

# Gas System Operator incentives review: Initial proposals

## Consultation

**Publication date:** 27/10/2014

**Response deadline:** 24/11/2014

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### Overview:

This document sets out, for consultation, our initial proposals to replace two incentives which expire at the end of March 2015 and one that expires in March 2016. All apply to National Grid Gas as gas transmission System Operator.

The incentives which expire on 31 March 2015 relate to forecasting and maintenance while the incentive that expires on 31 March 2016 relates to greenhouse gas emissions. We propose to run all three replacement schemes until the end of March 2018.

## Context

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National Grid Gas (NGG) is the gas transmission system operator (SO) responsible for balancing the system on a continuous basis across Great Britain (GB). To do this, the SO buys and sells gas and procures associated services. It also provides other services to market participants, such as demand forecasts. The SO is obliged to perform its role in an economic and efficient manner.

Ofgem sets incentives on the SO to promote behaviours that improve the efficient operation of the system. There are currently ten incentives in place on NGG covering areas such as residual balancing, demand forecasting, shrinkage and maintenance. These incentives were last set on 1 April 2013 and most were set for an eight year period to align with the RIIO-T11 price control. Where we were introducing new incentives or substantially changing the form of incentives we set these for a shorter period to enable their effectiveness to be assessed before committing to longer timescales.

## Associated documents

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- **Gas System Operator Incentives Review: Initial Consultation:**  
<https://www.ofgem.gov.uk/publications-and-updates/gas-system-operator-incentives-review-initial-consultation>
- **National Grid: External Incentive Plan – 2014 Review:**  
<http://www2.nationalgrid.com/WorkArea/DownloadAsset.aspx?id=34565>
- **Gas System Operator (SO) incentive schemes from 2013 final proposals consultation:** <https://www.ofgem.gov.uk/publications-and-updates/gas-system-operator-so-incentive-schemes-2013-final-proposals-consultation>

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## Executive Summary

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This document sets out our initial proposals to implement three new incentives that apply to National Grid Gas (NGG) as gas transmission system operator (SO). These would replace two incentives that are due to expire at the end of March 2015 and one at the end of March 2016. We are proposing to set these incentives until the end of March 2018 to provide a further period to evaluate the effectiveness and usefulness of these incentives.

These three incentives encourage NGG to demonstrate key behaviours and outputs:

- Provide accurate gas demand forecasts two to five days ahead of delivery: these forecasts assist industry parties making decisions in relation to the balancing of their supply and demand positions (current incentive expires March 2015);
- Promote efficiencies in the way in which NGG plans for maintenance works: which enables industry parties to be able to take network outages into consideration when planning their own activities; (current incentive expires March 2015);and
- Reduce the greenhouse gas emissions from compressors (current incentive expires March 2016).

These incentives were either introduced for the first time or substantially redesigned in 2013 and were set for a limited duration to test their effectiveness. We believe these incentives have been delivered efficiencies to consumers by incentivising NGG to make changes in its operation of the system.

In the first year of the D-2 to D-5 demand forecasting incentive, NGG delivered an improvement of over 10% on its accuracy for the entire year. Since the introduction of the maintenance incentives, NGG has not deviated from its maintenance plan and has significantly reduced the number of maintenance days affecting consumers. There have been slight reductions in the level of emissions from the NTS.

### **Previous consultation from April 2014**

In the initial consultation we consulted on five different high level policy options for each of the three incentives. In brief, the options were:

- Renew the incentives as they are currently designed;
- Continue with the same design, but change parameters;
- Change the design of the incentives;
- Introduce new licence obligations on NGG in respect of the activity concerned; or
- Let the incentive expire.

## **Stakeholders' views**

Stakeholders stressed that these incentives were too new to allow for a full evaluation of their effectiveness. Stakeholders were strongly supportive of continuing to have a maintenance incentive on NGG. However, some stakeholders considered that the financial incentive on the two to five days demand forecast should be removed. Further engagement by NGG has suggested that other stakeholders such as major energy users value this forecast and hence support the retention of the incentive.

## **Our initial proposals**

We are proposing to introduce new incentives to replace the current schemes from April 2015/16, as appropriate, to March 2018.

We propose to base the new incentive schemes on the existing scheme structure with changes to both the parameters where appropriate (for example, tightening of targets to reflect improvements in performance).

In addition, we are proposing to remove In-Line Inspections (ILIs) from the maintenance incentives to as these are outside of NGG's control.

We are also planning to introduce a new licence mechanism which enables NGG to apply for funding to carry out studies to help it provide further understanding and transparency to the public around reducing greenhouse gas emissions from compressors.

## **Next steps**

This consultation will close on 24/11/2014. Following our review of responses, we intend to issue a final proposal consultation during winter 2014. We intend to have the licence modifications in place for 1 April 2015 scheme start.

# 1. Introduction

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## Chapter Summary

This chapter describes our incentives on the System Operator, reiterates the objectives of our previous consultation and sets out the next steps.

