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Customers and other Interested Parties

Your Ref:
Our Ref: 173/11
Direct Dial: 020 7901 7255
Email: martin.crouch@ofgem.gov.uk
Date: 14 December 2011

Dear Colleague

National Grid Gas System Operator Incentives from April 2012

National Grid Gas (NGG), a subsidiary of National Grid plc, is the System Operator (SO) for the gas National Transmission System (NTS) in Great Britain (GB) and is responsible for the residual balancing activity on the NTS. It also has responsibility for a number of other important areas such as the purchasing of shrinkage gas and operating margins. The transporter licence of NGG requires it to act in an efficient, economic and co-ordinated manner in performing its roles.

Since gas SO costs are ultimately borne by consumers, Ofgem sets economic incentives on NGG to encourage them to reduce costs where this is efficient. In addition for certain specified activities the SO can receive incentive payments or penalties related to its performance¹. NGG is currently subject to seven incentive schemes, each relating to different aspects of its activities. Five of these incentive schemes will expire on 31 March 2012, namely, NTS Shrinkage, NTS Unaccounted for Gas, Residual Gas Balancing, Demand Forecasting and Data Publication².

On 17 May 2011, Ofgem published an open letter in respect of the incentive schemes to apply from 1 April 2012. In our open letter we set out our intention that gas SO schemes that expire in 2012 will be "rolled over" to run from 1 April 2012 until 31 March 2013. We published an open letter on 26 September explaining the process to complete this review and on 12 October we held a stakeholder workshop. In developing our proposals we have taken account of views from NGG and other stakeholders expressed at the workshop and in written submissions. These views are summarised in Appendix 2.

The regulatory framework to be applied to NGG and NGET from 1 April 2013 is being developed as part of a separate process. We published a consultation on the broad principles for the new regulatory framework in June 2011³ and will publish a further paper on this in the coming weeks. We will consult stakeholders fully whilst developing this new framework, including publishing a formal consultation on our proposals, over the course of the next year.

Appendix 3 contains a statutory notice of our proposal to modify NGG's gas transporter licence under Section 23 of the Gas Act 1986. This statutory modification notice

¹ These are areas where the activities of the SO are particularly valued by stakeholders. An example is the day ahead demand forecast which is used extensively by gas shippers.

² Appendix 1 shows the gas SO incentive schemes and the expiry dates of the current schemes.

³

<http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=244&refer=Markets/WhIMkts/EffSystemOps/SystOpIncent>

proposes to implement the proposals set out in this document (subject to responses to this consultation). We would welcome the views of interested parties on all aspects of our proposed modifications. Responses should be sent to soincentive@ofgem.gov.uk to be received no later than 18 January 2012.

NTS Shrinkage

NTS Shrinkage refers to gas and electricity that is used to operate NTS compressors for system operation purposes (Compressor Fuel Usage - CFU) energy that is delivered but cannot be billed due to local differences in the calorific value of gas (CV shrinkage) or gas unaccounted for by the entry and exit measurement and allocation processes (unaccounted for gas). Shrinkage gas and electricity needs to be bought by the SO in its capacity as Shrinkage Provider under the Uniform Network Code (UNC). The cost of shrinkage in 2010/11 was £113 million.

NGG has out-performed this incentive for the past two years, receiving the maximum £5m reward for both 2009/10 and 2010/11. Data from our monitoring of the incentives and our subsequent analysis has suggested that this performance is largely due to NGG purchasing gas at below the reference price.

In our open letter we set out views on the elements of the shrinkage incentive that need review for the 2012/13 incentive year. In particular we set out that:

- given NGG's ability to procure gas at a price lower than the current benchmark, our initial view was that it does not remain appropriate to incorporate an uplift within the Gas Cost Reference Price (GCRP)⁴;
- given the changing flows on the NTS, NGG should review its model for adjusting the CFU component of the shrinkage volume target, currently based on the relationship between St. Fergus flows and CFU volumes, to reflect actual flows. This would include exploring the link between CFU volumes and flows from Milford Haven;
- we expected NGG to consider the extent to which the current exclusions regarding CV shrinkage volumes remained appropriate.

Our proposals

After considering the views of NGG and stakeholders we acknowledge that, in the context of a rollover of the incentives, there is still a case for maintaining an uplift given the need for NGG to purchase a certain volume of gas in the prompt market. We consider that there may be other approaches to setting the reference price (for example placing a greater weight on more recent forward prices in calculating the GCRP) that may remove the need for an uplift. However, this would go beyond the scope of a rollover of the incentive. We therefore propose to maintain an uplift but with a 50% reduction. This is an additional reduction compared to NGG's proposed 33% reduction⁵. The difference reflects our view that the shrinkage allowance should take into account the average difference between expected and outturn values of shrinkage gas rather than being based exclusively on the average of three days of the largest variation in each of the past three years. We consider this to be a more appropriate allowance for the uncertainty about actual shrinkage volumes.

With regard to the other aspects of shrinkage our final proposals are that:

⁴ The GCRP is a weighted rolling average of forward prices plus a "swing uplift". The uplift is intended to reflect that NGG has to make some purchases in respect of shrinkage gas in the prompt market. The uplift is based on the price of storage which effectively represents an insurance against exposure to prompt market prices.

⁵ The NGG proposed reduction represented the change in the price of storage at Rough since the time the uplift was last set.

- having reviewed NGG’s evidence we accept the proposed revision to the CFU fuel adjustment as an improvement over the current adjustment;
- there is still a case for maintaining the current CV exclusions, particularly for this rollover year.

In addition to the elements set out in our open letter NGG raised two other areas where it thought that changes to the incentive regime should be made for the rollover period. NGG suggested that the target price for purchasing electricity should increase to reflect changes to costs (other than pure energy costs) associated with its competitively sourced supply contract and changes in transportation charges. NGG also put to us that an allowance would need to be made for the Carbon Reduction Commitment Energy Efficiency Scheme (CRCEES)⁶ because to do otherwise would double-count the cost of carbon. Following review of the evidence provided by NGG, and consideration of stakeholder comments, we propose to make these changes. Our proposals therefore include the CRCEES costs within the target and increase the “retail uplift”⁷ on the ECRP from 19% to 23%.

NTS Unaccounted for Gas

Unaccounted for Gas (UAG) is the gas that remains unaccounted for after all inputs and outputs from the system have been measured. As a result of increasing UAG volumes, Ofgem considered it appropriate to place a separate incentive on NGG to incentivise it to undertake activities to identify the causes of UAG and take action to reduce these volumes. Over the last two years outturn UAG volume has been more than double the target volume, so NGG has received no rewards.

In our open letter we set out our initial view that it would be appropriate to remove the UAG incentive. We also set out our intention to replace it with a licence condition that would require NGG to continue to take reasonable actions to identify the causes of UAG and where possible reduce the levels of it.

Our proposals

Given the lack of a robust basis on which to set a UAG target and the lack of a clear link between changes in the level of UAG and actions of NGG, we do not propose to continue with the UAG incentive. However, to require NGG to continue to take reasonable actions in the area of UAG, we propose to introduce a new UAG licence condition.

The licence condition will require NGG to continue to take actions similar to those it has undertaken over the past few years aimed mainly at identifying the causes of UAG. Even though there has been no reduction in UAG (besides the reductions in respect of identified metering errors), this work has yielded some useful information. We do not propose to specify further actions as no convincing rationale has been suggested so far. Further, given the general level of industry uncertainty about the causes of UAG, we propose that the licence condition includes a requirement for NGG to report on its activities and to make publically available the data that it has accumulated (for example, with regard to meter validations), subject to confidentiality issues.

⁶ The CRCEES is a mandatory scheme aimed at improving energy efficiency and cutting emissions in large public and private organisations. This scheme sets a charge for electricity usage and impacts the SO activities via the cost of operating electric compressors.

⁷ The ECRP is set on the basis of a weighted average of forward price with a “retail uplift” to reflect the fact that NGG is a retail electricity customer.

Residual Gas Balancing

The Residual Balancing Incentive scheme is formed of two interacting measures:

- The Price Performance Measure (PPM): incentivises NGG to minimise the impact of trades that it takes to balance supply and demand on the market on a daily basis.
- The Linepack Measure (LPM): incentivises NGG to ensure that the gas in the system (the linepack) at the end of each trading day is similar to that at the start of the gas day. This helps to ensure that the costs of resolving imbalances are accurately targeted on those shippers who caused them by encouraging NGG to resolve any imbalances on the same day.

In our open letter we set out our initial views with respect to the roll over arrangements for the residual balancing incentive scheme. In particular, we noted that despite the tightening of the PPM target for 2010/11, NGG was able to outperform the target and receive a significant payment of £1 million under this scheme. Our view was that the PPM target should be further tightened for the 2012/13 incentive year.

Our proposals

Following review of the NGG performance against the PPM target, we propose to maintain the target at its level for 2012/13. In 2011/12 the PPM target was tightened from its 2010/11 level and our analysis suggests that NGG's payment against this incentive will be relatively small. Taking this into account we do not consider it necessary to further tighten the target at this time.

Demand forecasting

The demand forecasting incentive scheme is based on a daily measure of NGG's performance against a benchmark which is based on the deviation of the Day-Ahead (D-1) 13:00 demand forecast from the outturn figure. The target was set such that it is sharper for the second year of the current scheme (2.85% in 2010/11 and 2.75% for 2011/12). In 2009/10 and 2010/11 NGG received payments of £2 million and £1 million respectively. Our initial view was to tighten the target further for 2012/13.

