and/or NGG's SO costs based on our existing powers.

The process that we have undertaken this year has also demonstrated that there are a number of areas where considerable further work should be undertaken to establish a solid basis in order for longer term incentives to be developed. We will therefore actively engage with National Grid and market participants in this process from 1 April 2008.

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<sup>3</sup> It should be noted that NGG has received the maximum payout under the shrinkage scheme for the last five years, a point made by a number of respondents.

## 1. Introduction

### Chapter Summary

This chapter provides a short background on the process so far. It also provides an outline of the structure of this document and the way forward.

### Question box

There are no specific questions in this chapter.

## Background

1.1. National Grid Electricity Transmission (NGET), a subsidiary of National Grid plc, is the system operator (SO) for the high voltage electricity transmission system in Great Britain (GB), with responsibility for making sure that electricity supply and demand stay in balance and the system remains within safe technical and operating limits<sup>4</sup>.

1.2. National Grid Gas (NGG), another subsidiary of National Grid plc, is the SO for the gas National Transmission System (NTS) in GB and has responsibility for the residual balancing activity on the NTS. The transmission and transportation licences of NGET and NGG respectively require each to act in an efficient, economic and co-ordinated manner in performing their respective roles.

1.3. In addition, to their licence requirements, we also look to incentivise NGET and NGG financially to operate the gas and electricity systems in the most economic and efficient manner.

## Process

1.4. On 1 November 2007, we published an open letter in which we detailed that we had decided to use a different process to develop the SO incentive schemes to apply from 1 April 2008. In previous years, NGET and NGG have provided their forecasts of the costs that they will incur in their roles as gas and electricity SO respectively. Ofgem has then scrutinised these forecasts and published its Initial Proposals consultation document for incentive schemes based on the information provided to it

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<sup>4</sup> NGET is also the owner of the high voltage electricity transmission network in England and Wales, whilst in Scotland the transmission network is owned by Scottish and Southern Energy and Scottish Power.

by NGET and NGG. Based on the responses received to this consultation, Ofgem has then produced final proposals, including proposed licence modifications.

1.5. This year, instead of Ofgem taking the lead at the initial proposals stage, we requested that NGET and NGG (National Grid<sup>5</sup>) provided and consulted upon its own set of proposals. On 7 December 2007, National Grid published its Initial Proposals consultation. National Grid received twelve responses to this consultation, which it has shared with Ofgem<sup>6</sup>. National Grid also held a series of one-to-one meetings with interested parties and held a workshop on 10 January 2008.

1.6. We have scrutinised NGET and NGG's forecasts for their respective incentivised SO costs; considered the responses to National Grid's Initial Proposals consultation and the views expressed at National Grid's Workshop on 10 January; and we have also received further information from NGET and NGG. All of this information has helped us to develop our final proposals for the SO incentive schemes to apply to NGET's and NGG's external SO costs from 1 April 2008, which are discussed in this document<sup>7</sup>.

## Structure and approach

1.7. This final proposals document consists of three chapters. This chapter: provides the background to our proposals, outlines the process we are following in developing SO incentive schemes for NGET and NGG from 1 April 2008, and set the structure of the document and the way forward.

1.8. In Chapter 2 we discuss our final proposals for the electricity SO incentive scheme to apply to NGET's external SO costs from 1 April 2008. In Chapter 3 we discuss our final proposals for the gas SO incentive scheme to apply to NGG's external SO costs from 1 April 2008. In both chapters, we explain how our final proposals have been informed by National Grid's initial proposals, the views of market participants and the additional information provided by NGET and NGG.

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<sup>5</sup> For the purposes of the provision of initial proposals and the associated consultation we refer to NGET and NGG as National Grid. Where we refer to specific proposals relating to gas and electricity we will refer to NGET and NGG as appropriate.

<sup>6</sup> Appendix 2 of this document contains Ofgem's summary of these responses. National Grid has also published a report on its Initial Proposals Consultation. The non-confidential responses and both National Grid documents are available on the National Grid website.

<sup>7</sup> NGET and NGG currently have incentive schemes in place which relate to their internal SO costs, these schemes run until March 2012. Therefore these final proposals only relate to external costs, the current incentive schemes for which expire on 31 March 2008.

## Way forward

1.9. Appendix 3 of this document contains a statutory notice of our proposal to modify by agreement NGET's electricity transmission licence under section 11 of the Electricity Act 1989. Appendix 4 of this document contains a statutory notice of our proposal to modify by agreement NGG's gas transporter licence under section 23 of the Gas Act 1986. These statutory modification notices propose to implement the proposals set out in this document (subject to responses to this consultation).

1.10. We would welcome the views of interested parties on all aspects of our proposed modifications. Responses should be sent to [GB.markets@ofgem.gov.uk](mailto:GB.markets@ofgem.gov.uk), to be received no later than 26 March 2008. Further details of how to respond can be found in Appendix 1<sup>8</sup>.

1.11. The statutory notices under section 11 of the Electricity Act 1989 and section 23 of the Gas Act 1986 specify a period of not less than 28 days during which interested parties can make representations or objections to the proposed licence modifications, and during which the Secretary of State may direct the Gas and Electricity Markets Authority (the Authority) not to make the proposed modifications. Following any such representations, objections or direction, the Authority may make such revisions to the proposed licence modifications as it considers appropriate and carry out a further statutory consultation on the new proposed licence modifications.

1.12. NGET and NGG must consent to the proposed licence modifications to their respective licences before they can be implemented. If NGET and/or NGG do not consent to the proposed licence modifications Ofgem can refer the proposed SO incentive scheme modifications to the Competition Commission for final adjudication. Alternatively, we could allow the incentive schemes to fall away. If this occurs, NGET and/or NGG will simply pass through the actual costs of operating the system to parties using the respective system. Ofgem would then be responsible for directly regulating NGET's and/or NGG's performance as SO and could take enforcement action and impose financial penalties if NGET and/or NGG were operating the systems inefficiently, or were found to be in breach of other relevant licence conditions or other relevant statutory requirements.

1.13. If NGET and NGG consent to the proposed licence modifications, Ofgem intends, subject to any representations made during the consultation and any direction received from the Secretary of State, to direct the relevant modifications to NGET's transmission licence and NGG's transportation licence in line with the proposed licence modifications shortly after 26 March 2008, so that the new licence conditions would apply on and from 1 April 2008.

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<sup>8</sup> Appendix 7 provides details of how to give feedback to us on the manner in which this consultation has been conducted.

## Way forward - longer term

1.14. We feel that a number of aspects of the new process that was adopted to develop these incentive schemes have been a success. Industry participants have been significantly more engaged with the debate about the proposals for the SO incentive schemes and this has been reflected in the quality of consultation responses to National Grid's initial proposals. There was a consensus among respondents that the process should be continued next year, but starting earlier in the year and with additional data disclosure from National Grid.

1.15. This process has also demonstrated that there are a number of areas where considerable further work should be undertaken to establish a solid basis for longer term incentives to be developed. There are also a number of other workstreams, for example the Transmission Access Review, which have links to the development of SO incentives. We will therefore engage with National Grid and market participants to take this work forward from 1 April 2008. In our recent discussions with National Grid it has expressed a willingness to lead on this work. In this document we outline, where possible, the areas of work that we consider should be taken forward.

## 2. Electricity external costs incentive scheme from April 2008

### Chapter Summary

This chapter outlines the forecasts provided to us by NGET on electricity external SO costs for 2008/09 and NGET's initial proposals based on those forecasts, our views on NGET's forecasts and initial proposals following consideration of the views of respondents to National Grid's consultation, and our final proposals for an electricity external SO incentive scheme to apply from 1 April 2008.

### Question box

**Question 1: Do you consider that the final proposals for the SO incentive scheme to apply to NGET's external SO costs represent a fair balance of risk and reward?**

**Question 2: Do you consider that the proposed licence modifications appropriately reflect the final proposals as described in this chapter?**

### Background

2.1. Since the introduction of the New Electricity Trading Arrangements (NETA) in 2001 NGET's electricity SO incentive schemes have taken the form of a single target on the Incentivised Balancing Cost (IBC) with sharing factors, a cap and a floor. The incentive schemes for each year along with outturn IBC costs and baseload electricity prices are shown in Table 2.1.

**Table 2.1 Historical External SO Incentive Schemes<sup>9, 10</sup>**

| £ m            | Target           | Sharing factors |              | Cap  | Floor | Actual | NGET share | Outturn Baseload Prices (£/MWh) |
|----------------|------------------|-----------------|--------------|------|-------|--------|------------|---------------------------------|
|                |                  | Upside (%)      | Downside (%) |      |       |        |            |                                 |
| <b>2001/02</b> | 382              | 40              | 12           | 46.3 | -15.4 | 263.0  | 46.3       | 17.8                            |
| <b>2002/03</b> | 367              | 60              | 50           | 60   | -45   | 285.6  | 48.6       | 16.3                            |
| <b>2003/04</b> | 340              | 50              | 50           | 40   | -40   | 280.8  | 32.2       | 19.7                            |
| <b>2004/05</b> | 320              | 40              | 40           | 40   | -40   | 289.2  | 12.2       | 23.8                            |
| <b>2005/06</b> | 378              | 40              | 20           | 40   | -20   | 427.2  | -4.0       | 42.4                            |
| <b>2006/07</b> | No scheme agreed |                 |              |      |       | 495.0  | -          | 32.3                            |
| <b>2007/08</b> | 430 - 445        | 20              | 20           | 10   | 10    | 467.0  | -4.4       | 40.4 <sup>11</sup>              |

<sup>9</sup> Targets and actual IBC before 2005/06 have been recalculated to include net transmission losses.

<sup>10</sup> All data in money of the day.

<sup>11</sup> Based on YTD prices and forward prices.

2.2. In 2006/07, NGET and Ofgem did not agree on the IBC target and, as it is entitled to do under the Electricity Act 1989, NGET did not consent to our proposed incentive schemes. Ofgem chose to exercise its power to supervise this aspect of NGET's activities, rather than refer the matter to the Competition Commission.

### **2007/08 forecast costs**

2.3. NGET's current forecast for 2007/08 IBC is £467m<sup>12</sup>. The main increases<sup>13</sup> compared to the forecast prepared by NGET at the start of the regulatory period (in March/April 2007) are transmission losses (£19m), wholesale power prices and 'system length'<sup>14</sup> (£21m). The main decreases have been reserve (£-10m) and black start (£-4m).

2.4. Under the current incentive scheme there is a 'deadband' between £430m and £445m above which NGET is exposed to 20% of any increase in balancing costs up to a maximum of £10m. Based on the current reforecast outturn, NGET is expecting to lose £4.4m under the current scheme.

### **NGET's forecast of 2008/09 external SO costs**

2.5. In its initial proposals consultation (published 7 December 2007) NGET presented a mean forecast for its IBC for 2008/09 of £530m. NGET has since re-forecast these costs to be £544m. This forecast takes into account comments received from the initial proposals consultation process. NGET has presented this forecast as underlying balancing costs plus items which will give rise to increasing costs.

2.6. NGET predicts underlying balancing costs of £405m for 2008/09 as compared to an outturn forecast of £397m for these costs for the current year. A comparison of the latest estimates for the current year with the 2008/09 forecast can be seen in Table 2.2.

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<sup>12</sup> IBC forecast for 2007/08 set out in National Grid's initial proposals published on 7 December was £480m.

<sup>13</sup> Constraint costs have not increased overall between these two periods. NGET incurred additional constraint costs of £14m as a result of the summer floods and the constraining on of Scottish generation in the Autumn, but these have largely been offset by the need to constrain off a lower level of Scottish generation during the winter.

<sup>14</sup> 'System length' refers to the net imbalance between the contracted supply and contracted demand for electricity. NGET believe that SO costs are influenced by 'system length'.