## Question box

**Question 1:** Do you agree that our initial proposals provide a balanced risk/reward profile to the SO?

**Question 2:** Do you agree that the draft licence conditions we are publishing support the policy we are proposing?

## Incentive scheme

1.1. National Grid Gas (NG) is the gas transmission System Operator (SO) responsible for balancing the system across Great Britain (GB). To do this, the SO buys and sells gas and procures a range of associated services. It also plays a key role in providing information to market participants, such as demand forecasts. The SO is required under its licence to undertake its actions in an economic and efficient manner.

1.2. We set incentives on the SO to promote behaviours that improve the efficient operation of the system. In December 2012, we published our final proposals and set the incentives from 1 April 2013. Most of the incentives were set for eight years, in alignment with incentives placed on the gas transmission network owner in RIIO-T1.

## Incentive review

1.3. For three incentives, we decided not to set eight-year incentives, namely the two to five days ahead of gas delivery (D-2 to D-5) demand forecast incentive; the maintenance incentives; and the Greenhouse Gas (GHG) emissions incentive:

1.3.1. The D-2 to D-5 demand forecast incentive encourages the SO to improve the accuracy of its future forecasts of demand, specifically its forecast of what demand will be two days to five days ahead.

1.3.2. The maintenance incentives encourage the SO to avoid changes and minimise the length of maintenance in the National Transmission System (NTS).

1.4. We set these two incentive schemes for two years in order to be able to test whether the incentives set were successfully promoting these outputs, determine

whether our target and incentive structure was fit for purpose and obtain further stakeholder input in those areas.

1.5. The GHG emissions incentive contains an obligation for NGG to undertake a scheme of work under licence condition 8D to assess whether it would be possible to move to longer term incentives. We set the incentive for three years to allow the outputs from this scheme of work to be incorporated in any long term incentive.

1.6. In April 2014, we published our initial consultation on these incentives and highlighted the assessment criteria that we were using to analyse whether we should:

- Renew the incentives as they are currently designed;
- Continue with the same design, but change parameters;
- Change the design of the incentives;
- Introduce new licence obligations on NGG; or
- Let the incentive expire.

1.7. We received four responses to our consultation. Overall, stakeholders noted that the incentives are not established enough to allow for a thorough evaluation of the incentives' effectiveness. Stakeholders were also divided on specific incentives structure and whether we should maintain all of these incentives.

1.8. Since then, the SO has published its business plan for the three incentives where it set out its views on how they should be structured and how targets should be set. After having reviewed stakeholder responses and the SO's business plan, this document sets out our initial proposals for the three incentives.

1.9. We are proposing to keep the three incentives on the SO and to align durations such that all three expire in March 2018. For both of the new incentives, we are proposing to tighten the target to account for the SO's improved performance. For the GHG emissions, we are proposing to fix the target for the period 2016/18 at 2015/16 levels and to introduce an opportunity for the SO to apply for funding to investigate solutions to:

- enhance understanding of emissions,
- be transparent with its findings to the industry on its investigations, and
- devise mitigation strategies that have a net benefit to consumers until the end of the RIIO-T1 period (as a minimum).

## **Next steps**

1.10. This consultation will close on 24/11/2014. Following our review of responses, we intend to issue a final proposal consultation in winter 2014. We intend to have the licence modifications in place for the start of each incentive period (1 April 2015 for forecasting and maintenance, and 1 April 2016 for GHG emissions).

## **Your views**

1.11. We are interested in your views on the changes we are proposing to make. We also seek views on the draft licence conditions we are publishing alongside this consultation.



## 2. D-2 to D-5 Demand Forecasting Incentive

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### Chapter Summary

This chapter describes our initial proposals for our two to five days ahead demand forecasting incentive. It highlights the responses to our consultation and our analysis to reach our proposed incentive.

### Question box

**Question 1:** From the consultation responses we gather that some stakeholders do not value the D-2 to D-5 forecasting service. We would welcome your views on why do you value or not value these incentives? Is there no demand for this service, or is the level of accuracy the issue?

**Question 2:** Do you agree with the proposed target of 13.7mcm? If not, what else should we consider when setting the target? Please provide evidence if possible.

**Question 3:** Do you agree with the parameters (static error rate with equal weighting and no adjuster for volatility)? If not, why, and what alternatives do you believe we should consider? Please provide evidence for this.

**Question 4:** Do you agree with the proposed cap and floor? If not, why, and what alternatives do you believe we should consider? Please provide evidence for this.

### Summary of proposal

- Tighten the absolute forecasting error from 16mcm to 13.7mcm for all years;
- Maintain cap of £10m and a floor of -£1m;
- This proposed structure of the incentive should provide more accurate demand forecasts for the two to five days ahead of gas delivery which improves information for gas shippers to balance their trades, minimises the need for NGG to take actions to balance the system, and thereby reduces costs to consumers.

### Overview

2.1. NGG publishes national gas demand forecasts over a range of timescales to assist the industry to make efficient decisions in balancing their supply and demand positions.