Our proposals

We propose to maintain the current target at 2.75% and introduce an automatic adjustment mechanism that will see the target increase should new injection capability come on line at specified storage sites. This proposal reflects the evidence provided by NGG regarding increasing unpredictability of demand due to additional fast-cycle storage. Storage is considered difficult to forecast day-ahead because it is relatively responsive to within day market prices and there is limited historical information to use to develop forecasting models. NGG have had notice of intention to expand fast cycle storage capability such that it will more than double throughout the course of 2012/13.

We are not yet convinced that, over the long run, the changes in demand that NGG describes should necessarily lead to poorer demand forecasting performance. Over time, we would expect NGG to improve its forecasting of the elements of demand more difficult to predict, including fast cycle storage. However we acknowledge that there may be challenges in the near term. For this year we therefore propose to introduce an automatic adjustment to the forecast target which will take effect as and when the additional fast cycle storage comes on line. The adjustment will be of the form of a percentage increase in the target per mcm/day of additional storage injection capability and is based on the historical contribution of fast cycle storage to forecast error. The

adjustment will only apply for new injection capability where NGG has already received notification that it will come on line during 2012/13.

Data Publication

The data publication incentive is based on a daily measure of NGG's performance against a benchmark. The benchmark is based upon the availability and timeliness of the publication of certain data such as demand and flows onto the network. In each of the last two years NGG has received a payment of around £60,000 (compared to a cap of £100,000) under this incentive and is forecast to receive a slightly lower payment for 2011/12. Our initial view was to maintain the incentive in its current form for 2012/13.

Our proposals

We propose to maintain the incentive in its current form for the rollover year as it appears to be working reasonable well. Further, stakeholders indicated that they value the marginal improvement in the timeliness and accuracy in data provision that the partial payments are intended to incentivise.

Responses

Ofgem would like to hear the views of interested parties in relation to any of the aspects of our proposed modifications. Responses should be received by 18 January 2012 and should be sent to soincentive@ofgem.gov.uk.

Unless marked confidential, all responses will be published by placing them in Ofgem's library and on its website 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.

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.

Yours sincerely,

Martin Crouch,
Partner, Wholesale Europe

Appendix 1: Summary of incentive schemes

Scheme	Length of current scheme	Date current scheme expires	Purpose of incentive
NTS shrinkage	3 years	31 March 2012	Minimise cost of purchasing gas and electricity shrinkage
NTS unaccounted for gas	3 years	31 March 2012	Reduce volumes of unaccounted for gas
Residual gas balancing	2 years	31 March 2012	Target costs of NGG's actions to resolve participants' imbalance, whilst minimising the impact of its trades on the market
Demand forecasting	2 years	31 March 2012	Minimise the error on NGG's demand forecast
Data publication	2 years	31 March 2012	Encourage timeliness and availability of published information
GHG emissions from compressor venting incentive	2 years	31 March 2013	Minimise Greenhouse gas (GHG) emissions from compressor venting
Operating margins (OM)	2 years	31 March 2013	Minimise costs of procuring OM gas

Appendix 2 – Summary of NGG and stakeholder views

NTS Shrinkage

NGG's View

With respect to the GCRP uplift, NGG argued that there was a case for retaining it. It argued that given the unpredictability of shrinkage gas volumes, NGG needed to purchase gas in the prompt market, and this would not be reflected in a GCRP based on forward prices only. NGG further argued that the principle behind the shrinkage cost target was to provide NGG with a neutral strategy that it could pursue on behalf of consumers (with the incentive to improve on this if possible) and that the reference price needed to be set to reflect the uncertainty NGG faced when making prompt purchases. NGG therefore proposed to maintain the uplift but with a reduction of 33% to account for a decrease in the price of storage⁸.

NGG agreed with Ofgem's view that a review of the CFU model was appropriate for the rollover period. In its submission to us it set out evidence for an alternative adjustment. We presented this evidence at the workshop.

NGG also argued that the rationale behind the CV shrinkage exclusions remained valid. More specifically, in respect of gas volumes from LDZ offtakes at Ross, Dyffryn Clydach and Cowpen Bewley, NGG argued that there have not been any significant changes to network design that justify the exclusion of the CV capping risks associated with these flows, and that CV capping still represents a low probability but high impact event over which NGG has limited control. Also, in respect of gas entering directly into distribution networks, NGG argued that more diverse sources of gas supply may increase CV capping costs, but there will be limited actions that NGG could take to mitigate this impact.

Further, NGG suggested some additional aspects of the shrinkage cost target that should be revised for the rollover. NGG stated that the current uplift level should be updated to reflect new market conditions resulting from their most recently signed electricity purchase contract and the current level of supplier, market and delivery costs (such as BSUoS charges, renewable obligations, management fees, etc.). NGG also noted that allowance would need to be made for the Carbon Reduction Commitment Energy Efficiency Scheme (CRCEES), and that the value used to make the carbon price adjustment to the shrinkage cost target needed to be changed to reflect DECC's most recent advice on the application of carbon values.

Views of stakeholders

At the workshop and in written submissions there was a broad consensus that our proposals were reasonable. Stakeholders were supportive of our proposal to reduce the GCRP uplift by 50%. Also, one stakeholder suggested that we needed to make sure that there was no double counting with the allowance of CRCEES costs and the working of the carbon price adjustment.

NTS Unaccounted for Gas

NGG's view

NGG suggested that we might want to retain the UAG incentive but set a target based on the more recent levels. It noted that one of the likely major causes of UAG, namely meter tolerances and errors, was largely beyond their control as meters are owned by

⁸ The uplift is based on the price of storage which effectively represents an insurance against exposure to prompt market prices.

parties other than themselves. In the absence of an incentive, NGG did not consider that a specific licence condition was required for it to take reasonable actions with regard to UAG. NGG suggested some options for actions it might take in the absence of a UAG incentive, including in some cases setting out a requirement for additional funding.

Views of stakeholders

The increasing and unpredictable levels of UAG create uncertainty for gas shippers in terms of the commodity charges they will be liable for. Stakeholders, particularly gas shippers, made it clear throughout this process that UAG was an important issue for them. However, they did acknowledge that there was a limit to the ability of NGG itself to influence levels of UAG. Stakeholders supported our proposal to remove the incentive but were keen that NGG continued to take reasonable actions to identify the causes of UAG. With regard to the options put forward by NGG, the majority of stakeholders (although there were two who suggested otherwise) said they would be willing to contribute additional funding as long as there was a reasonable chance that they would receive a benefit from this. One stakeholder suggested appointing a third party to review the work undertaken by NGG and the data it had available and to suggest a way forward on UAG.

Residual Gas Balancing

NGG's view

NGG's analysis presented in its initial proposals and at the workshop concluded that there was little scope for performance improvement under the current market conditions, therefore, NGG suggested that the PPM and LPM elements of the residual balancing incentive should remain unchanged.

Views of stakeholders

At the workshop and in their written submissions, stakeholders broadly supported our view to keep the both the PPM target at its current level.

Demand forecasting

NGG's view

NGG argued that there will be changes to market conditions that will make current performance levels under the demand forecasting incentive more difficult to achieve. The main reason NGG mentioned is the increase in short-cycle storage injection capability, which is expected to more than double with respect to its current level over the course of the 2012/13 incentive year. Given the considerable increase in demand coming from these storage sites, demand volatility will be significantly higher and therefore, the likelihood of incurring in larger forecast errors will increase. NGG argued that under this scenario the demand forecasting error target should be increased, even after accounting for continual improvement of performance.

Views of stakeholders

Stakeholders agree that the industry value the D-1 13:00 forecast. In their written submissions, all stakeholders supported the rollover of the structure of the current incentive scheme. One stakeholder suggested a modification to this incentive by introducing different targets for winter and summer and placing a cap on the daily forecast error allowed in winter. Also, the views of workshop participants were broadly sceptical about the need of increasing the target as a result of higher demand volatility.

Data Publication

NGG's view

NGG agrees with Ofgem's view that the current incentive on timeliness and availability of published information on NGG's website should be completely rolled over.

Views of stakeholders

All stakeholders agreed that maintaining the data publication incentive scheme in its current form was appropriate for a one year rollover. However, one stakeholder stated that information provision should be treated as a routine task and it should therefore be enforced via a licence requirement. This stakeholder also noted that the current incentive does not take into account that the value of availability is higher in some periods (eg, peak demand periods).

NOTICE UNDER SECTION 23(2) OF THE GAS ACT 1986

The Gas and Electricity Markets Authority ("the Authority") hereby gives notice pursuant to section 23(2) of the Gas Act 1986 ("the Act") as follows:

- 1.** The Authority proposes to modify the gas transporter licence held by National Grid Gas plc (NGG) ("the Licensee") in respect of its National Transmission System (NTS) ("the NTS Licence") granted or treated as granted under section 7 of the Act by amending Special Condition C8F and inserting a new Special Condition C29.
- 2.** The reason why the Authority proposes to make these licence modifications were published by the Authority in the following letter:

"National Grid Gas System Operator Incentives from April 2012", Ofgem, 14 December 2011.