**Table 2.2 NGET forecast of Underlying Balancing Costs 2008 / 09**

| All Categories £m                         | Latest 2007/08 Forecast, £m | Latest 2008/09 Forecast, £m | Difference, £m | Comment                                                                                                                             |
|-------------------------------------------|-----------------------------|-----------------------------|----------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Constraints England & Wales <sup>15</sup> | 33                          | 19                          | -14            | Additional costs incurred in 07/08 as a result of summer floods and the constraining-on of Scottish generation in the Autumn        |
| STOR <sup>16</sup>                        | 62                          | 65                          | 3              | Increase in tender prices                                                                                                           |
| Footroom                                  | 5                           | 4                           | -1             |                                                                                                                                     |
| Fast Reserve                              | 57                          | 60                          | 3              | Forecast increase in contract costs                                                                                                 |
| Frequency Response <sup>17</sup>          | 153                         | 145                         | -8             | Holding Costs have stabilised post implementation of CAP47 & CAP107 at approx £10m/month - some reduction from early 2007/08 levels |
| Reactive Power                            | 49                          | 63                          | 14             | Reactive Power Prices are linked to wholesale prices                                                                                |
| Blackstart                                | 14                          | 17                          | 3              | Increase in contract costs and service testing                                                                                      |
| Unclassified BM                           | 10                          | 9                           | -1             |                                                                                                                                     |
| BM+AS General                             | 3                           | 4                           | 1              |                                                                                                                                     |
| Reconciliation                            | 3                           | 0                           | -3             |                                                                                                                                     |
| <b>Sub-total system</b>                   | <b>389</b>                  | <b>386</b>                  | <b>-3</b>      |                                                                                                                                     |
| Energy Imbalance                          | 42                          | 42                          | 0              | Effects of changes in market length and increasing wholesale price                                                                  |
| Negative NIA                              | -159                        | -196                        | -37            |                                                                                                                                     |
| Margin                                    | 125                         | 173                         | 48             |                                                                                                                                     |
| <b>Sub-total Energy + Margin</b>          | <b>8</b>                    | <b>19</b>                   | <b>11</b>      |                                                                                                                                     |
| <b>Total</b>                              | <b>397</b>                  | <b>405</b>                  | <b>8</b>       |                                                                                                                                     |

<sup>15</sup> Although titled England and Wales constraints, NGET includes the costs of constraining on Scottish generation as a result of constraints across the England/Scotland border (for example during Autumn 2007) within this category.

<sup>16</sup> Short Term Operating Reserve, STOR.

<sup>17</sup> This total of frequency response costs include costs incurred by NGET within the Balancing Mechanism, for example costs payable to generators to be in a state of readiness to operate in frequency response mode.

2.7. In total, NGET has forecast that underlying balancing costs will be very similar in 2008/09 to the levels experienced in previous years (although there are several changes within individual cost components, as shown above).

2.8. In addition to the underlying balancing costs, NGET has forecast increased costs for Cheviot and within-Scotland constraints and for the impact of the Large Combustion Plant Directive (LCPD)<sup>18</sup> and increased wind penetration on the system; these are shown in Table 2.3<sup>19</sup>.

**Table 2.3 NGET forecast of components where costs are expected to increase in 2008/09**

| All Categories £m                 | Latest 2007/08 Forecast, £m | Latest 2008/09 Forecast, £m | Difference, £m | Comment                                                                                                                          |
|-----------------------------------|-----------------------------|-----------------------------|----------------|----------------------------------------------------------------------------------------------------------------------------------|
| Underlying balancing costs        | 397                         | 405                         | 8              | See table above                                                                                                                  |
| Constraints – Cheviot             | 27                          | 75                          | 48             | Significant outages across Cheviot boundary                                                                                      |
| Constraints – within Scotland     | 20                          | 39                          | 19             | Significant outages across a number of critical boundaries                                                                       |
| LCPD                              | 3                           | 15                          | 12             | Increased reserve costs resulting from implementation of LCPD on 1 January 2008                                                  |
| Wind                              | 0                           | 10                          | 10             | Increased reserve and frequency management costs resulting from increase in wind generation capacity on the system <sup>20</sup> |
| Transmission losses <sup>21</sup> | 19                          | 0                           | -19            | Assuming target volume will equal forecast volume                                                                                |
| <b>Total</b>                      | <b>467</b>                  | <b>544</b>                  | <b>78</b>      |                                                                                                                                  |

<sup>18</sup> The LCPD is designed to limit emissions of noxious gases from generation plant and places constraints on the way in which some plant can run.

<sup>19</sup> Figures do not sum as a result of rounding.

<sup>20</sup> NGET has not explicitly included SO costs associated with wind generation in its previous years' forecasts. However, we understand that NGET expects to incur £17m of costs related to wind generation in 2007/08.

<sup>21</sup> The transmission losses cost included is the net cost resulting from the difference between the target volume and the actual volume multiplied by the transmission losses reference price. NGET is forecasting this to be £0 in 2008/09, assuming that the target figure will be adjusted to equate to its forecast volume of losses.

## Transmission losses

2.9. NGET did not include its forecast of transmission losses volumes in its initial proposals consultation, but presented the transmission loss volume forecast contained in Table 2.4 below at its industry workshop on 10 January. NGET subsequently revised its forecast in a note to Ofgem on 31 January 2008.

**Table 2.4 NGET forecast of transmission losses**

| Year             | 2004/05 <sup>22</sup> | 2005/06 | 2006/07 | 2007/08 <sup>23</sup> | 2008/09 |
|------------------|-----------------------|---------|---------|-----------------------|---------|
| 10 January (GWh) | 4452                  | 5588    | 6102    | 6766                  | 7445    |
| 31 January (GWh) | -                     | -       | -       | 6500                  | 6900    |

2.10. NGET has also provided us with a quarterly forecast for 2008/09 which is contained in Table 2.5.

**Table 2.5 NGET forecast of transmission losses for 2008/09 by quarters**

| Quarter          | Q1   | Q2   | Q3   | Q4   | Total 2008/09 |
|------------------|------|------|------|------|---------------|
| 5 February (GWh) | 1610 | 1500 | 1840 | 1950 | 6900          |

## NGET's Scheme options for 2008/09

2.11. In its 7 December initial proposals consultation NGET proposed a menu of scheme options intended to allow participants to choose the level of risk and reward that they feel it is appropriate for NGET to be exposed to. These options can be seen in Table 2.6<sup>24</sup>.

2.12. Two of the options proposed by NGET included an element of indexation based on two possible components: the length of outages on the Cheviot boundary (as a result of changes to the completion of the Cheviot outage works) and/or to changes in wholesale prices.

<sup>22</sup> These losses relate only to the England and Wales system.

<sup>23</sup> These losses relate to seven months of actual losses plus five months of forecast.

<sup>24</sup> As shown above, since providing these scheme options, NGET has increased its forecast of costs from £530m to £544m. NGET has not provided us with corresponding amendments to its scheme proposals.

**Table 2.6 NGET's scheme options for 2008/09**

| Scheme                     | 1                                                    | 2                       | 3                                          | 4                        | 5                        | 6                        |
|----------------------------|------------------------------------------------------|-------------------------|--------------------------------------------|--------------------------|--------------------------|--------------------------|
| Target, £m                 | 481                                                  | 495                     | 530                                        | 520 to 540               | 530                      | 540                      |
| Upside sharing factor, %   | 35                                                   | 35                      | 15% from £530 to £520m<br>40% below £520m  | 40                       | 35                       | 15                       |
| Cap, £m                    | 20                                                   | 20                      | 10                                         | 10                       | 10                       | 7                        |
| Downside Sharing factor, % | 27                                                   | 27                      | 15% from £530m to £540m<br>20% above £540m | 15                       | 27                       | 15                       |
| Collar, £m                 | 20                                                   | 20                      | 10                                         | 15                       | 10                       | 7                        |
| Indexes                    | 1. Cheviot Outage weeks<br>2. Power price option (a) | 1. Cheviot Outage weeks | None, but could be added                   | None, but could be added | None, but could be added | None, but could be added |

### Transmission losses

2.13. The current SO scheme includes an incentive on NGET to minimise transmission losses works by combining a volume target with a reference price<sup>25</sup>. By extrapolating recent trends, NGET proposed a target with a deadband of +/- 0.3TWh around its central forecast for 2008/09, i.e. between 6.6TWh and 7.2TWh.

2.14. NGET assumed that the transmission losses reference price would be adjusted up from the 2007/08 level of £29/MWh to reflect recent increases in electricity prices for 2008/09.

### Ofgem's views on NGET's forecast of costs

2.15. We have taken account of the views expressed by respondents to National Grid's consultation, and have undertaken our own analysis of IBC and NGET's forecasts of these costs. We believe NGET's forecast of underlying balancing costs to be reasonable. We note that in preparing its latest forecast of £544m NGET has

<sup>25</sup> The difference between the actual and target volume of losses is multiplied by this reference price in order to calculate a total financial value of transmission losses.

revised its view of Net Imbalance Volumes (NIV) for 2008/09 to be closer to that seen in 2007/08. We also note that had NGET used the prevailing level of NIV seen during 2007/08 within its forecast this would have resulted in a further increase of £10m. We also recognise NGET's concerns regarding the uncertainty of costs which are related to the introduction of the LCPD, increasing wind generation and constraints (both within Scotland and Cheviot). We discuss each of these categories of costs further below.

**2.16. LCPD.** The LCPD limits the total number of hours that certain (coal and oil) generation plant can run which is likely to impact on bidding behaviour and, hence, on marginal costs<sup>26</sup>. NGET's central estimate of the impact of LCPD is that it will increase costs by £15m. The LCPD only became effective from January 2008 and it is therefore difficult to be sure about the impact that the Directive will have. We note that NGET did not amend its 2008/09 forecast of increased costs to account for the introduction of LCPD in January 2008; nevertheless, there is already evidence that some generators have amended their bidding behaviour. At this stage, we consider that NGET's central forecast of £15m to be an appropriate balance of these considerations. We consider that it is vital that NGET provides information to both market participants and Ofgem in relation to the effects on its costs as SO and on the wider market of the introduction of LCPD.

**2.17. Wind.** As a result of the variability and unpredictability of wind generation, NGET is of the view that it will be necessary to hold a higher volume of plant in reserve as cover for occasions when wind plant is not generating<sup>27</sup>. NGET's central estimate of the impact of wind is that it will increase costs by £10m<sup>28</sup>.

**2.18.** We consider that there is significant uncertainty surrounding the costs that will be incurred by the SO as a result of increasing wind generation on the system. For example, the impact of increasing wind generation on the ability to forecast generation output will depend on the pattern, and hence extent of diversification, of wind generation. We also note that whilst NGET has not explicitly forecast wind related costs for 2007/08, it currently expects to incur around £17m of such costs in the current year, for 2.5GW of wind capacity. Therefore in total NGET is forecasting to incur £27m of costs as SO as a result of wind generation in 2008/09, when it expects 3GW of wind generation to be installed. We note that alternative assumptions about the characteristics of wind generation will result in lower cost estimates. In particular, our analysis highlighted that by making small and plausible changes to NGET's assumptions regarding wind forecast error and/or the marginal cost of reserve procurement, NGET's forecast could be reduced by several million pounds and we have taken this into account in preparing our final proposals.

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<sup>26</sup> The impact of LCPD is expected to feed through into BM, reserve and constraint costs.

<sup>27</sup> In addition to reserve costs, NGET is of the view that effects of wind generation will also feed through into BM, frequency response and constraint costs.

<sup>28</sup> NGET has not explicitly included SO costs associated with wind generation in its previous years' forecasts. However we understand that NGET expects to incur around £17m of costs in relation to wind generation in 2007/08 and that NGET is therefore forecasting an increase in the total increase in costs as a result of wind generation from £17m to £27m.

2.19. In the light of Government commitments to increase the market share of wind generation, the impact of wind generation on SO costs is likely to be a growing concern. As a consequence, it is important that NGET fully understands the implications on its SO costs of increasing levels of wind generation. If wind generation does cause significant additional costs, it may be necessary to consider whether these costs are allocated in the most appropriate way.