2.2. The two to five day ahead, or D-2 to D-5, demand forecasting incentive is a new incentive introduced in 2013 with the aim of improving the accuracy of the targeted forecasts. This incentive was introduced following input from stakeholders

that highlighted the difference in accuracy between NGG's day ahead (D-1) demand forecast, where an incentive already existed, and the then not incentivised two to five days ahead (D-2 to D-5) forecasts. We believed that consumers would benefit from this incentive, as improved forecasting accuracy would allow shippers to better balance their positions, reducing the need for the SO to balance the system and a reduction in costs for consumers.

2.3. The D-2 to D-5 forecast incentive sets a target for the average forecast error for the year, across the forecasts for the four consecutive days. For every day, the average forecast error for each of the four days is produced. These errors are then averaged giving greater weight to the periods of higher demand, when there is greater value to parties having accurate information to assist in balancing their position.

2.4. The target for the 2013 to 2015 incentive period is 16 mcm. The target is the average forecasting error for these forecasts for the period 2010/13.

2.5. The current scheme provides a theoretical cap of £10m (NGG would have to have a 0mcm forecast error across the entire year), and a floor of -£1m (if the average forecast error for the SO exceeds 17.6mcm). The target uses the absolute forecast error, rather than a percentage error and no volatility adjuster is applied.

### Incentive scheme performance

2.6. Table 1 below shows NGG's D-2 to D-5 average demand forecasting error between 2009/10 and 2013/14.

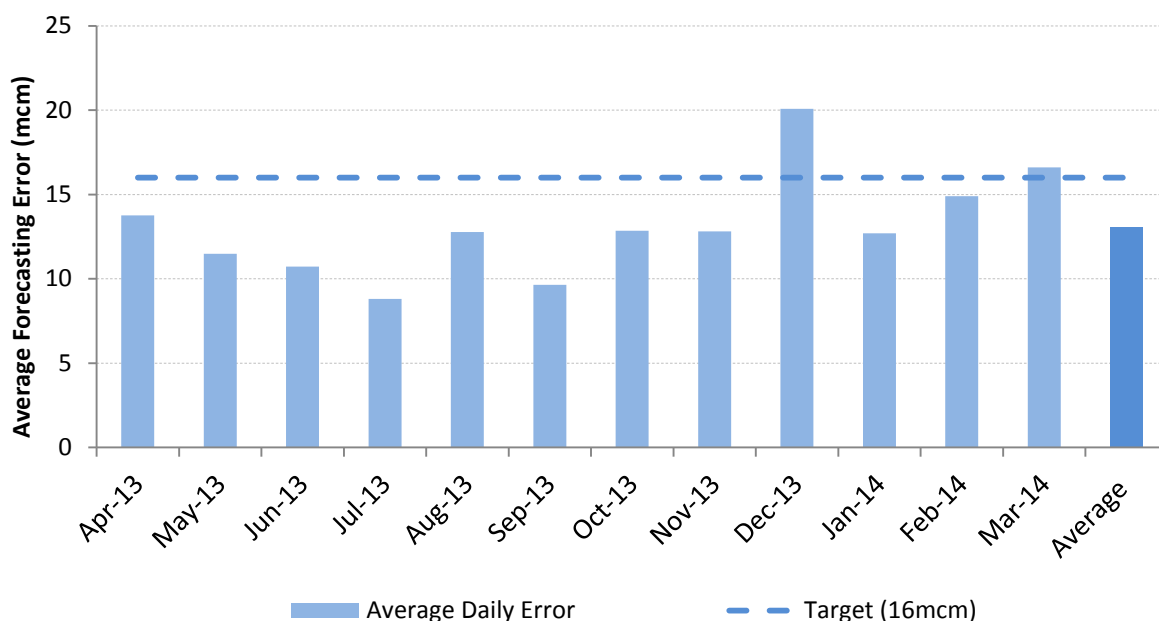
**Table 1 - NGG's forecast error**

Year	D-2 to D-5 average daily forecast error (mcm)
<b>2009/10</b>	15.0
<b>2010/11</b>	15.7
<b>2011/12</b>	15.1
<b>2012/13</b>	16.5
<b>2013/14</b>	13.1

2.7. In 2013/14, NGG's average forecast error was 13.1mcm, which is 2.9mcm below the target. This strong performance resulted in NGG receiving £1.61m in 2013/14 under this incentive.

2.8. Figure 1 illustrates NGG's strong performance with the average forecast error below the target for ten months in the 2013/14 incentive year.

**Figure 1- D-2 to D-5 monthly average forecast error for 2013/14**



## Stakeholder views

### *The previous consultation from April 2014*

2.9. In our April 2014 consultation, we asked stakeholders questions relating to this incentive. We received four responses to the consultation.

2.10. Many stakeholders highlighted that they did not use these forecasts widely. NGG, however, noted that when these incentives were introduced, many customers had expressed value in improving the forecasts prior to the day ahead, in particular by taking account for more challenging operational conditions.

2.11. One other stakeholder highlighted that there was limited value in improving the quality of the forecasts and that priority should be given to the day-ahead (D-1) forecast.