- 3.** Information in relation to the proposed licence modifications is contained in the following documents:

"National Grid Gas System Operator Incentives from April 2012", Ofgem, 17 May 2011

"National Grid Gas (NTS) System Operator Incentives for April 2012 Initial Consultation", National Grid, 7 July 2011

"Gas System Operator Incentives from 2012", Ofgem, 12 October 2011

- 4.** The effect of the proposed modifications set out in Schedule 1 of this Notice is to implement proposals relating to the NTS System Operation External Cost Incentive Revenue Scheme from 1 April 2012. In summary the effects are:
 - a. to implement an NTS Shrinkage Incentive for the period 1 April 2012 to 1 April 2013;
 - b. to amend the NTS Shrinkage Incentive to account for meter reconciliation revenues;
 - c. to implement a Residual Gas Balancing Incentive for the period 1 April 2012 to 1 April 2013;
 - d. to implement a Quality of Information Incentive for the period 1 April 2012 to 1 April 2013; and
- 5.** The proposed licence modification set out in Schedule 2 of this Notice introduces a requirement on the Licensee to undertake work to investigate the causes of unaccounted for gas and to report on such work.
- 6.** A copy of the proposed modifications and other documents referred to in this notice are available (free of charge) from the Ofgem library (telephone 020 7901 1600) or on the Ofgem website (www.ofgem.gov.uk). Documents published by National Grid are available from the National Grid website at <http://www.nationalgrid.com.uk>.
- 7.** Any representations to the proposed licence modifications may be made on or before 18 January 2012 to: Martin Crouch, Partner, Wholesale Europe, Office of Gas and Electricity Markets, 9 Millbank, London, SW1P 3GE or by email to soincentive@ofgem.gov.uk.
- 8.** All responses will normally be published on Ofgem's website and held in the Research and Information Centre. However, if respondents do not wish their response to be made public then they should clearly mark their response as not for publication.

Ofgem prefers to receive responses in an electronic form so they can be placed easily on the Ofgem website.

9. If the Authority decides to make the proposed modification it will take effect 56 days after the decision is published.

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Martin Crouch,
Partner, Wholesale Europe
Duly authorised on behalf of the Gas and Electricity Markets Authority

14 December 2011

SCHEDULE 1

PROPOSED MODIFICATION OF THE SPECIAL CONDITION ON NATIONAL GRID GAS PLC'S GAS TRANSPORTER LICENCE IN RESPECT OF ITS NATIONAL TRANSMISSION SYSTEM UNDER SECTION 23 OF THE GAS ACT 1986

1. For Special Condition C8F (NTS System Operator external incentives, costs and revenues) substitute:

Special Condition C8F: NTS System Operator external incentives, costs and revenues

(1) External cost incentive revenue (SOOIRC_t)

(a) Principal formula

For the purposes of paragraph 3(a) of Special Condition C8C (NTS System Operation Activity Revenue Restriction), the maximum external cost incentive revenue allowed to the licensee in respect of formula year t (SOOIRC_t) shall be derived from the following formula:

$$SOOIRC_t = SC_t + OMC_t + RBC_t + SIR_t + OMIR_t + RBIR_t + QIIR_t + GHGIR_t + GHGC_t$$

where

SC_t means the total costs incurred by the licensee in formula year t in respect of system costs which shall be derived from the following formula:

$$SC_t = \sum_q GC_{t,q} + ECC_{t,q}$$

where:

GC_{t,q} means the total costs incurred by the licensee (less any revenues received from DN operators) in respect of relevant quarter year q in formula year t in the provision of NTS Shrinkage (which has the meaning given to that term in the network code) other than those payments included in the calculation of ECC_{t,q};

$ECC_{t,q}$ means the total costs incurred by the licensee in respect of relevant quarter year q in formula year t in procuring electricity for the purposes of operating Electric Compressors; and

\sum_q means the sum over all relevant quarter years q in the relevant formula year t .

OMC_t means the total costs incurred by the licensee in respect of formula year t in respect of the procurement of availability and utilisation of Operating Margins services for the purposes of satisfying Operating Margins Requirements (having the meaning given to those terms in the network code) including all capacity fees, gas delivery service fees, standby fees and costs associated with reprofiling, withdrawing and injecting gas into and out of storage and costs that may arise as a result of the difference between the Operating Margins WACOG and Net Margins WACOG as calculated in accordance with Section K of the uniform network code in the event of service utilisation multiplied by the relevant utilisation volume;

RBC_t means an amount equal to the revenue equivalent to the net residual balancing costs incurred by the licensee in respect of formula year t and shall be equal to the sum of the Basic Net Neutrality Amount and the Adjustment Neutrality Amount (having the meanings given to each of those terms in the network code) across all days in formula year t ;

SIR_t means the NTS Shrinkage Incentive Revenue in respect of formula year t which shall be calculated in accordance with paragraph 2 of this condition;

$OMIR_t$ means the Operating Margins Incentive Revenue in respect of formula year t which shall be calculated in accordance with paragraph 3 of this condition;

$RBIR_t$ means the Residual Balancing Incentive Revenue in respect of formula year t which shall be calculated in accordance with paragraph 4 of this condition;

QIIR_t means the Quality of Information Incentive Revenue in respect of formula year t which shall be calculated in accordance with paragraph 5 of this condition;

GHGIR_t means the Greenhouse Gas Incentive Revenue in respect of formula year t which shall be calculated in accordance with paragraph 6(a) of this condition; and

GHGC_t means the efficient Greenhouse Gas Emissions Project Costs in respect of formula year t which shall be calculated in accordance with paragraph 6(b) of this condition.

- (b) For the purposes of this condition, "relevant quarter year" and "q" means each quarter in formula year t, where a quarter is a continuous period of three calendar months and where q=1 is the period between 1 April and 30 June, q=2 is the period between 1 July and 30 September, q=3 is the period between 1 October and 31 December and q=4 is the period between 1 January and 31 March (each inclusive).
- (c) For the purposes of this condition, "Electric Compressor" means electrically powered gas compression equipment forming part of the pipe-line system to which this licence relates that is used by the licensee to increase the pressure of gas in part of that pipe-line system.
- (d) for the purposes of this condition, subscript "s" means a relevant compressor site being a location at which one or more Electric Compressors are installed.
- (e) For the purposes of this condition, "mcm" means millions of cubic meters of gas.

(2) NTS Shrinkage Incentive

(a) Maximum Shrinkage incentive revenue

For the purposes of paragraph 1 of this condition, the maximum total NTS Shrinkage Incentive Revenue allowed to the licensee in respect of formula year t (SIR_t) shall be derived from the following formula:

If $SIT_t \geq SCMR_t$, then:

$$SIR_t = \text{Min} [USF_t \times (SIT_t - SCMR_t), CAP_t]$$

Otherwise:

$$SIR_t = \text{Max} [DSF_t \times (SIT_t - SCMR_t), COL_t]$$

where:

SIT_t means the NTS shrinkage incentive target in respect of formula year t and shall be calculated in accordance with paragraph 2(b) of this condition;

$SCMR_t$ means the NTS shrinkage incentive cost performance measure in respect of formula year t and shall be derived from the following formula;

$$SCMR_t = SC_t + MR_t$$

where:

SC_t has the meaning set out in paragraph 1 of this condition;

MR_t means the net amount of revenues received by the licensee due to the reconciliation of Measurement Errors (as defined in the network code OAD D1.2.1) and/or meter errors (as described in the network code TPD M1.9) in respect of formula year t for the formula years $t \geq 8$;

Min [x,y] is the value which is the lesser of x and y;

Max [x,y] is the value which is the greater of x and y;

USF_t means the upside sharing factor in respect of formula year t as set out in Table A below;

DSF_t means the downside sharing factor in respect of formula year t as set out in Table A below;

CAP_t means the maximum shrinkage incentive revenue in respect of formula year t set out in Table A below; and

COL_t means the minimum shrinkage incentive revenue in respect of formula year t set out in Table A below:

Table A

	t=11
USF_t	0.25
DSF_t	0.20
CAP_t (£million)	5
COL_t (£million)	-4

(b) The NTS Shrinkage Incentive Target

- (i) For the purposes of paragraph 2(a) of this condition, the NTS shrinkage cost incentive target (£million) in respect of formula year t (SIT_t) shall be derived from the following formula:

$$SIT_t = \frac{\sum_q \left(GCRP_{t,q} \times GVT_{t,q} \right) + \left(ECRP_{t,q} \times EVT_{t,q} \right)}{100} + TPCA_t + TNUoS_t + DUoS_t + CRCEES_t$$

where:

GCRP_{t,q} means the NTS shrinkage gas cost reference price (p/kWh) in respect of relevant quarter year q in formula year t and

shall be calculated in accordance with paragraph 2(c) of this condition;

$GVT_{t,q}$ means the NTS shrinkage gas volume target (GWh) in respect of relevant quarter year q in formula year t and shall be calculated in accordance with paragraph 2(d) of this condition;

$ECRP_{t,q}$ means the NTS shrinkage incentive electricity cost reference price (p/kWh) in respect of relevant quarter year q in formula year t and shall be calculated in accordance with paragraph 2(e) of this condition;

$EVT_{t,q}$ means the NTS shrinkage incentive electricity volume target (GWh) in respect of relevant quarter year q in formula year t and shall be calculated in accordance with paragraph 2(f) of this condition;

$TPCA_t$ means the traded price of carbon adjustment (£million) in respect of formula year t and shall be calculated in accordance with paragraph 2(g) of this condition;

$TNUoS_t$ means the Transmission Network Use of System (TNUoS) costs (£million) to be incurred by the licensee in operating its Electric Compressors in respect of formula year t and shall be calculated in accordance with paragraph 2(h) of this condition;

$DUoS_t$ means the Distribution Use of System costs (£million) to be incurred by the licensee in operating its Electric Compressors in respect of formula year t and shall be calculated in accordance with paragraph 2(i) of this condition; and

$CRCEES_t$ means the Carbon Reduction Commitment Energy Efficiency Scheme costs (£million) incurred by the licensee in operating its electric compressors in respect of formula year t.