2.20. **Scottish Constraints.** NGET has forecast constraint costs for the Cheviot boundary and within Scotland constraints to be £75m and £39m, respectively<sup>29</sup>. This compares to £35m and £22m for 2007/08. Much of this additional cost results from planned outages needed to upgrade the transmission system to support renewable generation. We note that, whilst plans for outages to the transmission system connecting Scotland and England are at an advanced stage, there is considerable uncertainty about the way in which these outages will impact on constraint costs. We have noted the views of respondents and have carried out an independent review of NGET's forecasts of constraint costs. Our analysis shows that alternative, plausible assumptions will result in varying forecasts of constraint costs.

2.21. **In summary**, feedback from the consultation process and our analysis has shown that there is potentially uncertainty in NGET's forecast costs, particularly in the three areas discussed above and NGET's assumptions of NIV. This uncertainty results in the wide forecast range put forward by NGET. However, we consider that it is also possible to adopt an alternative set of assumptions that can still reasonably be considered to be 'central'. Under an alternative set of assumptions it is credible that costs could outturn in the region of £529m. We therefore propose to establish a deadband between £529m (our estimate of costs) and £544m (NGET's estimate).

### Transmission losses

2.22. The level of transmission losses has continued to increase for reasons that NGET is unable to fully explain<sup>30</sup>. Transmission losses are imposing an increasing burden on end-users and have sustainability implications. If transmission losses are priced at prevailing wholesale prices, they cost around £350m per annum. In recent years, the increase in losses has added over £100m to this figure.

2.23. We judge it wholly unsatisfactory that NGET has no explanation for the rising trend in transmission losses. We consider it vitally important that NGET fully explains the rising trend in the volume of transmission losses and report its findings to interested parties. Our final proposals sharpen the incentive on NGET to identify the cause of recent increases in losses and to take actions to reduce losses.

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<sup>29</sup> Costs that National Grid incurs as a result of an import constraint into Scotland, such as those that occurred in Autumn 2007, are captured within England and Wales constraint costs which are included in the underlying balancing costs figure.

<sup>30</sup> National Grid is currently forecasting that under its transmission losses incentive it will incur £19m of additional costs in 2007/08 as a result of the increase in the volume of transmission losses.

## **Our views on National Grid's Scheme Options**

### **Scheme parameters**

2.24. NGET proposed a menu of scheme options intended to allow participants to choose the level of risk and reward that they feel it is appropriate for NGET to be exposed to. We have analysed the impact of each of NGET's options. Whilst it appears that NGET has been imaginative in presenting six options of different risk/reward balance, our analysis indicates that there is little difference between the scheme options, particularly around the target costs and upside and downside payments in the region of the target. Notably, the expected cost to consumers is identical under all the options. NGET has said to us that it would be broadly content to accept any of the options that it has proposed.

2.25. Respondents to National Grid's consultation did not express a strong preference for one of the options. However, there was a general view that the incentive scheme should be defined by symmetric parameters or, in other words, that the sharing factors and the cap/floor should be the same either side of target costs. Respondents also expressed a preference for NGET to be provided with sharper incentives than in 2007/08.

2.26. In its Initial Proposals document, NGET did not provide details of how its behaviour would be motivated by the wider cap/floor of some of the schemes or how customers would benefit from any behavioural changes that would result from the different scheme. We have subsequently asked NGET to explain how its behaviour would change if more significant sums of money were on the table. NGET has not been able to provide detailed information on such changes.

2.27. Although we note respondents' views that NGET should be provided with sharper incentives, we do not consider that it is appropriate materially to increase the value of the incentives on NGET since we have seen no evidence to support the view that a change would be in the interests of customers. We are therefore proposing a scheme which is based on the current regime, but which provides slightly sharper incentives - upside and downside sharing factors of 25% and a cap and floor each of £15m.

### **Indexation**

2.28. In its Initial Proposals, NGET suggested two possible options in respect of indexing SO costs: one to wholesale prices, and one to outage weeks on the Cheviot boundary. In respect of indexation to wholesale prices, NGET proposed an indexation level of +£2m change in target for each +£1/MWh change in outturn average annual wholesale price, and vice versa. In respect of indexation to outage weeks, NGET proposed an index to adjust the target by £1.57m for every week that the outage on the Cheviot boundary varies from the 2007/08 baseline of eight weeks.

2.29. We have carried out an independent review of NGET's proposed wholesale price indexation. Our analysis shows that the relationship NGET has put forward (i.e. indexing day ahead prices to daily incentivised balancing costs) is not statistically robust. Whilst we believe that this type of indexation clearly has merits (in that it shelters NGET from the effect of factors which lie outside its control) it is vital that any index is based on a robust relationship. We do not consider that NGET has demonstrated that its proposed approach is appropriate.

2.30. However, we are looking for NGET to take forward this work post 1 April 2008, as we, and a number of respondents to NGET's Initial Proposals consultation recognise that there are potential benefits in establishing relationships that recognise the link between IBC and other variables. Included in this work, we are asking NGET to consider whether the current Net Imbalance Adjustment calculation remains robust.

2.31. In respect of any indexation to Cheviot boundary outages, we agree with several respondents who consider that this form of indexation would reduce the incentive on NGET to reduce the number of outage weeks. This is because the operation of the incentive would reduce the financial impact on NGET of different lengths and severity of outage. For this reason, we do not believe that NGET's proposed indexation is appropriate. We plan to consider the nature of the relationship between the incentives on NGET as SO and the Scottish Transmission Owners as we develop the incentive mechanism that will apply from 1 April 2009.

## Ofgem's final proposals for an electricity incentive scheme to apply from 1 April 2008

### Incentive scheme parameters

2.32. As discussed above, we consider that we should develop a scheme based on a roll-over of the 2007/08 arrangements<sup>31</sup>, but with slightly sharper incentives and having made the appropriate adjustments to take account of our view of forecast costs. Our final proposal for the electricity incentive scheme is shown in Table 2.7.

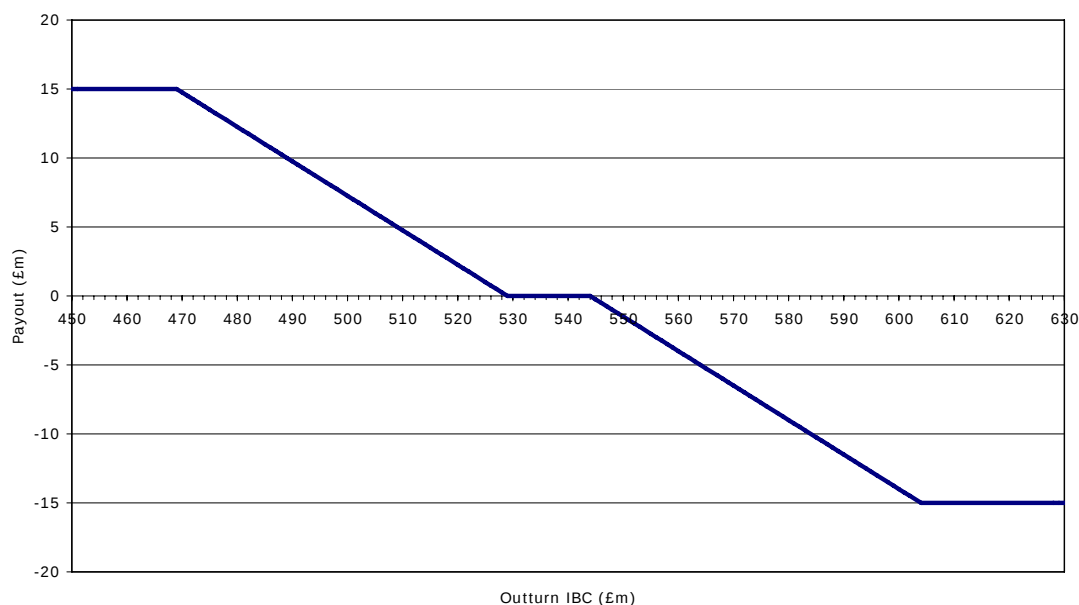
**Table 2.7 Final Proposal for 2008 / 09**

|         | IBC Target | Upside (reward to NGET if costs are below target) |          | Downside (payment by NGET if costs are above target) |            |
|---------|------------|---------------------------------------------------|----------|------------------------------------------------------|------------|
| £m      | £m         | Sharing factor (%)                                | Cap (£m) | Sharing factor (%)                                   | Floor (£m) |
| 2008/09 | 529 - 544  | 25                                                | 15       | 25                                                   | -15        |

<sup>31</sup> With appropriate changes to take into account the most up to date information on the costs likely to be incurred by National Grid.

2.33. These proposals are illustrated diagrammatically in Figure 2.1.

**Figure 2.1 Final Proposal for 2008 / 09**



### Transmission losses

2.34. We are also proposing to sharpen the incentive on NGET to investigate the causes of the recent increase in transmission losses and to take actions to reduce losses.

2.35. We propose to utilise our powers under the licence to request NGET to carry out an investigation into the causes of the recent increases in transmission losses. We will ask for this work to be completed by the end of June 2008.

2.36. We also propose to increase the transmission loss reference price: first, in line with forward price rises (to £56/MWh, in line with the price used in NGET's latest forecast); and second, to adjust this upward to reflect the shadow cost of carbon (£6/MWh). We therefore propose to increase the reference price to £62/MWh from £29/MWh.

2.37. Finally, because NGET does not have a full explanation for the recent increase in losses, we propose to base the transmission loss target on quarterly data and to adjust this data in the light of the findings from NGET's investigation. Any changes to the losses target will be considered via an industry consultation.

2.38. In combination, we consider that these three actions will increase pressure on NGET to resolve this issue.

## Income Adjusting Events

2.39. In line with the current incentive scheme, we believe that it is appropriate to retain the income adjusting event (IAE) provisions for the scheme in 2008/09. However, it is important to note that these provisions not only allow NGET the opportunity to raise an IAE, but also for third parties as well (i.e. in the event that unanticipated demand and supply conditions lead to a significant and unexpected change in costs to the benefit of NGET).

2.40. We consider that it is appropriate for the Authority to have the power to approve certain events as IAEs, for example if there are major structural changes in wholesale markets<sup>32</sup>. These could occur in either direction and might be notable because of a significant change in the outturn wholesale price (either higher or lower) relative to the current forward curve. In considering an IAE for a structural shift in the wholesale market we would also take a view on, for example, how much NGET could or had hedged its risk exposure through the forward market.

2.41. By contrast, if (for example) the behaviour of a market participant appeared to deviate markedly from operating patterns that might reasonably be expected, or result in materially different prices from those which would reasonably be expected, this might be evidence of a breach of that person's licence or an abuse of a dominant position under the Competition Act 1998.

2.42. We would expect any market participant that believed it was incurring additional cost as a consequence of another participant's behaviour to raise a complaint to Ofgem. We would expect the provision of sufficient evidence and information in order to explain properly the case; NGET would have an important role in providing this information<sup>33</sup>.

2.43. Of course, Ofgem would consider any complaint made and whether or not it has reasonable grounds to investigate on a case by case basis taking into account the relevant circumstances.

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<sup>32</sup> IAEs may also be needed in response to force majeure events under the BSC and CUSC; and/or security events; and as a result of events arising directly from the implementation of a modification to the BSC and CUSC.

<sup>33</sup> It is helpful in such situations if complainants clearly explain any breach/abuse and put together a well formed case with the appropriate evidence. Complainants should include copies of all relevant information evidencing the breach/abuse and the materiality of the harm. This may include minutes of internal risk assessment meetings, correspondence with the relevant party (including emails, minutes of meetings, notes of telephone conversations etc.) and other such documents which establish the facts of the case or the effects on the complainant/market.

### 3. Gas external costs SO incentive scheme from April 2008

#### Chapter Summary

This chapter outlines the forecasts provided to us by NGG on gas external SO costs and volumes for 2008/09 and NGG's initial proposals based on those forecasts, our views on NGG's forecasts and initial proposals, and our final proposals for a gas external SO incentive scheme to apply from 1 April 2008.