2.12. One stakeholder, however, noted that a measure of whether the incentive was benefiting industry was evidence on whether NGG has reduced the number of residual balancing actions. In the stakeholder's view this would compensate for the additional cost of funding the incentive scheme. This respondent felt it would be more appropriate to replace the financial incentive with a licence obligation or reputational incentive.

2.13. Another respondent suggested that the incentive revenue cap of £10m should be significantly reduced or removed, and that the target should be tightened

to create more of a challenge to NGG to improve its performance. The same respondent felt that a reputational incentive should be considered as any revenue awarded to NGG is paid through System Operator charges which are ultimately paid by the consumer.

2.14. One stakeholder suggested that we should reduce the target to create a higher challenge to NGG.

### **National Grid Gas's business plan**

2.15. NGG published its views on the current incentive and its views on how we should account for recent performance when resetting the incentive.

2.16. NGG provided evidence that stakeholders had shown a higher level of interest in this incentive than the limited number of responses to our initial consultation suggests. It stressed that it presented to a range of forums such as the Major Energy Users Group and it received feedback that many industrial players relied on these forecasts to inform their decisions. As such, NGG believes that there was value in continuing the incentive for three years, allowing more time to evaluate the usefulness of the improved forecasts.

2.17. NGG suggested that the incentive cap should be reduced from £10m to £2m with the floor remaining at -£1m to account for stakeholder preference for the D-1 incentive. NGG also proposed that the incentive should continue to be based on an annual absolute forecasting error rather than a percentile measurement of demand to incentivise performance. It also did not propose any volatility adjuster.

2.18. NGG proposed two options to set a target:

- either to set a target based on the average forecast error for the past three years (2011/14) and then apply a static efficiency factor. This would result in a target of 14.9mcm/d for 2015/16 with an efficiency factor being applied in the subsequent years of the scheme; or
- to apply an uplift of 50% on 2013/14 performance improvements to account for the number of factors outside of its control that impacted on performance. This would lift the target to 14.5mcm.

2.19. NGG's rationale for these proposals is to take account of external conditions which may impact on its performance. NGG highlighted that mild weather made forecasting easier. It also noted that there was less demand volatility as a result of predictable interconnector and storage behaviour as well as low gas demand from (CCGTs). Its qualitative assessment suggested that around half of the performance was as a result of improvements in its ability to forecast demand.

## Initial proposals

2.20. We are proposing to introduce a new incentive broadly in line with the structure of the current scheme. We aim to allow more opportunity for this incentive to be tested over winter periods with tightening electricity margins, when accurate information is likely to be more important to market participants. However, we agree that it would be appropriate to review the incentive again before the end of the RIIO-T1 price control period.

2.21. We have considered the comments on the value of the incentive and propose to maintain the current cap and floor of the scheme. The cap can be considered to be only theoretical. We do not expect NGG to be able to have a perfect forecast throughout the entire year. In fact, it is very unlikely that NGG would perform close to the cap. In addition, we believe that there is value to consumers if NGG is able to significantly improve its ability to forecast resulting in a payment above £2m. As such, we do not believe there is a need to change the volume cap. We, however, continue to propose that the incentive floor should be maintained at -£1m to provide an appropriate balance of risk/reward.

2.22. In its business plan, NGG described a number of internal and external factors that impacted its ability to forecast demand in 2013/14. To quantitatively review NGG's performance, we conducted an econometric analysis to assess the extent that the outperformance was due to NGG's actions when external factors were accounted for.

2.23. Our regression analysis used Market Information Provision Initiative (MIPI) data for the 2010/14 period. It included the external factors highlighted by NGG and a dummy variable for the incentive period (2013/14) to capture the impact of NGG's actions. We also assessed the suitability of a number of other factors in this analysis, such as spot gas prices, total gas demand, and an aggregated figure of non-domestic gas demand. We found that these factors were either highly correlated to other variables in our analysis or were not good predictors of forecast errors. Also, when assessing the role of storage, we found that the coefficients on short and long term storage were not statistically significant suggesting that their behaviour was not influential on forecast errors at the D-2 to D-5 stage. As suggested by NGG, we included two lags on forecast error (L.1 & L.2) to the analysis.

2.24. Our analysis suggests that NGG was responsible for 2.3mcm out of the 3.1mcm outperformance. Hence, we are proposing to reduce the target from 16mcm to 13.7mcm to take account of this improvement as a result of NGG's actions (see Annex 1 for a summary of our econometric analysis).

## 3. Maintenance Incentive

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### Chapter Summary

In this chapter we set out our initial proposals for a number of potential changes to the maintenance incentives for 2015/18. In developing these proposals, we reviewed the performance over the 2013/15 period and views expressed by the respondents to our April consultation.

### Question box

**Question 1:** Do you agree with the proposal of halving of the percentage target for changes to maintenance days target?

**Question 2:** Do you agree with the inclusion of Advice Notes in the changes to maintenance days target?

**Question 3:** Do you agree with the proposed target of 11 for Remote Valve Operations (RVOs)? Does the reallocation of the incentive revenue provide an appropriate challenge to incentivise continued performance?