(c) The NTS shrinkage gas cost reference price (GCRP_{t,q})

- (i) For the purposes of paragraph 2(b) of this condition, the NTS shrinkage gas cost reference price (p/kWh) in respect of relevant quarter year q in formula years $8 \leq t \leq 12$ (GCRP_{t,q}) shall be derived from the following formula:

$$\text{GCRP}_{t,q} = \frac{\sum_{d=a}^b \text{GQFP}_{t,q,d}}{nq} * 0.75 + \frac{\sum_{m=g}^h \left(\frac{\sum_{d=y}^z \text{GMFP}_{t,q,m,d}}{nm} \right)}{3} * 0.25 + \text{GCRPU}_{t,q}$$

where:

a means 1 April in formula year t-1;

b means 31 March in formula year t-1;

$\sum_{d=a}^b$ means the sum over all business days d between day a and day b (both inclusive);

GQFP_{t,q,d} means the mid-point of the forward bid/offer price (expressed in p/kWh) as quoted in the "ICIS Heren European Spot Gas Markets" published price reporting service (or any similar reporting service directed by the Authority) on business day d for a gas contract for delivery at the national balancing point (having the meaning given to that term in the published price reporting service);

g means the first calendar month in relevant quarter year q;

h means the last calendar month in relevant quarter year q;

$\sum_{m=g}^h$ means the sum over all relevant calendar months m in relevant quarter year q ;

$GMFP_{t,q,m,d}$ means the mid-point of the forward bid/offer price (expressed in p/kWh) as quoted in the "ICIS Heren European Spot Gas Markets" published price reporting service (or any similar reporting service directed by the Authority) on business day d for a gas contract for delivery at the national balancing point (having the meaning given to that term in the published price reporting service);

nq means the number of business days between a and b inclusive;

y means the first business day of the calendar month preceding the relevant calendar month m of relevant quarter year q ;

z means the last business day of the calendar month preceding the relevant calendar month m of relevant quarter year q ;

nm means the number of business days between y and z inclusive;

$\sum_{d=y}^z$ means the sum over all business days in the month preceding relevant calendar month m of relevant quarter year q ; and

$GCRPU_{t,q}$ means the Gas Cost Reference Price Uplift (p/kWh) in respect of relevant quarter year q in formula year t and shall take the value 0.1185.

(d) The NTS Shrinkage Gas Volume Target

- (i) For the purposes of paragraph 2(b) of this condition, the NTS shrinkage gas volume target (GWh) in respect of relevant quarter

year q in formula year t ($GVT_{t,q}$) shall be derived from the following formula:

$$GVT_{t,q} = \text{Max}(GCVT_{t,q} + GCVTA_{t,q}, 0) + CVST_{t,q} + CVO_{t,q} + \text{NOUAG}_{t,q}$$

where:

$\text{Max}[x,y]$ is the value which is the greater of x and y;

$GCVT_{t,q}$ means the NTS compressor gas volume target (GWh) in respect of relevant quarter year q of formula year t set out in Table B below:

Table B

$GCVT_{t,q}$ (GWh)	t=11
q=1	415
q=2	318
q=3	510
q=4	343

$GCVTA_{t,q}$ means the NTS compressor gas volume target adjustment (GWh) in respect of relevant quarter year q of formula year t and shall be derived from the following formula:

$$GCVTA_{t,q} = \left(\frac{GCVT_{t,q}}{GCVT_{t,q} + 3(ECVT_{t,q})} \right) \times (AASFF_{t,q} - FASFF_{t,q}) \times 9.3$$

where:

$ECVT_{t,q}$ has the meaning given to that term in paragraph 2(f) of this condition;

$AASFF_{t,q}$ means the actual average daily gas flows through the St. Fergus Entry terminal (mcm/day) in relevant quarter q in formula year t; and

FASFF_{t,q} means the forecast average daily gas flows through the St. Fergus Entry terminal (mcm/day) in relevant quarter q in formula year t set out in Table C below:

Table C

FASFF _{t,q} (mcm/day)	t=11
q=1	55
q=2	49
q=3	62
q=4	65

CVST_{t,q} means the calorific value shrinkage gas volume target (GWh) in respect of each relevant quarter year q of formula year t and shall take the value 35.5GWh;

CVO_{t,q} means the calorific value outturn which shall be calculated as the aggregate of the daily volumes of NTS shrinkage (GWh) in respect of the relevant quarter year q in formula year t that is attributable to the calculation of daily calorific values – alternative method, under section 4A(1)(b) of the Gas (Calculation of Thermal Energy) (Amendment) Regulations 2002 in respect of (i) gas taken off the NTS at the following NTS offtakes: ROSS, DYFFRYN CLYDACH, COWPEN BEWLEY and/or (ii) gas entering a Distribution Network without passing through the NTS; and

NOUAG_{t,q} means the net outturn NTS SO unaccounted for gas volume (GWh) which in respect of each relevant quarter year q of formula year t and shall be calculated from the following formula:

$$NOUAG_{t,q} = \sum_{d \in q} UAGO_{t,d}$$

where:

$UAGO_{t,d}$ means the amount of gas (GWh) that remains unaccounted for on each day d in formula year t after the Entry Close-out Date (as defined in the network code TPD Section E) following the assessment of NTS Shrinkage for each such day d performed in accordance with the network code TPD section N paragraph 2.3.

(e) The NTS shrinkage incentive electricity cost reference price

- (i) For the purposes of paragraph 2(b) of this condition, the NTS Shrinkage incentive electricity cost reference price (p/kWh) in respect of relevant quarter year q in formula year t ($ECRP_{t,q}$) shall be derived from the following formula:

$$ECRP_{t,q} = \frac{\sum_{d=e}^f FEP_{t,q,d}}{n} \times (1 + RPU_t)$$

where:

$FEP_{t,q,d}$ means the mid-point of the forward bid/offer price (expressed in p/kWh) as quoted in the "ICIS Heren European Daily Electricity Markets" published price reporting service (or any similar reporting service directed by the Authority) on business day d for a baseload electricity contract for delivery in respect of relevant quarter year q in formula year t ;

$\sum_{d=e}^f$ means the sum over all business days d between day e and day f (inclusive);

- e means the first business day of the calendar month preceding relevant quarter year q;
- f means the last business day of the calendar month preceding relevant quarter year q;
- n means the number of business days between e and f inclusive; and
- RPU_t means the retail price uplift in respect of formula year t and in formula year t = 11 shall have the value 0.23.

(f) The NTS Shrinkage incentive Electricity Volume Target

- (i) For the purposes of paragraph 2(b) of this condition, the NTS shrinkage incentive electricity volume target (GWh) in respect of relevant quarter year q in formula year t ($EVT_{t,q}$) shall be derived from the following formula:

$$EVT_{t,q} = \text{Max}(ECVT_{t,q} + ECVTA_{t,q}, 0)$$

where:

$\text{Max}[x,y]$ is the value which is the greater of x and y;

$ECVT_{t,q}$ means the NTS compressor electricity volume target (GWh) in respect of relevant quarter year q in formula year t and as set out in Table D below:

Table D

$ECVT_{t,q}$ (GWh)	t=11
q=1	1
q=2	0
q=3	32
q=4	124

$ECVTA_{t,q}$ means the NTS compressor electricity volume target adjustment (GWh) in respect of relevant quarter year

q of formula year t and shall be derived from the following formula:

$$ECVTA_{t,q} = \left(\frac{3(ECVT_{t,q})}{GCVT_{t,q} + 3(ECVT_{t,q})} \right) \times \left(AASFF_{t,q} - FASFF_{t,q} \right) \times \frac{9.3}{3}$$

where:

AASFF_{t,q}, FASFF_{t,q} and GCVT_{t,q} have the meanings set out in paragraph 2 (d) of this condition.

(g) The traded price of carbon adjustment

- (i) For the purposes of paragraph 2(b) of this condition, the traded price of carbon adjustment (£million) in respect of formula year t (TPCA_t) shall be derived from the following formula:

$$TPCA_t = \frac{\sum_q (GECVT_{t,q} - GECVP_{t,q}) \times TPCU_t}{100}$$

where:

GECVT_{t,q} means the gas equivalent compression volume target (GWh) in respect of relevant quarter year q in formula year t and shall be derived from the following formula:

$$GECVT_{t,q} = \text{Max}(GCVT_{t,q} + GCVTA_{t,q}, 0) + 3 * EVT_{t,q}$$

where:

Max [x,y] is the value equal to the greater of x and y;

GCVT_{t,q} and GCVTA_{t,q} have the meanings set out in paragraph 2(d) of this condition; and

EVT_{t,q} has the meaning set out in paragraph 2(f) of this condition.