#### Question box

**Question 1: Do you consider that the final proposals for the SO incentive scheme to apply to NGG's external SO costs represent a fair balance of risk and reward?**

**Question 2: Do you consider that the proposed licence modifications appropriately reflect the final proposals as described in this chapter?**

**Question 3: Do you agree that NGG should be provided with an incentive to minimise methane emissions? If so, please provide your comments on how it should be addressed.**

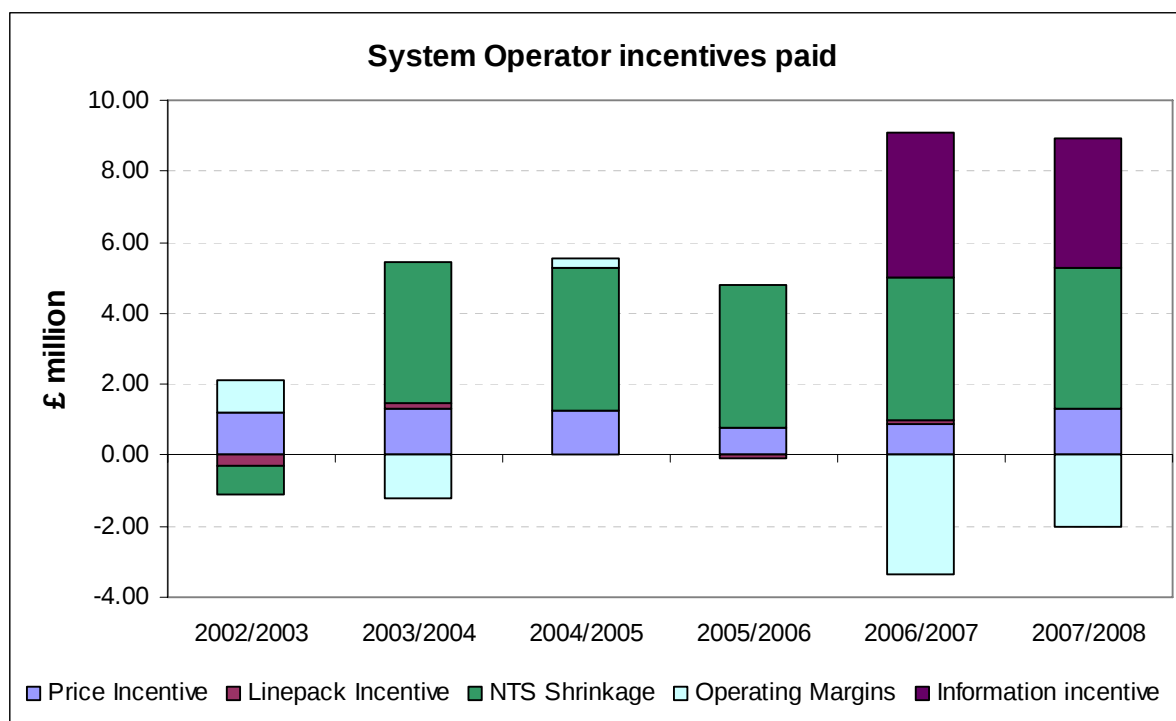
#### Background

3.1. Unlike electricity, the gas SO incentive scheme is unbundled - NGG is incentivised on a number of cost areas independently of each other. Each cost area has its own cap/floor and sharing factor<sup>34</sup>. NGG looks to optimise its performance over each individual component.

3.2. As can be seen in Figure 3.1, historically NGG has earned money on its gas SO incentive scheme, with the gas shrinkage incentive being a consistent source of earnings. More recently, Ofgem has put in place an incentive to drive NGG to improve its information provision to the market. This incentive has also proved to be a consistent source of earning for NGG. NGG is currently forecast to earn £6.9m under the schemes in total in 2007/08.

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<sup>34</sup> This is different from the arrangements for electricity where there is a single cost target around which NGET is incentivised.

**Figure 3.1 NGG's performance under previous incentive schemes**

### NGG's forecast costs 2008 / 09-plus

3.3. The need for forecast costs only arises for certain elements of the gas incentives. NGG's forecast for each relevant component of the gas incentives is set out below.

#### Shrinkage

3.4. NGG's shrinkage cost target is composed of a volume target (composed of three elements) which is multiplied by a price target. These are discussed separately below.

#### Volume

3.5. The three elements of shrinkage volume are compression energy, calorific value shrinkage and unaccounted for gas:

- **Compression energy** is the energy (both gas and electricity) which is used to run compressors to transport gas through the National Transmission System.

NGG has commenced a programme of work to change some of the existing gas compressors with electric compressors. The capital expenditure for this

programme was agreed as part of the Transmission Price Control Review. The introduction of electric compressors will have a material impact on gas energy volumes. (NGG uses a ratio of 3:1 which it considers reflects the average relative energy efficiencies of gas-driven and electricity-driven compressors).

NGG's forecast of compression energy volumes has decreased substantially from last year<sup>35</sup>. This is as a result of an increase in the diversity of flows (which has resulted in less reliance on flows from St Fergus which are typically associated with higher compressor usage). NGG has again proposed that its volume of compression energy is linked to total flows through St Fergus, as this has a significant bearing on the overall volume used.

- **CV shrinkage** is energy which cannot be billed as a result of the CV capping regime<sup>36</sup>. Historically CV shrinkage volumes have been very small. However, NGG has highlighted a potential new risk as a result of increases in LNG flows (LNG is more likely to be at the limits of the allowable CV range and therefore more likely to 'cap' other flows<sup>37</sup>).

Whilst NGG considers the probability of LNG-related CV shrinkage to be low, if capping does occur, the impact would potentially be very significant. For example, under some circumstances NGG estimates that LNG flows at Milford Haven and at PX Teesside might give rise to 707GWh and 858GWh of CV shrinkage gas, respectively. NGG has proposed that it should not be incentivised on these volumes<sup>38</sup>.

- **Unaccounted for gas (UAG)** is the gas that remains after taking account of all other factors. In recent years, volumes of UAG have been around a fifth of the size of the compression energy requirement. For next year, NGG is forecasting a slight decrease in volume (as compared with the outturn volumes for 2005/06, 2006/07 and the forecast for 2007/08).

3.6. The volumes proposed by NGG in December 2007 are summarised Table 3.1.

<sup>35</sup> The exact amount of this decrease is dependent on flows through the St Fergus terminal. NGG's central case forecast for next year as set out in its initial proposals consultation is for a decrease in energy compression volumes of 12% compared with this year.

<sup>36</sup> Established through the Gas (Calculation of Thermal energy) Regulations 1996.

<sup>37</sup> For the purpose of energy settlement, all gas entering a particular LDZ is 'deemed' to have a single calorific value regardless of the actual energy content of the gas. In circumstances where gas from a particularly low (or high) calorific value source is entering an LDZ it can cap (or be capped by) other sources of gas to that LDZ. This leads to a shortfall in energy terms between the amount of gas entering the NTS and that leaving it. This is referred to as CV shrinkage and represents an amount of gas that must be purchased by National Grid in its role as SO. The risk of significant CV capping occurring is increasing as supplies become more diverse (especially in the case of LNG imports).

<sup>38</sup> NGG also asked whether the current CV capping rules in the Gas (Calculation of Thermal Energy) Regulations are appropriate.

**Table 3.1 Forecast shrinkage gas requirements**

| X = Average annual volumetric flow through ST. Fergus terminal (mcm/d) | Compression OUG component (gas GWh) | Compression ECE component (elec GWh) | CV Shrinkage (gas GWh) | UAG (gas GWh) |
|------------------------------------------------------------------------|-------------------------------------|--------------------------------------|------------------------|---------------|
| X<85                                                                   | 3000                                | 259                                  | 150                    | 1161          |
| 85<=X<90                                                               | 3682                                | 315                                  | 150                    | 1161          |
| 90<=X<95                                                               | 3953                                | 338                                  | 150                    | 1161          |
| 95<=X<100                                                              | 4228                                | 360                                  | 150                    | 1161          |
| 100<=X<105                                                             | 4499                                | 383                                  | 150                    | 1161          |
| X>105                                                                  | 5097                                | 433                                  | 150                    | 1161          |

*Price*

3.7. NGG proposed to establish an interim methodology for determining the Gas Cost Reference Price (GCRP) which will apply in 2008/09. This interim methodology is the same as the existing GCRP except that it utilises the following reference periods:

- for the "summer" quarters (Q1 2008/09 and Q2 2008/09), the reference period is 1 January 2008 to 31 March 2008, inclusive; and
- for the "winter" quarters (Q3 2008/09 and Q4 2008/09), the reference period is 1 January 2008 to 30 June 2008, inclusive.

3.8. NGG proposed that, for years beyond 2008/09, the existing enduring GCRP methodology would apply. In other words, the target price will be based on the forward gas price for the formula year as quoted in the 12 months before the start of the formula year.

3.9. In addition, reflecting the anticipated increase in the use of electric compressors, NGG proposed that an electricity cost reference price (ECRP) methodology be established using a similar methodology to that for the gas cost reference price. Specifically, this reference price is determined from:

- a seasonal wholesale power price (for 2008/09 this would be derived from published prices taken over the period 1 March 2008 to 31 March 2008);
- forecast transmission and distribution use of system charges; and
- an uplift for additional retail and load profile costs.

**Operating Margins (OM)**

3.10. OM services are purchased by NGG to meet the requirements set out in the Uniform Network Code and through its safety case. NGG's forecast requirement for OM gas volumes for 2008/09 is 15% lower than the forecast for last year. This is a result of the expected commissioning of new NTS infrastructure and an anticipated increase in supply diversity, especially the LNG importation terminals at Milford Haven. In addition the locational element, as a proportion of the total requirement,

has also decreased due to increased supply diversity. Overall, NGG is forecasting a total OM cost of £23.3m<sup>39</sup> for 2008/09, a decrease of 9% on last year.

### **Information incentives**

3.11. The information incentives are designed to provide NGG with a financial incentive for providing accurate and timely gas market operational information. The current incentive scheme has two components: the first provides an incentive for NGG to forecast demand accurately; and the second relates to the quality and availability of other information which is utilised by Market Participants.

3.12. NGG has identified a set of potential investments which would result in the greater availability of market-related data. These investments are associated with modifications to source systems, data transfer protocols and configuration arrangements, improvements to web interfaces, and enhancements to load management. NGG forecast that the cost of these investments would be up to £600k in 2008/09.

### **NGG's scheme options for 2008/09-plus**

3.13. As with electricity, NGG has proposed a menu of scheme options which, in NGG's view, is intended to allow participants to choose the level of risk and reward that they feel it is appropriate for NGG to be exposed to. This menu of options is set out in more detail below.

### **Shrinkage**

3.14. NGG's proposed options for 2008/09 are shown in Table 3.2. NGG's proposals are variances on the current scheme with changes to sharing factors, caps and collars and scheme duration.

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<sup>39</sup> The cost of LNG storage is based on the C3 prices in NGG's transporter licence for 2007/08 inflated by an RPI of 3.8%. For the non-LNG storage sites, an estimate of the costs of capacity has been used.