**Question 4:** Do you agree with the removal of In-Line Inspections (ILIs) from the maintenance days target?

### Summary of proposal

- Halve the target for changes to maintenance days to 7.25%.
- Include Advice Notices in the maintenance change target.
- Reduce the target for RVOs to 11 days/year.
- Realign the incentive revenue such that performance between 0-4 RVOs is rewarded with £25,000 per RVO under target and performance between 5-10 RVOs is rewarded with £15,000 per RVO under target. Reduce the floor in this incentive to -£500,000.
- Remove ILIs from the maintenance days target and introduce a reputational incentive to report on ILI length.

### Overview

3.1. NGG carries out maintenance of network assets on the NTS to ensure both the safety and security of the network and that it can be operated economically and efficiently. In order to do so, it is sometimes necessary for NGG to restrict access to parts of the network or reduce the flexibility available, affecting those who depend on access to the NTS to operate. NGG publishes maintenance plans to provide notice of maintenance periods in order to minimise industry disruption.

3.2. The current maintenance incentive aims to incentivise NGG to plan and carry out maintenance work efficiently by reducing the number of maintenance days

taken and minimising the changes made to maintenance plans. The incentive has two targets: the 'Maintenance Days Target' and the 'Maintenance Change Target'.

3.3. The Maintenance Days target incentivises NGG to minimise the number of days taken to complete 3 types of maintenance: short ILIs, long ILIs and RVOs. The target is calculated on an annual basis and is a set number for each of the types of maintenance works. The Remote Valve Operations (RVO) target is based on a baseline of 47 RVOs, with a further 5% efficiency factor applied. The ILI target is based on a baseline of the number of each type of ILI run multiplied by a benchmark of 4.23 for short ILIs and 5.53 for long-run ILIs.

3.4. Each extra maintenance day below/above the target is valued at  $\pm£20,000$  subject to a cap/floor of  $\pm£1$  million a year.

3.5. The Maintenance Change target incentivises NGG to reduce the number of changes made to its maintenance plans, covering all types of maintenance works. This annual target is based on a set percentage of the total number of planned maintenance days.

3.6. Each maintenance change below/above the target is valued at  $\pm£50,000$ , subject to a cap/floor of  $\pm£500,000$  a year.

3.7. Table 2 below displays the targets for both scheme years.

**Table 2 - Targets for Maintenance Incentive**

Incentive year	Target for ILIs (number of maintenance days)	Target for RVOs (number of maintenance days)	Percentage target for changes to maintenance days	Absolute target for changes to maintenance days
<b>2013/14</b>	27.65	44.65	14.5%	6.24
<b>2014/15</b>	0	44.65	14.5%	1.02

### Incentive scheme performance

3.8. NGG significantly outperformed both parts of the incentive in 2013/14, earning £1.1 million. It reported 31 maintenance days (of which 6 RVOs) against a target of 72.3 days and made 0 changes to its maintenance plan. For 2014/15, NGG has called 4 maintenance days for RVOs and 0 for ILIs.

3.9. NGG's outperformance suggests that the incentive has driven the intended improvements. It has also led to the introduction of innovations such as the Advice Notice process, which is used to confirm an agreement with customers for maintenance where it has been aligned to the customer's outage periods. This has reduced the impact of maintenance on consumers and contributed to the outperformance on this incentive.

## Stakeholder views

3.10. In our April 2014 consultation, we sought views from stakeholders on the value they place on different aspects of the incentive. We sought to understand stakeholders' experiences of NGG's maintenance planning, the efficiency of NGG's maintenance and the improvements that system users have experienced.

3.11. The four consultation respondents recognised and welcomed the improvements in NGG's maintenance planning since the introduction of the incentive. While most respondents suggested a tightening of the incentive targets for 2015/18, they noted that the data available to review the incentive is limited.

3.12. The majority of respondents noted the maintenance change target as relatively more important to them (and consumers) than the maintenance days target. The greater certainty promoted by this incentive allows stakeholders to better plan and align their own maintenance periods.

3.13. The high value placed on these incentives by stakeholders highlights the benefits against the cost in revenue to NGG. The value of the improvements so far has outweighed the cost and we expect it to continue over the 2015/18 incentive period.

## National Grid Gas's business plan

3.14. In its business plan, NGG made 4 main proposals for this incentive:

- Maintain the current target for changes to maintenance days, set at 14.5%.
- Include Advice Notices in the maintenance change target.
- Reduce the incentive target for RVOs to 33.25 days per year. This represents a reduction of the baseline down to 35 from 48 (as a result of the reduction in the number of applicable valves), with a further 5% efficiency factor applied.
- Remove ILIs from the maintenance days target. NGG's rationale is that the duration of ILIs is operationally outside of its control.

## Initial proposals

3.15. We are proposing, in line with NGG's proposal, to include Advice Notices in the scope of the maintenance change target. We consider that this recognises stakeholder feedback on the importance of certainty for all maintenance work. This would be incorporated to the current scheme, with NGG incorporating advice notices in its Maintenance Plans.