$GECVP_{t,q}$ means the aggregate of the volume of gas in GWh and electricity in gas-equivalent GWh (gas-equivalent GWh being the volume of electricity in GWh multiplied by a factor of 3) purchased for the purpose of operating compressors in respect of relevant quarter year q in formula year t; and

$TPCU_t$ is the uplift required (p/kWh) to reflect the traded price of carbon in respect of formula year t and shall take the value set out in Table E below:

Table E

	t=11
$TPCU_t$ (p/kWh)	0.268

(h) Transmission Network Use of System Cost Target

- (i) For the purposes of paragraph 2(b) of this condition, the Transmission Network Use of System costs (£million) in respect of formula year t ($TNUoS_t$) to be incurred by the licensee in operating its electric compressors shall be derived from the following formula:

$$TNUoS_t = \frac{\sum_s TNUoS_{t,s}}{1,000,000}$$

where:

$TNUoS_{t,s}$ means the Transmission Network Use of System costs in respect of each relevant compressor site s in respect of formula year t and shall be derived in accordance with Table F:

Table F

Relevant Site s	Compressor	TNUoS_{t,s}
Lockerley		16000 x TDT _{t,s}
Felindre		30000 x TDT _{t,s}
Churchover		15000 x TDT _{t,s}
Wormington		15000 x TDT _{t,s}
St. Fergus		48000 x TDT _{t,s}
Kirremuir		35000 x TDT _{t,s}

where:

TDT_{t,s} means the TNUoS Demand Tariff (£/kW) in respect of formula year t and in respect of the charging zone in which the relevant compressor site s is located, published by National Grid Electricity Transmission plc in its Statement of Use of System Charges at 1 April in relevant year t.

(i) Distribution Use of System Cost Target

- (i) For the purposes of paragraph 2(b) of this condition, the Distribution Use of System costs (£million) in respect of formula year t (DUoS_t) to be incurred by the licensee in operating its Electric Compressors shall be derived from the following formula:

$$DUoS_t = \sum_s kVAC_{t,s} + FC_{t,s} + CC_{t,s}$$

where:

kVAC_{t,s} means the capacity charge (£million) applicable to that relevant compressor site s in respect of formula year t calculated as the Chargeable kVA specified in the electricity connection agreement for that site s multiplied by the relevant kVA tariff in respect of formula year t applicable to that site published in the "Use of System Charging Statement" (or otherwise

made available) by the relevant distribution network operator;

$FC_{t,s}$ means the fixed charge (£million) applicable to that relevant compressor site s in respect of formula year t as published in the "Use of System Charging Statement" (or otherwise made available) by the relevant distribution network operator; and

$CC_{t,s}$ means the distribution use of system consumption charge (£million) for relevant compressor site s in respect of formula year t calculated from the half-hourly metered consumption of electricity at that site multiplied by the relevant consumption tariff in respect of formula year t applicable to that site as published in the "Use of System Charging Statement" (or otherwise made available) by the relevant distribution network operator.

(3) Operating Margins Incentive

(a) Maximum operating margins incentive revenue

For the purposes of paragraph 1(a) of this condition, the maximum Operating Margins incentive revenue (in £) allowed to the licensee in respect of formula year t (OMIR_t) shall be derived from the following formula:

If $OMOPC_t \leq OMIT_t$, then:

$$OMIR_t = \text{Min} [OMUSF_t \times (OMIT_t - OMOPC_t), OMCAP_t]$$

Otherwise:

$$OMIR_t = \text{Max} [OMDSF_t \times (OMIT_t - OMOPC_t), OMFLO_t]$$

where:

Min [x,y] is the value which is the lesser of x and y;

Max [x,y] is the value which is the greater of x and y;

OMIT_t means the operating margins incentive target (in £) in respect of formula year t and shall be derived using the following formula:

for formula year t=10

$$OMIT_t = \text{£}17,318,792 + OMA_t$$

where:

OMA_t means the operating margins incentive target adjustment (in

£) in respect of formula year t whether of a positive or zero value in respect of the full recovery of the increase in costs efficiently incurred by the licensee as a result of booking deliverability at the Avonmouth LNG Storage facility. In the event the licensee incurs deliverability costs or a liability for deliverability costs at Avonmouth in formula year t=10, the licensee shall provide a statement to the Authority detailing the costs incurred or anticipated to be incurred and justification that these costs are efficient. This statement shall also detail the reduction in reprofiling and utilisation costs resulting from the licensee incurring deliverability costs. This statement shall be provided not later than 14 days after the licensee books deliverability at the Avonmouth LNG Storage facility. Upon receipt of the statement, the Authority will determine the extent to which the licensee's costs are efficient and, if appropriate, shall issue a direction specifying the value of OMA_t . In formula year t=10 OMA_t shall take the value zero unless otherwise directed by the Authority.

for formula year t=11

$$OMIT_t = 0.95 \times OMIT_{t-1} + OMLS_t$$

where:

$OMLS_t$ means the operating margins incentive target adjustment in respect of formula year t (in £) whether of a positive or zero value in respect of the full recovery of the costs efficiently incurred by the licensee for locational - Scotland operating margins. In the event the licensee will incur locational - Scotland operating margins costs or a liability for locational - Scotland operating margins costs in formula year t=11, the licensee shall within 14 days of booking locational - Scotland operating margins provide a statement to the Authority detailing these

costs and justification that these costs are efficient. Upon receipt of the statement, the Authority will determine the extent to which the licensee's costs are efficient and, if appropriate, shall issue a direction specifying the value of $OMLS_t$. In formula year $t=11$ $OMLS_t$ shall take the value zero unless otherwise directed by the Authority.

For the relevant formula year t , for formula year $t=10$ and formula year $t=11$ $OMIT_t$ shall take the value derived from the formula above unless the Authority directs that an alternative value (either higher or lower) shall apply. Such alternative value shall only be directed by the Authority to apply if the applicable prices specified in Special Condition C3 of the licensee's transportation licence for the Avonmouth LNG Storage facility change from those specified in the Authority's Notice of Modification under Section 23 of the Gas Act of 2 March 2011 (the "Notice") such that the value of $OMIT_t$ would vary by an amount in excess of £100,000. The Authority shall direct a change to this value in line with any change to the prices set out in the Notice.

$OMUSF_t$ means the operating margins upside sharing factor in respect of formula year t and in formula year $t=10$ and formula year $t=11$ shall take the value 0.2;

$OMDSF_t$ means the operating margins downside sharing factor in respect of formula year t and in formula year $t=10$ and formula year $t=11$ shall take the value 0.2;

$OMCAP_t$ means the operating margins incentive cap in respect of formula year t and in formula year $t=10$ and formula year $t=11$ shall take the value £1,000,000;

$OMFLO_t$ means the operating margins incentive collar in respect of formula year t and in formula year $t=10$ and formula year $t=11$ shall take the value -£1,000,000;

$OMOPC_t$ means the operating margins overall performance cost measure (in

£) in respect of formula year t and in formula year t=10 and formula year t=11 shall be derived using the following formula:

$$\text{OMOPC}_t = \text{OMAPC}_t + \text{OMUPC}_t$$

where:

OMAPC_t means the operating margins availability performance cost measure (in £) in respect of formula year t and is equal to the total costs incurred by the licensee in respect of formula year t in respect of the procurement of availability of Operating Margins services for the purposes of satisfying Operating Margins Requirements (having the meaning given to those terms in the network code) including all capacity fees, gas delivery service fees, standby fees and costs associated with re-profiling, withdrawing and injecting gas into and out of storage;

OMUPC_t means the operating margins utilisation performance cost measure (in £) in respect of formula year t and shall be derived using the following formula:

if: $\text{OMUV}_t \leq \text{OMUVC}_t$, then:

$$\text{OMUPC}_t = \text{OMAUC}_t$$

if: $\text{OMUV}_t > \text{OMUVC}_t$, then:

$$\text{OMUPC}_t = \text{OMAUC}_t \times \left[\frac{\text{OMUVC}_t}{\text{OMUV}_t} \right]$$

where:

OMUV_t means the total volume (in GWh) of utilisation of operating margins (as defined in accordance with Section K

paragraph 1.1.2 (c) of the uniform network code as at 1 March 2011) in formula year t;

OMUVC_t means the operating margins utilisation volume cap (in GWh) in respect of formula year t and in formula year t=10 and in formula year t=11 shall take the value 78.1GWh; and

OMAUC_t means the operating margins actual utilisation cost (in £) in respect of formula year t and shall be equal to the total costs incurred by the licensee in respect of formula year t as a result of the utilisation of Operating Margins as defined in accordance with of Section K paragraph 1.1.2 (c) of the uniform network code as at 1 March 2011. Such costs include costs incurred as a result of the withdrawal of gas from an Operating Margins Facility (as such facility is defined in the network code), the cost of the Operating Margins WACOG as calculated in accordance with Section K of the uniform network code multiplied by the relevant utilisation volume and costs incurred as a result of re-profiling required as a result of the utilisation of Operating Margins including capacity fees, gas delivery service fees and costs associated with the injection of gas into an Operating Margins Facility. For the avoidance of doubt, costs reported under OMAUC_t will not also be reported under OMAPC_t and vice versa.