**Table 3.2 NGG's proposed scheme options for the shrinkage incentive**

| Scheme  | Duration | Annual Cap | Upside Sharing Factor | Annual Collar | Downside Sharing Factor |
|---------|----------|------------|-----------------------|---------------|-------------------------|
| Current | 1 year   | £4m        | 25%                   | £-3m          | 20%                     |
| A       | 1 year   | £10m       | 40%                   | £-6m          | 35%                     |
| B       | 1 year   | £5m        | 25%                   | £-3m          | 20%                     |
| C       | 2 years  | £8m        | 30%                   | £-5m          | 25%                     |
| D       | 4 years  | £10m       | 40%                   | £-6m          | 30%                     |
| E       | 4 years  | £6m        | 25%                   | £-4m          | 20%                     |

**Operating Margins (OM)**

3.15. Under recent schemes, NGG has only been incentivised on the 'space' component of storage. No allowance has been made for the utilisation charges (withdrawal and injection overrun charges) that it would incur if it utilised the OM gas. NGG does not propose to amend the way the space component of gas stored for OM purposes is incentivised. However, NGG has proposed a target for OM utilisation. NGG has proposed a number of schemes to address this (see scheme options in Table 3.3):

- **Scheme A.** NGG has proposed that all utilisation costs should be passed through directly to customers.
- **Scheme B.** Historically, on average a small amount of utilisation costs are incurred each year (around £0.27m). NGG has proposed that the target should be increased by £0.27m and that it should be exposed to a maximum loss of £0.5m against any utilisation costs.
- **Scheme C.** NGG has proposed that the target should be increased by £1.08m (four times the typical annual utilisation) with no collar on utilisation costs.

**Table 3.3 NGG's proposed scheme options for the OM incentive**

| Scheme  | Target<br>(pending<br>C3 prices) | Holding<br>Cost Cap | Holding<br>Cost Collar | Upside<br>Sharing<br>Factor | Downside<br>Sharing<br>Factor | Utilisation<br>Cost Collar |
|---------|----------------------------------|---------------------|------------------------|-----------------------------|-------------------------------|----------------------------|
| Current | £25.6m                           | none                | none                   | 100%                        | 100%                          | None                       |
| A       | £23.3m                           | none                | none                   | 100%                        | 100%                          | £0                         |
| B       | £23.57m                          | none                | none                   | 100%                        | 100%                          | -£0.5m                     |
| C       | £24.38m                          | none                | none                   | 100%                        | 100%                          | None                       |

**Residual balancing incentive**

3.16. The incentive scheme for residual balancing is not based on a target, but rather on a daily measure of NGG's performance against two benchmarks:

- the price at which it bought/sold gas to balance the system; and
- the deviation of the closing linepack from the figure the day before.

3.17. NGG's proposed options for 2008/09 are shown in Table 3.4 and can be explained as follows:

- **Scheme A.** For the price and linepack incentives, NGG has proposed that the daily caps and collars are increased by RPI (since the incentive was set originally in 2002). For the linepack incentive, NGG has also proposed that the benchmark measure is increased to reflect the additional amount of linepack in the system now as compared with 2002.
- **Scheme B.** NGG has proposed that the linepack incentive is removed and that the value of the incentive is transferred to the price incentive.

**Table 3.4 NGG's proposed scheme options for the residual balancing incentive**

| Scheme  | Duration | Price Incentive |     |              | Linepack Incentive |        |              | Overall Annual Cap / Collar |
|---------|----------|-----------------|-----|--------------|--------------------|--------|--------------|-----------------------------|
|         |          | Daily Cap       | PIR | Daily Collar | Daily Cap          | PIR    | Daily Collar |                             |
| Current | 1 year   | £+5k            | 10% | £-30k        | £+5k               | 2.4mcm | £-30k        | £+3.5m / £-3.5m             |
| A       | 1 year   | £+6k            | 10% | £-35k        | £+6k               | 3.1mcm | £-35k        | £+3.5m / £-3.5m             |
| B       | 1 year   | £+10k           | 7%  | £-60k        | Remove             |        |              | £+3.5m / £-3.5m             |

## Information incentives

3.18. As discussed above, the current incentive scheme for information provision has two components: demand forecasting accuracy, and quality of information provision. The incentive scheme is not based on a target but rather is based on a daily measure of NGG's performance against a benchmark (the deviation of the day-ahead demand forecast from the outturn figure for that day and the availability and timeliness of the publication of certain data such as demand and flows on to the network).

3.19. For the demand forecast incentive, NGG has proposed a simple roll-over. It argues this is justified because the increasing diversity of gas supply will require it to invest in its forecasting processes and systems simply in order to maintain the current level of accuracy.

3.20. For the quality of information incentive, NGG has proposed to expand the data items that are currently incentivised to include all reports which attract a similar level of user interest. This would result in 16 sets of reports being incentivised. Based on this set of data items, NGG has proposed two options, shown in Table 3.5. Option A is based on a set of potential investments that NGG estimates will cost up to £600k. The potential investments underpinning Option B are expected to cost up to £850k.

**Table 3.5 NGG's proposed scheme options for quality of information incentive**

| Scheme  | Duration | Max Incentive Return | Incentive Return for Achieving Target Improvement | Target Improvement                                        |
|---------|----------|----------------------|---------------------------------------------------|-----------------------------------------------------------|
| Current | 1 year   | £1.5m                | £1m                                               | Reduce unavailability by 27%<br>Improve timeliness by 27% |
| A       | 1 year   | £1.8m                | £1.2m                                             | Reduce unavailability by 25%<br>Improve timeliness by 25% |
| B       | 2 years  | £2.5m                | £1.7m                                             | Reduce Unavailability by 50%<br>Improve Timeliness by 40% |

## Our views on NGG's forecasts of costs and scheme options

### Shrinkage

#### Volumes

3.21. We have considered the views expressed by respondents to National Grid's consultation. We have also carried out an independent review of NGG's shrinkage forecasts. In general, we are satisfied that there is a sufficiently strong relationship between shrinkage volume and flows via St Fergus for the target to be linked with St Fergus flows. We are also satisfied that it is appropriate to adjust compressor

volumes to take account of the electric compressor changeover programme. However, we have identified a number of areas in NGG's original forecasts which warranted further consideration:

- a reduction of 219GWh in respect of compression energy, resulting from inaccuracies in NGG's model as a consequence of increasing flows through Easington; and
- amendments to the forecasting methodology for UAG.

3.22. Following discussions with NGG, we consider that NGG's original forecast should be reduced by 405GWh.

3.23. In our discussions with NGG we have also become aware that shrinkage volumes are sensitive to supply and demand levels that amongst other things are influenced by weather conditions. Retaining the existing annual incentive would result in a risk that payments under the scheme hit the cap or floor early in the year; this would reduce the effectiveness of the incentive and hence reduce benefits to customers. For this reason we intend to set the incentive on a quarterly basis. We also consider that a review of the appropriate basis for forecasting shrinkage should be one of the areas taken forward from 1 April 2008.

3.24. As noted by a number of respondents, NGG has not furnished any evidence to support a change in the scheme parameters from those agreed under the current arrangements. In particular, NGG has not described how its behaviour would change under different scheme options. We propose to retain the current scheme parameters, having made appropriate adjustments for the transition to a quarterly incentive mechanism.

3.25. As noted above, NGG has highlighted a potential new risk to CV shrinkage volumes due to increases in LNG flows. NGG has proposed that it should not be incentivised on these volumes. We have considered the views of respondents to National Grid's consultation who generally agreed that NGG is unable to influence CV LNG-related shrinkage costs. We propose that the shrinkage incentive for 2008/09 should be adjusted so that these volumes fall outside NGG's incentives. However, we have asked NGG to work with BERR and Ofgem to explore the scope to modify the current CV-capping regime and we will consider the appropriate treatment of these volumes for the incentive arrangements to be in place from April 2009.

3.26. Based on these amendments the forecast shrinkage gas<sup>40</sup> and electricity volumes<sup>41</sup> for each quarter are outlined in our final proposals below.

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<sup>40</sup> This includes the requirement for OUG, CV shrinkage and UAG.

<sup>41</sup> The program for the installation of the electric compressors has been revised since the publication of National Grid's initial proposals.

### *Prices*

3.27. The majority of respondents supported NGG's proposals to establish an interim GCRP for 2008/09. We consider that NGG's proposals form an appropriate basis for incentivising the purchase of shrinkage gas in 2008/09.

3.28. The majority of respondents also supported NGG's proposals to establish an enduring GCRP which will apply from 1 April 2009. However, a number of respondents commented that the GCRP benchmark should be modified to better reflect NGG's gas buying strategy. A number of respondents stated that this could be achieved by using a mixture of forward and seasonal average prompt prices. Two respondents suggested a split of 75%-25% forward–prompt split. We are proposing to modify the enduring GCRP methodology so that it reflects a 75%-25% forward-prompt split.

3.29. Most respondents supported NGG's proposals regarding the ECRP. However, a number of respondents expressed concerns about NGG's proposed methodology. The ECRP is a new aspect of the incentive regime. We consider that it will be important to review the experience of the ECRP during 2008/09 before forming a view about the way in which NGG should be incentivised to purchase energy for electric compressors from 1 April 2009.

### **OM gas**

3.30. For NGG's OM gas incentive scheme we are proposing to amend the current arrangements to provide NGG with an incentive to optimise the total cost of OM by extending the incentive to include both the cost of reserving storage space and the cost of utilising this space. We judge that this is more likely to result in an outcome which is in customers' interests.

3.31. We noted that respondents did not express a strong preference for one of the three options proposed by NGG. We propose to adopt NGG's Option B, which represents a modest change from the current arrangements.

### **Residual balancing and linepack incentive**

3.32. NGG has neither provided a justification for its proposal to remove the linepack incentive, nor has it explained why it is necessary to up-rate the parameters to take account of RPI or the growth in the system. Respondents to NGG's consultation did not express a common view on either of these potential changes to the regime. For this reason we propose to retain the existing scheme. We plan to ask NGG to consider the operation of the residual balancing and linepack incentive as we work to develop arrangements which will apply from 1 April 2009.

### **Information incentive**

3.33. We agree with a number of respondents to National Grid's consultation who considered that it was appropriate to strengthen the incentive on NGG to forecast demand in an accurate way. We are therefore proposing to roll-over the current form of the incentive but tighten the target from 4% to 3.5%.

3.34. For NGG's quality of information incentive (website performance) we are proposing to create an incentive for NGG to maintain the current level of information provision by establishing a mechanism through which NGG will be penalised if current performance levels fall. Under the current arrangement, NGG can earn up to £1m if it meets its performance target for timeliness and availability with the possibility for it to earn a further £0.5m for additional over-performance up to a 100% improvement. Currently NGG is not 'penalised' if its performance is below the benchmark. We propose to adjust the sliding scale arrangement currently in place so that NGG earns £75,000 if it meets its performance benchmarks for timeliness and availability with the possibility for it to earn a further £25,000 for additional over-performance up to a 100% improvement. In addition, we propose that this sliding scale be symmetrical around the benchmark.

3.35. Further, we intend to establish a modest incentive for NGG to further improve performance, commensurate with the level of investment required to deliver this improvement.

### **Ofgem's final proposals for gas incentive schemes to apply from 1 April 2008**

3.36. In this section we provide details of our final proposals for each component of the gas SO costs incentive schemes.

#### **Shrinkage**

3.37. As discussed above, we consider NGG's forecast shrinkage volumes should be reduced by 405GWh. As a result of uncertainties in shrinkage volumes arising from different weather conditions, we propose to set the incentive on a quarterly basis. The target volumes for the incentive are shown in Table 3.6.