3.16. We are also proposing a tightening of the incentive to 7.25% of maintenance days, including Advice Notices. This is driven by NGG's strong performance against the incentive so far and the need to keep the incentive challenging, while maintaining the value of the incentive for NGG and consumers.

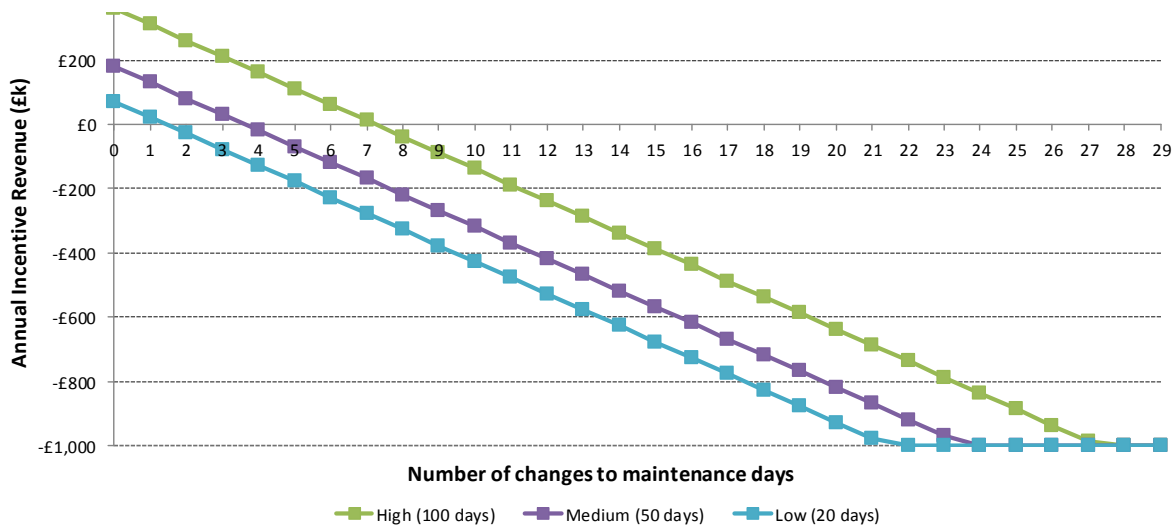


3.17. Stakeholders noted, however, that the incentive is not established enough to fully evaluate its benefits and effectiveness. As such, we are proposing to set it until 31 March 2018 and not the end of the RIIO-T1 period, 2021. This will allow for this incentive to be tested leading to greater awareness on its benefits and effectiveness.

3.18. As the target is based on a percentage of total maintenance days, the revenue that NGG can make, or the loss it can incur, depends on the total number of maintenance days. The possible incentive revenues/costs for NGG under our proposal are shown in Figure 2, with three scenarios for the number of maintenance days: High (100 days), Medium (50 days) and Low (20 days). These scenarios are based on maintenance days called over 2013/14: 92 days (including Advice Notices) in 2013/14 and 30 days (including Advice Notices) in 2014/15.

3.19. Our proposal provides a balanced risk/reward profile to NGG that should drive behaviour. In a maintenance heavy season, it provides NGG with almost £400,000 in potential revenue, as shown in Figure 2.

**Figure 2 - Potential revenues under our proposals**



3.20. On the maintenance days target, we are proposing to tighten significantly the target for RVOs. NGG has performed strongly against this target, particularly on RVOs. By increasing the alignment of maintenance with customers and using different maintenance methodologies, NGG has been able to perform some RVOs without calling a maintenance day. While these improvements are exactly the intention of the incentive, the incorporation of innovation into normal business practices leads to the need to tighten targets to promote further innovation.

3.21. We propose to realign the incentive with a target of 11 RVOs for each year of the 2015/18 scheme. This target is a weighted average of the 2013/15 figures and the original benchmark of 35, with twice the weighting given to the actual. This ensures that the value of the incentive is retained, but it remains challenging.

3.22. We also propose a realignment of the possible incentive revenue, with a change to the revenue/cost per RVO in accordance with Table 3 below:

**Table 3 - Proposed payment structure for Maintenance days target**

Number of RVOs	0 – 4	5-10	12+
<b>Payment/cost per RVO</b>	£25,000	£15,000	-£20,000

3.23. This proposed realignment recognises that the incentive is seeking to reward continuous improvement, not business as usual performance. The possible incentive revenue is weighted given the average 2013/15 figure of 5 RVOs.

3.24. We are also proposing, in line with NGG's proposal, to remove ILIs from the maintenance days target. Stakeholders did not indicate that they place considerable value on ILIs and they form a small proportion of the maintenance days target; £53,000 revenue in 2013/14 compared to £773,000 revenue for RVOs. We instead propose to introduce a requirement on NGG to report on ILIs. This will give transparency to stakeholders that the removal of the incentive will not lead to a worsening on the number of ILIs maintenance days taken by NGG. It will also provide us with sufficient data to re-evaluate the need for an ILI incentive in 2018.