(4) Residual Gas Balancing Incentive

(a) Maximum residual gas balancing incentive revenue

For the purposes of paragraph 1(a) of this condition, the maximum residual gas balancing incentive revenue allowed to the licensee in respect of formula year t (RBIR_t) shall be derived from the following formula:

$$RBIR_t = \text{Min} [RBCAP_t, \text{Max} (STIP_t, RBF_t)]$$

where:

RBCAP_t means the maximum residual gas balancing incentive revenue (£million) in respect of formula year t, and in formula year t=11 shall take the value £2million;

RBF_t means the minimum residual gas balancing incentive revenue (£million) in respect of formula year t, and in formula year t≥8 shall take the value £-3.5million;

STIP_t means the sum of the total daily incentive payments (£million) under the residual gas balancing incentive in respect of formula year t and shall be calculated in accordance with paragraph 4(b) of this condition;

Min[x,y] means the value equal to the lesser of x and y;

Max[x,y] means the value equal to the greater of x and y;

(b) The sum of the total daily incentive payments under the residual gas balancing incentive

For the purposes of paragraph 4(a) of this condition, the sum of the total daily incentive payments under the residual gas balancing incentive in respect of formula year t (STIP_t) shall be derived from the following formula:

$$STIP_t = \frac{\sum_d DPIP_{t,d} + \sum_d DLIP_{t,d}}{1,000,000}$$

where:

\sum_d means the sum across all days d in formula year t;

$DPIP_{t,d}$ means the daily price incentive payment (£) and shall be calculated in accordance with paragraph 4(c) of this condition; and

$DLIP_{t,d}$ means the daily linepack incentive payment (£) and shall be calculated in accordance with paragraph 4(e) of this condition.

(c) The daily price incentive payment

For the purposes of paragraph 4(b) of this condition, the daily price incentive payment (£) in respect of day d of formula year t ($DPIP_{t,d}$) shall depend on the value of $PPM_{t,d}$ and shall be derived from Table G below:

Table G

For formula year t=11,	
$PPM_{t,d}$	$DPIP_{t,d}$
$0 \leq PPM_{t,d} \leq 5$	$1500 - (PPM_{t,d} \times 1000)$
$5 < PPM_{t,d} < 75.667$	$-3500 - (375 \times (PPM_{t,d} - 5))$
$75.667 \leq PPM_{t,d}$	-30000

where:

DPIP_{t,d} means the daily price incentive payment (£) in respect of day d of formula year t;

PPM_{t,d} means the daily price performance measure (%) in respect of day d of formula year t and shall be calculated in accordance with paragraph 4(d) of this condition;

(d) The daily residual balancing price performance measure

For the purposes of paragraph 4(c) of this condition, the licensee's daily residual balancing price performance measure in respect of day d in formula year t (PPM_{t,d}) shall be derived from the following formula:

$$PPM_{t,d} = \left(\frac{TMIBP_{t,d} - TMISP_{t,d}}{|SAP_{t,d}|} \right) \times 100$$

where:

TMIBP_{t,d} means the price in pence per kilowatt hour which is equal to the highest market offer price (having the meaning given to that term in the network code) in relation to an eligible balancing action (having the meaning given to that term in the network code) excluding any locational actions taken in respect of day d of formula year t unless the licensee took no such eligible balancing action in which case TMIBP_{t,d} shall equal SAP_{t,d};

TMISP_{t,d} means the price in pence per kilowatt hour which is equal to the lowest market offer price (having the meaning given to that term in the network code) in relation to an eligible balancing action (having the meaning given to that term in the network code) excluding any locational actions taken in respect of day d of formula year t unless the licensee took no such eligible balancing action in which case TMISP_{t,d} shall equal SAP_{t,d}; and

$SAP_{t,d}$ means the system average price (having the meaning given to that term in the network code) in respect of day d of formula year t.

(e) The daily linepack incentive payment

For the purposes of paragraph 4(b) of this condition, the daily linepack incentive payment (£) in respect of day d of formula year t ($DLIP_{t,d}$) shall depend on the value of $LPM_{t,d}$ and shall be derived in accordance with Table H below:

Table H

$LPM_{t,d}$	$DLIP_{t,d}$
$0 \leq LPM_{t,d} \leq LPUL_t$	$LDCAP_t$
$LPUL_t < LPM_{t,d} < LPT_t$	$LDCAP_t \times \left(\frac{LPT_t - LPM_{t,d}}{LPT_t - LPUL_t} \right)$
$LPM_{t,d} = LPT_t$	0
$LPLL_t > LPM_{t,d} > LPT_t$	$LDF_t \times \left(\frac{LPT_t - LPM_{t,d}}{LPT_t - LPLL_t} \right)$
$LPM_{t,d} \geq LPLL_t$	LDF_t

where:

$DLIP_{t,d}$ means the daily linepack incentive payment (£) in respect of day d of formula year t;

$LPM_{t,d}$ means the daily linepack performance measure (mcm) in respect of day d of formula year t and shall be calculated in

accordance with paragraph 4(f) of this condition;

LPT _t	means the linepack performance target (mcm) in respect of formula year t and in formula year t ≥ 8 shall take the value 2.8mcm;
LPUL _t	means the linepack upper band limit (mcm) in respect of formula year t and in formula year t ≥ 8 shall take the value 1.5mcm;
LDCAP _t	means the linepack daily cap amount (£) in respect of formula year t and in formula year t ≥ 8 shall take the value £4000;
LPLL _t	means the linepack lower limit (mcm) in respect of formula year t and in formula year t ≥ 8 shall take the value 15mcm; and
LDF _t	means the linepack daily floor amount (£) in respect of formula year t and in formula year t ≥ 8 shall take the value £-30,000.

(f) The linepack performance measure

For the purposes of paragraph 4(e) of this condition, the linepack performance measure, in respect of day d of formula year t (LPM_{t,d}) shall be derived from the following formula:

$$LPM_{t,d} = \text{Max} [(OLP_{t,d} - CLP_{t,d}), (CLP_{t,d} - OLP_{t,d})]$$

where:

Max [x,y] is the value equal to the greater of x and y;

OLP_{t,d} means the total NTS linepack in respect of day d of

formula year t as at 06:00 hours on day d;

$CLP_{t,d}$ means the NTS linepack in respect of day d of formula year t as at 06:00 hours on day d+1; and

NTS linepack means the volume of gas within the NTS as calculated by the licensee in accordance with the methodology proposed by the licensee for that purpose from time to time and approved by the Authority.

(5) Quality of Information Incentive (QIIR_t)

(a) Principal formula

For the purposes of paragraph 1(a) of this condition, the quality of information incentive revenue (£million) allowed to the licensee in respect of formula year t (QIIR_t) shall be derived from the following formula:

$$QIIR_t = QDIIR_t + QWAIR_t + QWTIR_t$$

where:

QDIIR_t means the quality of demand information incentive revenue (£million) in respect of formula year t and shall depend on the value of DFIPE_t as derived in accordance with Table I below:

Table I

For formula year t = 11,	
DFIPE_t	QDIIR_t
$0 \leq DFIPE_t < DFA_t$	8.27
$DFA_t \leq DFIPE_t < 2.5 + DFA_t$	$8.27 - (2.667 \times (DFIPE_t - DFA_t))$
$2.5 + DFA_t \leq DFIPE_t < 3.0 + DFA_t$	$1.6 - (6.4 \times (DFIPE_t - 2.5 - DFA_t))$
$3.0 + DFA_t \leq DFIPE_t$	-1.6

where:

DFIPE_t means the demand forecasting incentivised performance error as defined in paragraph 5(b) of this condition;

DFA_t means the demand forecasting adjustment in respect of formula year t and shall be derived from the following formula:

$$DFA_t = \text{Min} [DFSA_t, 0.35]$$

where :

DFSA_t means the demand forecasting short-cycle storage adjustment in respect of formula year t and shall be derived from the following formula:

$$DFSA_t = 0.01 \times (AIC_t - RAIC_t)$$

where:

AIC_t means the average annual capability to have gas injected (expressed in mcm/d) of the short-cycle storage facilities connected to the NTS at Holehouse Farm, Aldbrough, Holford Byley and Hilltop Farm in respect of formula year t and shall be derived from the following formula:

$$AIC_t = \left[\frac{\sum_d HHF_{d,t}}{365} \right] + \left[\frac{\sum_d ALD_{d,t}}{365} \right] + \left[\frac{\sum_d HOL_{d,t}}{365} \right] + \left[\frac{\sum_d HTF_{d,t}}{365} \right]$$

where:

$\sum_d x$ means the sum of x for all days d in the formula year t;

HHF_{d,t} means the capability of the short-cycle storage facility connected to the NTS at Holehouse Farm to have gas injected (expressed in mcm/d) on day d of formula year t as specified in the storage capacity notice submitted by the Storage Operator to the licensee (and updated from time to time) pursuant to the Storage Connection Agreement;

ALD_{d,t} means the capability of the short-cycle storage facility connected to the NTS at Aldbrough to have gas injected (expressed in mcm/d) on day d of formula year t as specified in the storage capacity notice submitted by the Storage Operator to the licensee (and updated from time

to time) pursuant to the Storage Connection Agreement;

HOL_{d,t} means the capability of the short-cycle storage facility connected to the NTS at Holford Byley to have gas injected (expressed in mcm/d) on day d of formula year as specified in the storage capacity notice submitted by the Storage Operator to the licensee (and updated from time to time) pursuant to the Storage Connection Agreement;

HTF_{d,t} means the capability of the short-cycle storage facility connected to the NTS at Hilltop Farm to have gas injected (expressed in mcm/d) on day d of formula year t as specified in the storage capacity notice submitted by the Storage Operator to the licensee (and updated from time to time) pursuant to the Storage Connection Agreement;

RAIC_t means the average annual capability to have gas injected (expressed in mcm/d) during the reference period of the short-cycle storage facilities connected to the NTS at Holehouse Farm, Aldbrough, Holford Byley and Hilltop Farm which in respect of formula year t=11 shall take the value of 19.3;

Min[x,y] is the value which is the lesser of x and y.