**Table 3.6 Ofgem's proposed target volumes for the gas shrinkage incentive**

| X = Average annual volumetric flow through ST. Fergus terminal (mcm / d) | Shrinkage gas Q1 (gas GWh) | Shrinkage elec Q1 (elec GWh) | Shrinkage gas Q2 (gas GWh) | Shrinkage elec Q2 (elec GWh) | Shrinkage gas Q3 (gas GWh) | Shrinkage elec Q3 (elec GWh) | Shrinkage gas Q4 (gas GWh) | Shrinkage elec Q4 (elec GWh) |
|--------------------------------------------------------------------------|----------------------------|------------------------------|----------------------------|------------------------------|----------------------------|------------------------------|----------------------------|------------------------------|
| X < 85                                                                   | 1108                       | 1                            | 944                        | 2                            | 1149                       | 43                           | 1205                       | 46                           |
| 85 <= X < 90                                                             | 1306                       | 1                            | 1103                       | 2                            | 1357                       | 53                           | 1427                       | 56                           |
| 90 <= X < 95                                                             | 1386                       | 2                            | 1167                       | 2                            | 1441                       | 57                           | 1516                       | 61                           |
| 95 <= X < 100                                                            | 1465                       | 2                            | 1231                       | 2                            | 1524                       | 61                           | 1605                       | 65                           |
| 100 <= X < 105                                                           | 1545                       | 2                            | 1295                       | 2                            | 1608                       | 65                           | 1694                       | 69                           |
| X > 105                                                                  | 1719                       | 2                            | 1435                       | 3                            | 1791                       | 73                           | 1890                       | 78                           |

3.38. We are proposing to amend the methodology for the calculation of the reference price used in the shrinkage incentive in the following manner; we propose:

- to implement the interim methodology put forward by National Grid in its initial proposals for 2008/09<sup>42</sup>;
- to extend the gas reference price methodology<sup>43</sup> to future years which will ensure continuity in the use of the benchmark;
- to amend the current gas reference price methodology for future years<sup>44</sup> to include a measure of prompt gas prices. We are proposing that the reference prices be calculated on a 75:25 ratio of forward<sup>45</sup> - prompt prices<sup>46</sup>;
- to add a methodology to calculate a reference price for electricity compressor volumes. We propose that this reference price should be calculated in the same way as the gas reference price and should have a similar interim reference price<sup>47</sup>; and
- to uplift the prices to reflect the shadow price of carbon. For shrinkage gas we are proposing to uplift the gas reference price by £5.33/MWh<sup>48</sup>. For the electric

<sup>42</sup> The interim GCRP methodology would retain the same form as the existing methodology but rather than using a reference period from 1 April 07 – 31 March 08 it use the following periods: for 'summer' quarters (Q2-08 and Q3-08) the reference period will be 1 Jan 2008 to 31 Mar 2008 inclusive; and for 'winter' quarters (Q4-08 and Q1-09) the reference period will be 1 Jan 2008 to 30 June 2008 inclusive.

<sup>43</sup> Currently the reference price is based on the NTS throughput weighted average quarterly price for delivery of gas in the formula year as quoted on each day in the year prior to the formula year.

<sup>44</sup> And by extension the electricity reference price methodology.

<sup>45</sup> Calculated year ahead based on quarterly packages as is currently the case.

<sup>46</sup> Based on the average price of the monthly package for each month in the formula year as calculated in the month prior to delivery.

<sup>47</sup> The electricity reference price will be based on the quarterly baseload package.

<sup>48</sup> Based on a figure of 56.9 tCO<sub>2</sub>e/TJ of fuel burnt (see <http://www.defra.gov.uk/environment/climatechange/trading/eu/operators/mon-rep-ver.htm>).

compressor volume purchases we are proposing to uplift the price by £5.93/MWh<sup>49</sup>.

3.39. Our proposal for the gas shrinkage incentive is in Table 3.7.

**Table 3.7 Ofgem's proposed scheme option for the gas shrinkage incentive**

| Scheme  | Duration | Cap   | Upside Sharing Factor | Floor  | Downside Sharing Factor |
|---------|----------|-------|-----------------------|--------|-------------------------|
| 2008/09 | Q1       | £0.8m | 25%                   | -£0.6m | 20%                     |
|         | Q2       | £0.8m | 25%                   | -£0.6m | 20%                     |
|         | Q3       | £1.2m | 25%                   | -£0.9m | 20%                     |
|         | Q4       | £1.2m | 25%                   | -£0.9m | 20%                     |

#### OM gas

3.40. For NGG's OM gas incentive scheme we are proposing to amend the current arrangements to provide NGG with an incentive to optimise the total cost of OM by extending the incentive to include both the cost of reserving storage space and the cost of utilising this space. Our final proposal is included in Table 3.8.

**Table 3.8 Ofgem's proposed scheme option for OM gas**

| Scheme  | Target (pending C3 prices) | Holding Cost Cap | Holding Cost Floor | Upside Sharing Factor | Downside Sharing Factor | Utilisation Cost Floor |
|---------|----------------------------|------------------|--------------------|-----------------------|-------------------------|------------------------|
| 2008/09 | £23.57m                    | none             | None               | 100%                  | 100%                    | -£0.5m                 |

#### Residual balancing and linepack incentive

3.41. Our final proposal can be seen in Table 3.9.

<sup>49</sup> This uplift is identical to that used for the transmission losses uplift.

**Table 3.9 Ofgem's proposed scheme option for the residual balancing and linepack incentive**

| Scheme  | Price Incentive |     |             | Linepack Incentive |        |             | Overall Annual Cap / Floor |
|---------|-----------------|-----|-------------|--------------------|--------|-------------|----------------------------|
|         | Daily Cap       | PIR | Daily Floor | Daily Cap          | LIR    | Daily Floor |                            |
| 2008/09 | £+5k            | 10% | £-30k       | £+5k               | 2.4mcm | £-30k       | £+3.5m / £-3.5m            |

**Information incentive**

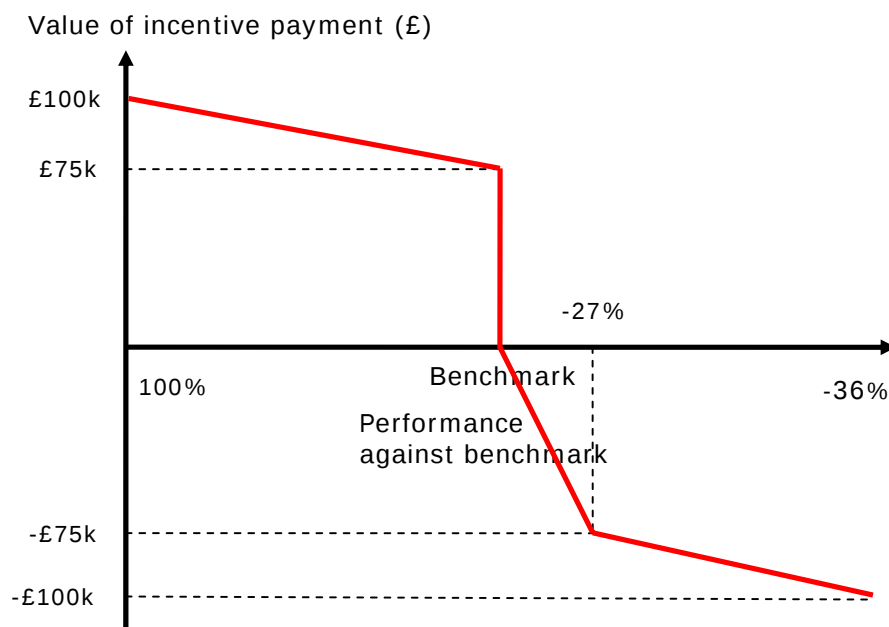
3.42. For NGG's demand forecasting incentive we are proposing to roll-over the current form of the incentive but tighten the target from 4% to 3.5%.

3.43. For NGG's quality of information incentive (website performance) we are proposing to create an incentive for NGG to maintain the current level of information provision by establishing a mechanism through which NGG will be penalised if current performance levels fall. In line with National Grid's initial proposals, we are also proposing to allow NGG to take planned outages for maintenance and upgrades. We propose to adjust the sliding scale arrangement so that NGG:

- earns £75,000 if it meets its performance benchmarks for timeliness and availability;
- has the possibility to earn a further £25,000 for additional over-performance up to a 100% improvement; and
- is subject to a penalty in the event that performance falls below the benchmark.

3.44. Our proposals are summarised in Figure 3.2, below.

**Figure 3.2 Ofgem's proposed scheme option for maintaining the current level of information provision**



3.45. Further, we intend to establish a modest incentive for NGG to further improve performance, commensurate with the level of investment required to deliver this improvement. We propose that NGG should earn a 6% return on the investment it plans to make in 2008/09 to deliver performance improvements so long as these investments deliver the anticipated results.

### Methane incentive

3.46. There are two sets of circumstances in which methane is released to atmosphere from equipment on the NTS. The first is 'compressor venting', which is associated with the depressurisation of compressor units. The second is 'fugitive emissions', which are low level emissions from the operation of control equipment on the NTS, for instance pressure relief valves and the depressurisation of plant or sections of pipeline for maintenance and construction activities<sup>50</sup>.

3.47. Although the volumes associated with methane emission from the NTS are considerably smaller than those associated with emissions from the DN Networks<sup>51</sup>, it

<sup>50</sup> Where possible NGG employs gas capture and recompression techniques to minimise the amount of methane vented to the atmosphere when plant or sections of the NTS have to be depressurised for maintenance, etc.

<sup>51</sup> Natural gas emissions from the DN networks for 2007/08 were around 350,000 tonnes of

has been acknowledged that methane is a more potent greenhouse gas than carbon dioxide and therefore we consider that NGG should have a financial incentive to minimise the volume of methane released from equipment on the NTS.

3.48. It is our current thinking that an incentive associated with compressor venting will be easier to implement in the short term. There are already procedures in place to measure the volumes of methane associated with such emissions and records of planned events are kept. Further, the operational decision as to whether to depressurise a compressor is determined by a number of economic factors, for instance fuel costs, and therefore the inclusion of the environmental costs associated with methane emissions is appropriate. We intend to work closely with NGG in the next few weeks to derive a forecast target volume for compressor venting. It is our view that a methane 'price' of £546/tonne of methane<sup>52</sup> is appropriate and that the incentive should apply retrospectively from 1 April 2008. We plan to put forward initial proposals for such an incentive as soon as we are in a position to propose a volume target.

3.49. We also intend to build on this incentive to include fugitive emissions. We understand from NGG, however, that fugitive emissions are not currently measured, but rather can only be estimated based on a study of typical installations. Further, it is unclear at this stage whether such an incentive is 'feasible' in that the rewards for reducing these emissions are sufficient when compared with the costs of doing so. We will continue to discuss these issues with NGG with the intention of introducing a complete methane incentive as soon as possible.

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methane. In comparison, total NTS compressor venting in 2007 was 1,761 tonnes and that for fugitive emissions is estimated at around 4,000 tonnes.

<sup>52</sup> This is based on a shadow price of carbon of 26 £/tCO<sub>2</sub>e for 2008 and a conversion of 1 tonne methane = 21 tCO<sub>2</sub>e.

NGET and NGG SO incentives from 1 April 2008

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## Appendices

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## Appendix 1 - Consultation Response and Questions

1.1. Ofgem would like to hear the views of interested parties in relation to any of the issues set out in this document.

1.2. We would especially welcome responses to the specific questions which we have set out at the beginning of each chapter heading and which are replicated below.

1.3. Responses should be received by **26 March 2008** and should be sent to:

- Andrew Wright
- Managing Director, GB Markets
- Ofgem
- 9 Millbank
- London
- SW1P 3GE

1.4. Unless marked confidential, all responses will be published by placing them in Ofgem's library and on its website [www.ofgem.gov.uk](http://www.ofgem.gov.uk). Respondents may request that their response is kept confidential. Ofgem shall respect this request, subject to any obligations to disclose information, for example, under the Freedom of Information Act 2000 or the Environmental Information Regulations 2004.

1.5. Respondents who wish to have their responses remain confidential should clearly mark the document/s to that effect and include the reasons for confidentiality. It would be helpful if responses could be submitted both electronically and in writing. Respondents are asked to put any confidential material in the appendices to their responses.

1.6. Any questions on this document should, in the first instance, be directed to Matthew Buffey (020 7901 7088). Email [matthew.buffey@ofgem.gov.uk](mailto:matthew.buffey@ofgem.gov.uk).

### CHAPTER: One

There are no specific questions in this chapter.