3.25. Given the proposed lower target for RVOs and the removal of ILIs from the maintenance days target, we consider that the cap and floor of ±£1million/year would not remain appropriate. A new natural cap of £215,000/year would prevail, which brings into question the justification of a -£1million floor. We therefore propose that this floor is reduced to -£500,000/year, which represents 25 RVOs below the target.

## 4. Greenhouse Gas Emissions

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### Chapter Summary

This chapter describes the greenhouse gas emissions incentive, the stakeholder response to our initial consultation, and our initial proposals for an incentive up to 2018.

### Question box

**Question 1:** Do you agree with the proposed emissions target? If not, please provide reasons and evidence to underpin these.

**Question 2:** Do you agree with not using a dead band for the emissions target? If not, please provide reasons and evidence to underpin these.

**Question 3:** Do you agree with the proposal to encourage NGG to publish annually venting data by area of control and a narrative on annual changes? If not, please provide reasons and evidence to underpin these.

**Question 4:** Do you agree with the proposed additional incentive for NGG to (i) carry out further research into the causes and interdependencies of venting events and (ii) research cost effective mitigations of venting events within the sphere of control of the SO, underpinned by a cost-benefit-analysis? If not, please provide reasons and evidence to underpin these.

**Question 5:** Do you agree with the proposed one-off incentive 'reward', criteria and value? If not, please provide reasons and evidence to underpin these.

**Question 6:** Do you agree with the proposed timeline for this additional incentive? If not, please provide reasons and an alternative timeline.

### Summary of proposal

- Freeze the emission target for 2016/17 and 2017/18 at 2015/16 levels (2,744t).
- Maintain a downside incentive only and no dead band.
- Encourage NGG to publish annually venting levels by each venting driver and provide a narrative on annual changes.
- Introduce an additional incentive for NGG to (i) carry further work to understand the underlying causes and drivers in this area and (ii) research cost effective mitigations of venting events within the sphere of control of the SO, underpinned by a cost-benefit-analysis. To support this research, we propose an incentive, where NGG can be rewarded if it delivers research that is in the interest of consumers.

## Overview

4.1. The GHG Emissions incentive was initially introduced in 2010/11. Within the scheme, NGG is incentivised to reduce the quantity of greenhouse gases emitted from system compressors during the operation and maintenance of the NTS.

4.2. The current design of the incentive is downside only which means that there is no upside to NGG. However, if it emits above the target, it incurs the cost of these emissions priced at the Department of Energy and Climate Change's (DECC) non-traded carbon price.

4.3. The current Greenhouse Gas Emissions incentive compares actual venting quantities against a target which reduces by 3% every year from the 2012/13 (3,007 tonnes (t)) baseline. For 2013/14, the target was 2,917t, with the target decreasing to 2,829t in 2014/15 and 2,744t in 2015/16.

## Incentive scheme performance

4.4. Table 4 below illustrates NGG's historical performance on compressor emissions since the introduction of the updated emissions calculation methodology in 2010/11.

**Table 4 - NGG's performance against GHG incentive**

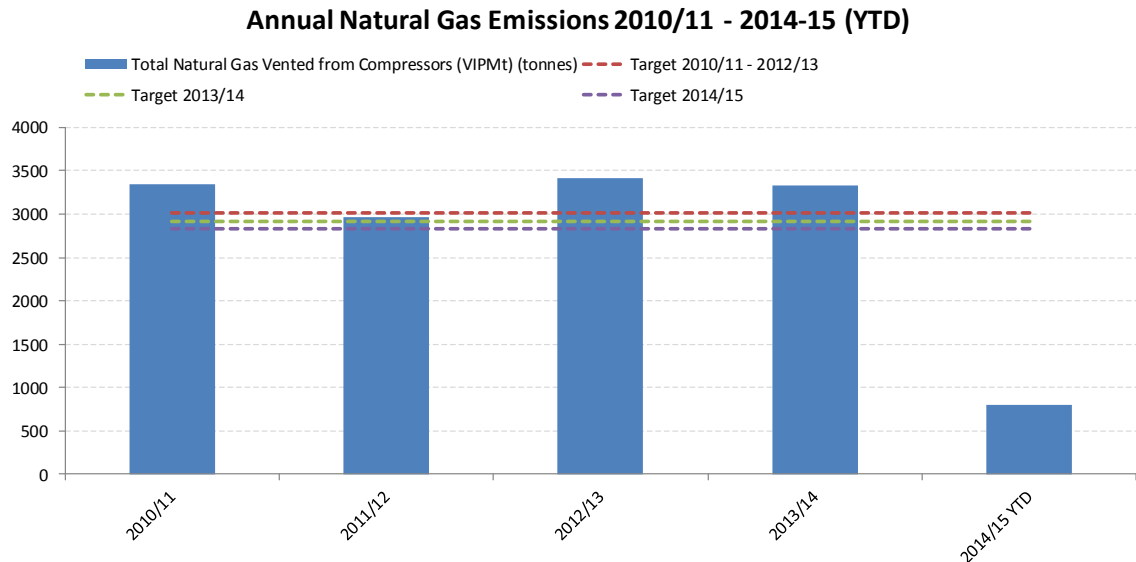
Year	Greenhouse Gas Emissions (tonnes)	Target (tonnes)	Venting price (£)	Incentive Revenue (£m)
<b>2010/11</b>	3,347	3,007	£1,100	-£0.37
<b>2011/12</b>	2,965	3,007	£1,145	£0.00
<b>2012/13</b>	3,416	3,007	£1,224	-£0.50
<b>2013/14</b>	3,330	2,917	£1,302	-£0.54