QWAIR_t means the quality of website availability incentive revenue (£million) in respect of formula year t and shall be derived from the following formula:

$$QWAIR_t = \frac{\sum_{\text{all } m} QWAIR_{t,m}}{1,000,000}$$

where:

$$\sum_{\text{all } m}$$

means the sum over all relevant calendar months m in formula year t;

QWAIR_{t,m}

means the quality of website availability incentive revenue in each relevant calendar month m in formula year t and shall depend on the value of WAPM_{t,m} and shall be derived from Table J below:

Table J

WAPM _{t,m}	QWAIR _{t,m}
WAPM _{t,m} ≤ (0.64 × WABM _{t,m})	-£4,167
(0.73 × WABM _{t,m}) ≥ WAPM _{t,m} > (0.64 × WABM _{t,m})	$\left[\frac{0.73 \times WABM_{t,m} - WAPM_{t,m}}{0.09 \times WABM_{t,m}} \right] \times (-£1,042) - £3,125$
WABM _{t,m} > WAPM _{t,m} > (0.73 × WABM _{t,m})	$\left[\frac{WABM_{t,m} - WAPM_{t,m}}{0.27 \times WABM_{t,m}} \right] \times (-£3,125)$
WAPM _{t,m} = WABM _{t,m}	£3,125
WABM _{t,m} < WAPM _{t,m} ≤ 1	$\left[\frac{WAPM_{t,m} - WABM_{t,m}}{1 - WABM_{t,m}} \right] \times £1,042 + £3,125$

where:

WAPM_{t,m}

means the quality of website availability incentive performance measure in respect of each relevant calendar month m in formula year t as defined in paragraph 5(c) of this condition;

WABM_{t,m}

is the website availability benchmark measure for each relevant calendar month m in formula year t and in t=11 shall take the value 0.993;

QWTIR_t

means the quality of website timeliness incentive revenue (£million) in formula year t, and shall be derived from the following formula:

$$QWTIR_t = \frac{\sum_{\text{all } m} QWTIR_{t,m}}{1,000,000}$$

where:

$\sum_{\text{all } m}$ means the sum over all relevant calendar month m in formula year t ;

$QWTIR_{t,m}$ is the quality of website timeliness incentive revenue in each relevant calendar month m in formula year t and shall depend on the value of $WTPM_{t,m}$ and shall be derived from Table K below:

Table K

WTPM_{t,m}	QWTIR_{t,m}
$WTPM_{t,m} \leq (0.64 \times WTBM_{t,m})$	-£4,167
$(0.73 \times WTBM_{t,m}) \geq WTPM_{t,m} > (0.64 \times WTBM_{t,m})$	$\left[\frac{0.73 \times WTBM_{t,m} - WTPM_{t,m}}{0.09 \times WTBM_{t,m}} \right] \times (-£1,042) - £3,125$
$WTBM_{t,m} > WTPM_{t,m} > (0.73 \times WTBM_{t,m})$	$\left[\frac{WTBM_{t,m} - WTPM_{t,m}}{0.27 \times WTBM_{t,m}} \right] \times (-£3,125)$
$WTPM_{t,m} = WTBM_{t,m}$	£3,125
$WTBM_{t,m} < WTPM_{t,m} \leq 1$	$\left[\frac{WTPM_{t,m} - WTBM_{t,m}}{1 - WTBM_{t,m}} \right] \times £1,042 + £3,125$

where:

$WTPM_{t,m}$ means the quality of website timeliness incentive performance measure in respect of each relevant calendar month m in formula year t as defined in paragraph 5(d) of this condition; and

WTBM_{t,m} is the website timeliness benchmark measure in respect of relevant calendar month m in formula year t and in t=11 shall take the value 0.905.

(b) Demand forecasting incentivised percentage error

For the purposes of paragraph 5(a) of this condition the demand forecasting incentivised percentage error (DFIPE_t) shall be derived from the following formula:

$$DFIPE_t = \left(\frac{\sum_d^D |DADF_d - AD_d|}{\sum_d^D AD_d} \right) \times 100$$

where:

d means the first day of formula year t;

D means the final day of formula year t;

DADF_d means the day-ahead forecast NTS throughput value (mcm) published by the licensee (in accordance with the network code) on its website not later than 14:00 hours at day ahead (d-1) in respect of each day of formula year t. Where the day ahead 14:00 forecast NTS throughput value is not published by 14:00 hours at day ahead (d-1), the next forecast published on the licensee's website for the gas day concerned shall be used;

AD_d means Actual NTS Throughput (mcm) on a given day d, calculated five days following the day (d+5), on each day of formula year t where:

Actual NTS Throughput

means the total offtake of gas from the NTS on each day (measured in mcm), including gas offtakes by DN Operators, Storage Facilities, interconnectors and Very Large Daily Metered Consumers (VLDMC) connected to the NTS, plus the physical elements of NTS Shrinkage; and

DN Operators, Shrinkage, Storage Facilities and VLDMC shall have the meaning given to those terms in the network code.

(c) Quality of website availability incentive performance measure

For the purposes of paragraph 5(a) of this condition the quality of website availability performance measure ($WAPM_{t,m}$) in respect of each relevant calendar month m in formula year t shall be derived from the following formula:

$$WAPM_{t,m} = \frac{\left(\frac{n_{t,m} - WAPPV_{t,m}}{n_{t,m}} \right) + \left(\frac{n_{t,m} - WAPDE_{t,m}}{n_{t,m}} \right) + \left(\frac{n_{t,m} - WAPRE_{t,m}}{n_{t,m}} \right)}{3}$$

where:

“ $n_{t,m}$ ” means the number of minutes in the relevant calendar month m in formula year t over which website availability performance is measured, which is derived in the following manner:

$$n_{t,m} = N_{t,m} - POM_{t,m}$$

where:

$N_{t,m}$ means the number of minutes in the relevant calendar month m in formula year t ; and

$POM_{t,m}$ means the number of minutes of planned downtime in each relevant calendar month m in formula year t which shall not exceed 240 minutes in each month and which shall not include any minutes that fall between the hours of 07:00 and 19:00 Monday to Friday (inclusive) and which shall not include any minutes relating to a planned outage where the licensee has not published a notice of the planned outage on its website at least 48 hours in advance of the commencement of the planned outage.

$WAPPV_{t,m}$ means the website availability performance measure for the licensee’s Gas Operational data, Prevailing View screen expressed

as the number of minutes of downtime of the Prevailing View screen published on the licensee's website in each relevant calendar month m in formula year t;

$WAPDE_{t,m}$ means the website availability performance measure for the licensee's Gas Operational data, Data Explorer screen expressed as the number of minutes of downtime of the Data Explorer screen published on the licensee's website in each relevant calendar month m in formula year t; and

$WAPRE_{t,m}$ means the website availability performance measure for the licensee's Gas Operational data, Report Explorer screen expressed as the number of minutes of downtime of the Report Explorer screen published on the licensee's website in each relevant calendar month m in formula year t.

(d) Quality of website timeliness incentive performance measure

For the purposes of paragraph 5(a) of this condition the quality of website timeliness performance measure ($WTPM_{t,m}$) in respect of each relevant calendar month m in formula year t shall be derived from the following formula:

$$WTPM_{t,m} = \frac{(WTPN_{t,m} + WTPNN_{t,m} + WTPNA_{t,m} + WTPDF_{t,m})}{4}$$

where:

$WTPN_{t,m}$ means the website timeliness performance measure for the licensee's Predicted Closing Linepack Data Item or Report, and has a value between 0 and 1, representing the proportion of occasions during each relevant calendar month m in formula year t that hourly data updates were posted within 10 minutes of the start of the hour (i.e. the 12:00 update published by 12:10 at the latest), expressed as a proportion of all publication occasions;

WTPNN_{t,m} means the website timeliness performance measure for the licensee's National Forecast Flow Data Item or Report, and has a value between 0 and 1, representing the proportion of occasions during each relevant calendar month m in formula year t that hourly data updates were posted within 10 minutes of the start of the hour (i.e. the 12:00 update published by 12:10 at the latest), expressed as a proportion of all publication occasions;

WTPNA_{t,m} means the website timeliness performance measure for the licensee's National Physical Flow Data Item or Report, and has a value between 0 and 1, representing the proportion of occasions during each relevant calendar month m in formula year t that hourly data updates were posted within 10 minutes of the start of the hour (i.e. the 12:00 update published by 12:10 at the latest), expressed as a proportion of all publication occasions; and

WTPDF_{t,m} means the website timeliness performance measure for the licensee's NTS Throughput Data Item or Report, and has a value between 0 and 1, representing the proportion of occasions during each relevant calendar month m in formula year t that the 14:00 hours (day ahead), 02:00 hours (day ahead), 12:00 hours (within day), 15:00 hours (within day), 18:00 hours (within day) and 21:30 (within day) publication deadlines are met;

NTS Throughput Data Item or Report means

a data item or report published by the licensee showing, amongst other data, the forecast level of Actual NTS throughput;

Predicted Closing Linepack Data Item or Report means

an hourly data item or report published by the licensee showing, for each day, the opening NTS Linepack, two projected closing NTS Linepack figures, and Forecast Total System Demand (measured in mcm). NTS Linepack and Forecast Total System Demand have the meaning given to those terms in the network code;

National Forecast Flow Data Item or Report means

an hourly data item or report published by the licensee showing, for each day, aggregate forecast flows of gas into the NTS based on delivery flow nominations (measured in mcm); and

National Physical Flow Data Item or Report means

an hourly data item or report published by the licensee showing, for each day, aggregate forecast flows of gas into the NTS based on actual (aggregate) physical flows into the NTS (measured in mcm).