### CHAPTER: Two

**Question 1: Do you consider that the final proposals for the SO incentive scheme to apply to NGET's external SO costs represent a fair balance of risk and reward?**

NGET and NGG SO incentives from 1 April 2008

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**Question 2: Do you consider that the proposed licence modifications appropriately reflect the final proposals as described in this chapter?**

**CHAPTER: Three**

**Question 1: Do you consider that the final proposals for the SO incentive scheme to apply to NGG's external SO costs represent a fair balance of risk and reward?**

**Question 2: Do you consider that the proposed licence modifications appropriately reflect the final proposals as described in this chapter?**

**Question 3: Do you agree that NGG should be provided with an incentive to minimise methane emissions? If so, please provide your comments on how it should be addressed.**

## Appendix 2 - Summary of responses to National Grid's Initial Proposals Consultation

1.7. National Grid's consultation on its initial proposals for the gas and electricity incentive schemes to apply from 1 April 2008 concluded on 25 January 2008. National Grid received 12 responses to its consultation. Ofgem's summary of these views follows, below.

### **Change to the consultation process**

1.8. In general, respondents to National Grid's consultation welcomed the change in process for the setting of system operator incentives, in particular the opportunity to give their views on the proposed incentive schemes. There was a consensus that the change to the process had created additional transparency, further explanation of National Grid's key assumptions and the opportunity for bilateral discussions with National Grid. There was support overall for building on this process in future years.

1.9. Many respondents suggested improvements to the new process. In relation to the timing of the new process, a number of respondents expressed the view that they would have preferred earlier engagement in the development of the incentive schemes. One such respondent considered that some elements of the proposals required considerable "thinking time" in order to fully process the potential variations.

1.10. A number of respondents supported even more information disclosure by National Grid. One respondent, in particular, stated that unless National Grid was to publish full information on past performance together with the full calculations used in its forecasts it was impossible to critique the forecasts fully. One respondent added that it would be beneficial for National Grid to provide additional reporting within the scheme year, including a commentary on performance to date. One respondent expressed the view that there should be additional consistency from National Grid in the way that it presents its numbers to more easily enable a comparison of historical performance.

1.11. One respondent considered that, although they were happy to comment on National Grid's assumptions and scheme proposals, they felt that the main role in scrutinising National Grid's forecasts should be taken up by Ofgem. This respondent considered that Ofgem was privy to confidential information that the industry did not (and should not) have that is critical to assessing the forecasts and scheme proposals. In addition, the respondent considered that it was a duplication of effort to have both Ofgem and industry scrutinising the forecasts and scheme proposals.

**Merits of a longer term review of SO incentives**

1.12. A number of respondents expressed concern that the change in the process for setting the incentive might delay the longer term review of the system operator incentives.

1.13. There was significant support for the idea of a more fundamental longer term review of the system operator incentive arrangements. One respondent considered that, by restricting National Grid's incentive scheme to one year, there was no incentive on National Grid to take the longer term investment decisions that may serve the market best in the longer term.

1.14. In contrast, one respondent considered that setting a longer term incentive scheme would be too difficult given the potential for substantial year on year variations within a longer term scheme and the likely significant market developments expected over the next few years.

**National Grid's electricity proposals**

1.15. In relation to the forecast assumptions used to derive the underlying balancing costs for 2008/09, the majority of respondents expressed broad agreement with the position taken by National Grid.

*NIV*

1.16. In relation to National Grid's assumptions about the level of NIV, most respondents were in agreement with National Grid, but a number considered that, if not in-line with 2007/08 outturn NIV levels, the system could outturn slightly shorter, owing to the limited running of LCPD plant in some periods and due to the long term trend to a more balanced system.

1.17. All respondents agreed that the forward price is the most appropriate figure to use for forecasting purposes as long as the basis for the forward price is transparent. In relation to this, one respondent expressed the view that the forecasts should be revised as close as possible to the start of the scheme year so that the latest forward price could be applied.

*Constraints*

1.18. In relation to the assumptions regarding constraint costs, whilst most respondents agreed broadly with the forecast costs put forward by National Grid, a number of respondents considered that they did not have enough information to comment or criticise the forecasts in detail. Three respondents voiced more specific concerns about National Grid's calculations:

- One stated that it did not believe that National Grid's approach to calculating the step change in costs associated with the planned additional outages on the Cheviot interconnector was particularly robust. It also criticised the inclusion in National Grid's forecast of "routine" constraint management costs arguing that only costs related to the specific planned boundary outages should be included. The same respondent went on to express the view that National Grid should explore putting in place forward constraint contracts or option contracts to limit costs should unplanned boundary outages occur.
- One respondent expressed concern that costs associated with import constraints had not been included in National Grid's estimated costs.
- Finally, another respondent argued that the bid-offer prices used by National Grid to estimate the constraint costs assumed that it will be "gamed" by generators; bid prices used in the model are far lower than is typical in England and Wales and lower than the marginal cost of generation. It also pointed out that National Grid's cost estimate assumes the system is in balance when it has historically tended to be long.

1.19. One respondent questioned whether the risks associated with the Cheviot works should sit with the SO at all since they are related to investments undertaken by the respective Transmission Owners. This respondent was unclear as to what mitigating actions the SO could realistically take to manage the risks.

#### *LCPD*

1.20. In relation to the potential increase in system operation costs associated with the implementation of LCPD, most respondents agreed that there is considerable uncertainty surrounding the issue of how opted-out plant will run and that running patterns of such plant should be monitored closely. This uncertainty led one respondent to agree with National Grid's mid range estimate. Another respondent took the view that the high level of uncertainty about LCPD-related costs (£1m to £20m) meant that these costs should be discounted as a 'line item' from the target. They went on to state that if costs are extremely high then National Grid would be justified in requesting an IAE.

#### *Incentivised balancing costs and BSUoS*

1.21. In relation to NGET's forecast range of incentivised balancing costs and BSUoS costs for 2008/09, the majority of respondents accepted that the large range in potential costs was due to the uncertainty of a number of cost components, in particular constraint costs. Related to this, a number of respondents commented favourably on NGET's suggestion that a fixed arrangement could be applied to BSUoS whereby costs are fixed for the current year with subsequent readjustment the following year to reflect the net position.

1.22. In relation to the areas NGET identified in its initial proposals as potential efficiency savings, one respondent stated that no areas for improvement had been specifically identified. Some respondents stated that the efficiency gain was in the area of frequency response, resulting from the implementation of "efficiency

measures” and improved algorithms. A couple of respondents noted their disappointment that there were no further suggestions for efficiency measures.

#### *Scheme parameters*

1.23. In relation to the proposed scheme options, there was no consensus on the preferred scheme. One respondent expressed the opinion that, due to the broad range of scheme options it would be unlikely that a consensus view would emerge from within industry. Two respondents were comfortable with the structures presented, one stating that they had not identified any alternative structures which would better achieve the objectives. One respondent was of the view that all the schemes have sharing factors that are too high. The respondent commented that it was also unclear as to why the upside sharing factors were consistently higher than the downside factors regardless of the level at which the target is set. The respondent would have expected that as the target increased, the downside factors would become closer to the upside ones and ultimately would be higher than them.

1.24. Without access to the full data set for the distribution of expected costs one respondent said that they could not ascertain whether the sharing factors were correct or not. One respondent stated that, given the uncertainty associated with significant areas of the forecast, they would have expected a wider spread of target values. They also expressed the view that the caps and collars are modest in comparison with 3 years ago. Whilst this respondent considered this to be sensible, they commented that more information was required on which costs were controllable from National Grid's perspective in order to justify the risk parameters.

#### *Indexation*

1.25. In relation to National Grid's proposal for IBC indexation to wholesale power prices, most respondents agreed that there is a relationship between certain balancing costs and wholesale prices (in particular fast reserve and reactive power). However, most stated that due to the complexity of this relationship, they wished to see more evidence and analysis before agreeing to an index. One respondent encouraged National Grid to explore a variety of correlations, for instance to NIV. One respondent added that they were concerned that, were an index to be put in place, National Grid's actions in the market could affect market prices whilst they remain protected from the impact of consequent price changes through indexation.

1.26. One respondent commented on the use of NIA under the current incentive arrangements. This respondent considered that the current arrangements tend to over-correct for the cost of resolving imbalance when the system is short. The respondent argued that this reimburses National Grid for the costs of response and reserve when the NIV is negative or slightly positive. The same respondent recommended that the NIA should be replaced by an EPUS-based (ex-post unconstrained schedule) cost of resolving imbalance.

1.27. In relation to National Grid's proposal for a Cheviot outage index to adjust outage costs for outturn outage duration, most respondents agreed that, at this

time, it would not be prudent to include such an index. Two respondents expressed the concern that the introduction of an index for Cheviot outage weeks reduces the incentive on the system operator to manage the outages efficiently. This led one of these two respondents to disagree with indexation in this area. The other respondent supported the use of indexation despite their concerns because of the great uncertainties involved in the project. One respondent did not support indexation based on number of outage weeks because they believe that “outage weeks” are not the main factor causing constraint costs. In support of this, another respondent argued that the costs of constraints on the Cheviot boundary will differ under different market and system conditions. Therefore this respondent expressed the view that to index costs to a fixed £m per week of outage was overly simplistic.

### **National Grid's gas proposals**

#### *Shrinkage*

1.28. In relation to the proposed scheme options for shrinkage gas, there was no consensus over the most appropriate scheme. One respondent commented that the current level of risk/reward was appropriate and that there was no need for a significantly more aggressive incentive at present. Another respondent favoured a single year scheme with low sharing factors. Two respondents, one expressing a preference for scheme A and the other for scheme B, commented that there should be more symmetry in the upside and downside sharing factors.

1.29. In respect of the forecast for shrinkage gas, the majority of respondents commented that National Grid had received the maximum incentive payment under this part of the gas SO incentives since 2003/04 and that consideration should be given to a tightening of this incentive. One respondent expressed the view that this suggested National Grid was over-forecasting their requirements for shrinkage gas.

1.30. Most respondents supported the continued linking of own use gas target volumes with flows at the St. Fergus entry point. A number of respondents expressed the reservation that volumes at the Total St Fergus terminal should be removed as National Grid has no control over these volumes and the incentive level should then be reassessed. A number of respondents commented that the lower range of the banding should be extended to ensure that the incentive is suitably targeted (for example taking 65 mcm per day as the lower band). Two respondents took the view that, since St Fergus flows would be less significant in relation to total system demand in the future, flows at other key entry points should be taken into account when setting shrinkage target volumes. One respondent suggested the use of a weighted average based on flows at St. Fergus and Easington (although they also considered that further statistical analysis would be necessary to determine whether other terminals should be included).

1.31. The majority of respondents considered that National Grid should be allowed to exclude volumes associated with CV shrinkage from its incentive scheme since this cost element was outside of its control. However, a number of respondents considered that this should only be the case if the volumes concerned were small and

that further analysis as to exactly what volume should be considered outside National Grid's control would need to be conducted before any larger volumes could be excluded. In addition, were it to be decided that larger volumes should be removed, a number of respondents considered that efforts should be made with relevant parties, for example LNG importers, to mitigate shippers' exposure to the resulting costs.

1.32. In relation to Unaccounted for Gas (UAG) one respondent stated that, given the volatility of UAG, National Grid's forecast was reasonable. Another respondent commented that forecasting UAG was difficult and that they accepted that there was no statistically robust driver with which to inform the forecasting process. However, this respondent also stated that it was possible for UAG to outturn negative and that it was not clear how this possibility had been taken into account in the forecast. A further respondent expressed concern that the underlying driver of UAG was not well understood by National Grid. In order to encourage National Grid to undertake further work on the issue and to share its findings with shippers, this respondent suggested linking the UAG target to a percentage of throughput which would decrease each year unless National Grid provided a satisfactory explanation of at least one of the causes of UAG.

1.33. In relation to the pricing of shrinkage gas, the majority of respondents wished to see a more challenging target. A number of respondents stated that this could be achieved by using a mixture of forward and seasonal average prompt prices. Two respondents suggested a split of 75%-25% forward–prompt split.