(e) Exceptional events

(i) where:

(aa) the licensee has notified the Authority of an event (the “notified event”) which it considers to be an exceptional event within 14 days of its occurrence; and

(bb) the Authority is satisfied that the notified event is an exceptional event,

the Authority may issue a direction excluding from the demand forecasting incentivised percentage error ($DFIPE_t$) and/or the quality of website timeliness performance measure ($WTPM_{t,m}$) and/or the quality of website availability performance measure ($WAPM_{t,m}$) a specified period within formula year t during which the exceptional event has occurred.

(ii) A notice provided to the Authority by the licensee under paragraph 5(e)(i) of this condition must give particulars of the notified event and the reasons why the licensee considers it to be an exceptional event.

(iii) A direction made by the Authority under paragraph 5(e)(i) of this condition may be made subject to such terms and conditions as may be specified in the direction.

(iv) A direction issued by the Authority under paragraph 5(e)(i) of this condition shall not have effect unless, before it is made, the Authority has given notice to the licensee:

- (aa) setting out the terms of the proposed direction;
- (bb) stating the reasons why it proposes to make the direction; and
- (cc) specifying the period (not being less than 14 days from the date of the notice) within which the licensee may make representations or objections,

and the Authority has considered such representations or objections and given reasons for its decision.

- (v) For the purposes of this paragraph 5(e), an "exceptional event" means an event or circumstance that is beyond the reasonable control of the licensee and shall include, but not be limited to, catastrophic loss of power, sabotage, act of vandalism, flood, fire and any third party product or service failure having an industry wide impact.

(6) Greenhouse Gas Emissions Incentive

(a) Greenhouse Gas Incentive Revenue

For the purposes of paragraph 1(a) of this condition, the Greenhouse Gas Incentive Revenue (in £) allowed to the licensee in respect of formula year t (GHGIR_t) shall depend on the value of VIPM_t and shall be derived from Table L below:

Table L

VIPM _t	GHGIR _t
VIPM _t < VITL _t	(VITL _t - VIPM _t) × VIRP _t
VITL _t ≤ VIPM _t ≤ VITU _t	0
VIPM _t > VITU _t	(VITU _t - VIPM _t) × VIRP _t

where:

VIPM_t means the venting incentive performance measure (tonnes of natural gas) in respect of formula year t which shall be the aggregate amount of natural gas released to the atmosphere by venting from all relevant compressors;

VITL_t means the venting incentive target volume lower limit (in tonnes of natural gas) in respect of formula year t and in formula year t=10 shall take the value 2857 and in formula year t=11 shall take the value 2857;

VITU_t means the venting incentive target volume upper limit (in tonnes of natural gas) in respect of formula year t and in formula year t=10 shall take the value 3157 and in formula year t=11 shall take the value 3157;

VIRP_t means the venting incentive reference price (in £/tonne of natural gas vented) in respect of formula year t and shall be derived using the following formula:

$$\text{VIRP}_t = \text{NTCP}_t \times \text{VF}_t$$

where

NTCP_t means the Non Traded Carbon Price (in £/tCO₂e) in respect of formula year t and shall be derived using the following formula:

$$\text{NTCP}_t = \frac{\sum_{m=1}^{12} \text{NTMCP}_{m,t,y} \times \text{IF}_{m,t,y}}{12}$$

where:

NTMCP_{m,t,y} means the latest Non Traded Central Carbon Price (£/tCO₂e) for month m in formula year t as published in advance of month m by the Department of Energy and Climate Change (or any other government department from time to time) in year y prices;

$\sum_{m=1}^{12} \text{IF}_{m,t,y}$ means the sum of IF_{m,t,y} for months m=1 to m=12 where m=1 is the first month of formula year t and m=12 is the last month of formula year t;

$IF_{m,t,y}$

means the inflation factor from year y to month m in formula year t as derived using the following formula:

$$IF_{m,t,y} = \frac{AI_t}{AI_y}$$

where:

AI_t

means the annual inflation index for formula year t and is equal to the arithmetic average of the retail prices index numbers published or determined with respect to each of the six months from July to December (both inclusive) in formula year t-1;

AI_y

means the annual inflation index for year y and is equal to the arithmetic average of the retail prices index numbers published or determined with respect to each of the six months from July to December (both

inclusive) in year
y-1;

and

VF_t means the venting equivalent factor that represents the number of tonnes of CO₂ equivalent of each tonne of natural gas vented in respect of formula year t and in formula year t=10 shall take the value 20.84 and in formula year t=11 shall take the value 20.86.

“relevant compressor” means gas and electrically powered gas compression equipment forming part of the pipe-line system to which this licence relates that is used by the licensee to increase the pressure of gas in part of that pipe-line system; and

“venting” means the release of natural gas from a relevant compressor as a result of:

- (a) starting a compressor;
- (b) purging a compressor;
- (c) depressurising a compressor; or
- (d) the leakage of gas through a seal around the shaft of a compressor.

(b) Greenhouse Gas Emissions Project Costs

For the purposes of paragraph 1(a) of this condition, the greenhouse gas emissions project costs (in £) allowed to the licensee in respect of formula year t ($GHGC_t$) shall be of a positive or zero value as directed by the Authority for the purposes of paragraph 7 of Special Condition C28 (Requirement to develop and undertake a Scheme of Work to facilitate the establishment of a long term external gas system operator incentive to reduce targeted greenhouse gases). In the event the licensee incurs costs under Special Condition C28 (Requirement to

develop and undertake a Scheme of Work to facilitate the establishment of a long term external gas system operator incentive to reduce targeted greenhouse gases) that it considers should be recovered via GHGC_t , the licensee shall by 31 July in the formula year t following the formula year in which those costs are incurred provide a statement to the Authority detailing the costs incurred in formula year $t-1$ and justification that these costs were efficiently incurred. Upon receipt of the statement, the Authority will determine the extent to which the licensee's costs were efficiently incurred and, if appropriate, shall issue a direction specifying the value of GHGC_t . The value of GHGC_t in formula year $t=10$, formula year $t=11$ and formula year $t=12$ shall be zero or as directed by the Authority.

SCHEDULE 2

PROPOSED MODIFICATION OF THE SPECIAL CONDITION ON NATIONAL GRID GAS PLC'S GAS TRANSPORTER LICENCE IN RESPECT OF ITS NATIONAL TRANSMISSION SYSTEM UNDER SECTION 23 OF THE GAS ACT 1986

Add the following Special Condition

Special Condition C29: Requirement to undertake UAG Projects to investigate the causes of Unaccounted for Gas (UAG)

1. The licensee shall use reasonable endeavours to undertake the UAG Projects as specified in this condition for the purposes of investigating the causes of Unaccounted for Gas in the formula year $t=11$. The UAG Projects shall include but need not be limited to those set out in paragraph 4. Where the licensee does not undertake certain UAG projects it shall clearly set out its reasoning in the UAG Reports referred to in paragraph 2.
2. The licensee shall publish UAG Reports of the findings of these UAG Projects on its website and provide a copy of the UAG Reports to the Authority. The licensee shall publish the UAG Reports by 1 August 2012, 1 February 2013 and 1 May 2013, or such other dates as agreed by the Authority.
3. Within one month of publishing a UAG Report the licensee shall publish on its website all the relevant data referred to in the UAG Report. Where there are legitimate reasons for not publishing certain data on the website the Authority may consent for the licensee not to do so.
4. For the purposes of this condition:

"UAG Projects" means the projects currently undertaken by the licensee including:

- (i) the witnessing by the licensee of the validation of Measurement Equipment (as defined in the network code OAD Section D1.2.1) at NTS System Entry Points (as defined in the network code TPD Section A2.2.1) or Supply Meter Installations (as defined in the network code TPD Section M1.2.2) at NTS Exit Points (as defined in the network code TPD Section A3.4.1); and

- (ii) investigation and analysis of data in order to seek to identify causes of UAG (which may include data-mining analysis and a pilot project to consider the assessment of inherent NTS measurement uncertainty).

“UAG Report” means the report of the findings of the UAG Projects undertaken by the licensee. The UAG Report shall detail the UAG Projects the licensee has undertaken in the previous period, the UAG Projects it proposes to undertake in the next period and the licensee’s views on how the findings of the UAG Projects may be taken forward in order to reduce the volume of UAG. The UAG Report shall also detail the reasons why any UAG Projects have not been undertaken in the formula year $t=11$.

“Unaccounted for Gas” (UAG)

means the amount of gas (GWh) that remains unaccounted for after the Entry Close-out Date (as defined in the network code TPD Section E) following the assessment of NTS Shrinkage performed in accordance with the network code TPD section N paragraph 2.3.