1.34. A majority of respondents supported the use of an interim Gas Cost Reference Price (GCRP) methodology for 2008/09. One respondent estimated that, due to rising forward prices since last year, delaying the setting of the GCRP until January 2008 would result in a target cost level over £10m higher than would have been had the reference price been set last year. Assuming this price rise correspondingly materialises in the outturn cost of shrinkage gas for 2008/09, this respondent considered that this could be seen as a cost to shippers as a result of the delay in agreeing the incentives. A majority of respondents supported the introduction of an enduring methodology for GCRP. However, many of these respondents expressed the view that any such arrangements should include an annual update mechanism. Another respondent argued that the incentive should not be for more than 2 years to minimise the risk of deviation from targets which is possible in the current volatile energy markets.

1.35. Most respondents supported National Grid's proposals regarding the Electricity Cost Reference Price (ECRP). However, a number of respondents expressed doubt as to whether £8.50/MWh uplift was the right level for the ECRP methodology given that retail costs differed on different parts of the network. One respondent commented that if it was possible to operate the electric compressors so as to avoid triad charging then they would expect the uplift to be reduced.

*Operating Margin (OM)*

1.36. In relation to the proposed scheme options for OM gas, there was no consensus over the most appropriate scheme. One respondent favoured scheme A, which they considered would minimise costs to shippers, although they felt that the risk of higher costs would remain as this would vary with actual utilisation of OM. Another respondent favoured scheme B. A further respondent favoured scheme C but with the average background utilisation cost doubled rather than increased by four times. In addition one respondent considered that a combination of scheme A and B would be appropriate, with the target from scheme A and the utilisation cost collar from scheme B.

*Gas balancing and linepack*

1.37. There was no consensus on the most appropriate residual gas balancing and linepack incentive scheme option. A number of respondents did not express a preference but stated that, pending a more fundamental review, a one year scheme would be appropriate. One respondent that supported scheme A considered that it was not appropriate to remove the linepack incentive since any lack of regulation on linepack stability could lead to a detrimental effect on the working of the market. One respondent that supported scheme B considered that the linepack incentive should be removed as it had little effect on National Grid's behaviour. A further respondent supporting scheme B considered that the caps, collars and sharing factors should be tightened to reflect the greater scope that National Grid would have to manage costs without the linepack incentive.

*Demand forecasting*

1.38. In relation to the demand forecasting incentive, the majority of respondents considered that the incentive should be continued but the target should be made more challenging. On this issue, one respondent considered that the demand forecast error target should be tightened to 3%. Concern was expressed that National Grid's role in calculating demand and its incentive to outperform against the resulting figure could create a perverse incentive. In support of this view the respondent said that there have been many days on which demand figures cannot be replicated. Another respondent suggested splitting the incentive in future years between demand which is mainly sensitive to weather (NDM) and that which is more sensitive to price or other economic factors.

*Information*

1.39. In relation to the proposed scheme designs for timeliness and availability of information, the majority of respondents considered that it was not necessary to include additional data items in the incentive scheme. A majority of respondents considered that the scheme should be adjusted to give National Grid less "upside". Many of these respondents expressed the view that National Grid had already received too much reward in the time since the incentive had been put in place. Indeed, a number of respondents supported removal of an incentive altogether and

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instead proposed a 'standards of service obligation' on National Grid. One respondent commented that it is already in the SO's best interests to publish accurate and timely data and that therefore there was no need for a formalised incentive. Another respondent argued that an important indicator of National Grid's performance was accuracy, but that this was currently missing from the incentive scheme. Most respondents did not express a preference as to the scheme options proposed by National Grid, however a number commented that National Grid should present a scheme option with an incentive more in line with its proposed investment.

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### Appendix 3 – Notice under Section 11 of the Electricity Act 1989

Please see separate document containing the notice.

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## Appendix 4 – Notice under Section 23 of the Gas Act 1986

Please see separate document containing the notice.

## Appendix 5 – The Authority’s Powers and Duties

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

1.2. The Authority’s powers and duties are largely provided for in statute, principally the Gas Act 1986, the Electricity Act 1989, the Utilities Act 2000, the Competition Act 1998, the Enterprise Act 2002 and the Energy Act 2004, as well as arising from directly effective European Community legislation. References to the Gas Act and the Electricity Act in this Appendix are to Part 1 of each of those Acts<sup>53</sup>.

1.3. Duties and functions relating to gas are set out in the Gas Act and those relating to electricity are set out in the Electricity Act. This Appendix must be read accordingly<sup>54</sup>.

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

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

- The need to secure that, so far as it is economical to meet them, all reasonable demands in Great Britain for gas conveyed through pipes are met;
- The need to secure that all reasonable demands for electricity are met;
- The need to secure that licence holders are able to finance the activities which are the subject of obligations on them<sup>55</sup>; and
- The interests of individuals who are disabled or chronically sick, of pensionable age, with low incomes, or residing in rural areas.<sup>56</sup>

<sup>53</sup> entitled “Gas Supply” and “Electricity Supply” respectively.

<sup>54</sup> However, in exercising a function under the Electricity Act the Authority may have regard to the interests of consumers in relation to gas conveyed through pipes and vice versa in the case of it exercising a function under the Gas Act.

<sup>55</sup> Under the Gas Act and the Utilities Act, in the case of Gas Act functions, or the Electricity Act, the Utilities Act and certain parts of the Energy Act in the case of Electricity Act functions.

<sup>56</sup> The Authority may have regard to other descriptions of consumers.

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

- Promote efficiency and economy on the part of those licensed<sup>57</sup> under the relevant Act and the efficient use of gas conveyed through pipes and electricity conveyed by distribution systems or transmission systems;
- Protect the public from dangers arising from the conveyance of gas through pipes or the use of gas conveyed through pipes and from the generation, transmission, distribution or supply of electricity;
- Contribute to the achievement of sustainable development; and
- Secure a diverse and viable long-term energy supply.

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

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

1.8. The Authority has powers under the Competition Act to investigate suspected anti-competitive activity and take action for breaches of the prohibitions in the legislation in respect of the gas and electricity sectors in Great Britain and is a designated National Competition Authority under the EC Modernisation Regulation<sup>58</sup> and therefore part of the European Competition Network. The Authority also has concurrent powers with the Office of Fair Trading in respect of market investigation references to the Competition Commission.

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<sup>57</sup> or persons authorised by exemptions to carry on any activity.

<sup>58</sup> Council Regulation (EC) 1/2003.

## Appendix 6 - Glossary

### A

#### Ancillary Services

These are mandatory, necessary or commercial services used by the Electricity System Operator to manage the system and to meet their license obligations.

### B

#### Balancing and Settlement Code (BSC)

This sets out the rules for governing the operation of the Balancing Mechanism and the Imbalance Settlement process and also sets out the relationships and responsibilities of all electricity market participants.

#### Balancing Mechanism (BM)

This is the mechanism by which the electricity System Operator procures commercial services (Balancing Services) from generators and suppliers post gate closure, in accordance with the relevant provisions of the Balancing and Settlement Code (BSC) and the Grid Code.

#### Balancing Services

The services that electricity System Operator needs to procure in order to balance the transmission system.

#### Balancing Services Use of System charges (BSUoS)

This is the daily charge, levied by the System Operator on users of the transmission system, in order to recover the costs of operating the transmission system and procuring and utilising Balancing Services.

#### Black Start

This is the ability to start a generating plant without external power supplies.

### C

#### Calorific Value (CV)

The ratio of energy to volume measured in Megajoules per cubic meter (MJ/m<sup>3</sup>) which for a gas is measured and expressed under standard conditions of temperature and pressure.

### Cash out arrangements (in electricity)

The arrangements whereby generators and suppliers pay or are paid for imbalances (shortages and surpluses of power relative to their contracted commitments).

### Compressor Station

An installation on the National Transmission System (NTS) that uses gas turbine or electricity driven compressors to boost pressures in the pipeline system; it is used to increase transmission capacity and move gas through the System.

### Connection and Use of System Code (CUSC)

Connection and Use of System Code (CUSC) constitutes the contractual framework for connection to, and use of, National Grid's high voltage transmission system.

## D

### Distribution Network (DN)

An administrative unit responsible for the operation and maintenance of the local pipeline network within a defined geographical boundary.

### Distribution System

A network of mains operating at three pressure tiers: intermediate (2 to 7 barg), medium (75 mbarg to 2 barg) and low (less than 75 mbarg).

## F

### Fast Reserve

This is the fast provision of reliable power via increased generation or reduction in demand which can be provided within 2 minutes, at a delivery rate of less than or equal to 25 MW/minute and the reserve needs to be sustainable for 15 minutes.

### Fast Start

Fast start is the ability of a genset to ramp from standstill to its maximum rated output within five minutes of initiating a low frequency relay, or within seven minutes of a manual instruction.

### Frequency Response

The electricity SO has a statutory obligation to maintain system frequency between +/- 1% of 50 hertz. The immediate second-by-second balancing to meet this requirement is provided by continuously modulating output through the procurement and utilization of mandatory and commercial frequency response.

**G****Gas Transporter (GT)**

Formerly Public Gas Transporter (PGT). GT's, such as Northern Gas Networks, are licensed by the Gas and Electricity Markets Authority to transport gas to consumers.

**I****Intertrip**

An intertrip is the automatic removal of a genset from the system usually as a result of a transmission system fault. Intertrips are required to strategically manage power flows on the system, and remove at short notice potentially vulnerable circuits.

**L****Linepack**

The volume of gas within the National or Local Transmission System at any time.

**N****National Transmission System**

A high pressure system consisting of terminals, compressor stations, pipeline systems and offtakes. Designed to operate at pressures up to 85 bar. NTS pipelines transport gas from terminals to NTS offtakes.

**O****On the day Commodity Market (OCM)**

This market enables anonymous financially cleared on the day trading between market participants.

**Operating Margin (OM) (in gas)**

Gas used to maintain system pressures under circumstances including periods immediately after a supply loss or demand forecast change before other measures become effective and in the event of plant failure, such as pipe breaks and compressor trips.

**Operating Margin (OM) (in electricity)**

This is a requirement to ensure that the system security can be properly managed across Power Exchange and Balancing Mechanism time-scales, i.e. 'up to' and 'at real time'.

### Own Use Gas

Gas used by system owners to operate the transportation system, this includes gas used for compressor fuel, heating and venting.

## R

### Reactive Power

Power generation creates background energy which absorbs or generates reactive energy as a result of the creation of magnetic and electric fields. Reactive power needs to be provided to assist in balancing the system and retaining its integrity.

## S

### Sharing factors

These describe the percentage of profit or loss which the System Operator will be subjected to if the relevant incentive performance measure falls below or exceeds the relevant incentive target.

### Shrinkage

Gas that is input to the system but is not delivered to consumers or injected into storage. It is either Own Use Gas or Unaccounted for Gas.

### Sliding Scale

This term is used to describe incentive schemes which involve profit (and loss) sharing around a fixed target cost.

### System Average Price (SAP)

This is the price in pence per kWh calculated as the sum of all Market Transaction charges divided by the sum of the Trade Nomination Quantities for all transactions effected in respect of that day, subsequently adjusted to account of any bids which are to be excluded in association with resolving constraints.

### System Operator (SO)

This is the entity charged with operating either the GB electricity or gas transmission system. NGET is the operator of the high voltage electricity transmission system for GB. NGG is the operator of the gas NTS for GB.

## T

### Transmission losses

This is the electricity lost on the GB transmission system through the physical process of transporting electricity across the network. The treatment of transmission losses is set out in the BSC.

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**U****UK Continental Shelf UKCS**

The UK Continental Shelf (UKCS) comprises those areas of the sea bed and subsoil beyond the territorial sea over which the UK exercises sovereign rights of exploration and exploitation of natural resources.

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## Appendix 7 - Feedback Questionnaire

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

1. Do you have any comments about the overall process, which was adopted for this consultation?
2. Do you have any comments about the overall tone and content of the report?
3. Was the report easy to read and understand, could it have been better written?
4. To what extent did the report's conclusions provide a balanced view?
5. To what extent did the report make reasoned recommendations for improvement?
6. Please add any further comments?

1.2. Please send your comments to:

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