4.5. In 2013/14, NGG underperformed against the target incurring -£0.54 million. According to its business plan, NGG attributed its poor performance to several factors outside of its control. These reasons included the increase in 'Within Day Linepack Swings' and thus uncertainty associated with venting, as well as other factors it believes are outside its control such as Emergency Shutdowns, Venting whilst Unavailable (on maintenance) and Seal Emissions.

4.6. NGG has emphasised that these factors contributing to negative performance are likely to continue in the future and consequently raised concerns that the current scheme framework will lead to unfeasible targets going forward.

4.7. Figure 3 shows NGG's historical venting against the targets for the next few years. It highlights the fact that future targets, 2,829t and 2,744t, are considerably lower than the historical average performance of 3,157t.

**Figure 3 - NGG's historical performance against the new incentive targets**



### Stakeholder views

4.8. Stakeholders displayed a mixed view on the incentive scheme. Two respondents believed that this financial incentive should be replaced with a reputational incentive on NGG. One stakeholder noted the difficulty historically of establishing metrics to set targets against, but did not believe that this should lead necessarily to higher targets. NGG stressed that it believed the current scheme did not align to our proposed evaluation criteria of offering a potential for reward and penalty.

4.9. On the incentive structure, two respondents indicated that a future symmetrical incentive could be appropriate. Of these two responses, one respondent thought it would be difficult to establish suitable metrics and thus set targets. One further respondent thought a downside only incentive would be appropriate.

4.10. Stakeholders pointed out that further work would need to be carried out prior to any improvements being made to the incentive. Suggestions for improvements include (i) further research into sources of methane leakage, (ii) the interaction of health and safety requirements on levels of venting, (iii) methodologies to measure volumes and (iv) studies on cost-effective mitigations.

### National Grid Gas's business plan

4.11. In its business plan, NGG proposed three different scheme options for the GHG emissions incentive. Table 5 below summarises the three options put forward by the SO.

**Table 5: Summary of National Grid's propose options for GHG incentive scheme**

Options	Description	Target	Incentive structure	Deadband
<b>Scheme Option 1:</b>	New baseline created using the average total venting levels from the past three years.	Efficiency Factor reduced from 3% to 1.74% <sup>1</sup> .	Symmetrical Scheme which allows for both rewards and penalties	Deadband introduced to account for uncertainty associated with the venting process.
<b>Scheme Option 2:</b>	New baseline calculated using the average venting within system operator control.	Efficiency Factor reduced from 3% to 1.74% <sup>1</sup> .	Symmetrical Scheme which allows for both rewards and penalties dependant on performance.	Deadband introduced to account for uncertainty associated with the venting process.
<b>Scheme Option 3:</b>	Introduce a detailed methodology statement to determine how associated targets are calculated on a year by year basis.			

### Initial proposals

4.12. We are proposing to maintain a financial incentive on GHG emissions as it creates a strong incentive for NGG to incorporate venting into its operational decisions. This is aligned with the interest of current and future consumers. We propose to extend the incentive from April 2016 until March 2018.

4.13. On the structure of the financial incentive, at this point in time, we are not sufficiently persuaded that it would be appropriate to move to a symmetrical

<sup>1</sup> This figure corresponds to the annual factor used by the EU emissions trading system

incentive; hence we propose to maintain the current structure (i.e. downside-only). This is in line with our views expressed in our Final Proposals<sup>2</sup> consultation for the current scheme. Here, we set incentives in line with the RIIO approach, defined output, cost incentives and decided on a shorter period to test their effectiveness.

4.14. On the target for this scheme, we have quantified the first two options proposed by NGG and found that these would lead to broadly neutral incentive revenue if current performance continues. In our view, this would not necessarily incentivise behaviour to minimise emissions.

4.15. Our initial view is that the target should be frozen at 2015/16 target levels (2,774t) for both incentive years (2016/17 and 2017/18). This will account for the current challenges NGG faces to limit venting. We would expect that further knowledge gained under this incentive would allow NGG to improve its performance against the target. Nevertheless, if the current venting quantity and DECC's non-traded carbon price is kept constant, NGG would incur a loss of around -£0.7m for 2016/17 and 2017/18.

4.16. We agree with respondents' views that an additional incentive could be beneficial. We recognise the challenge in measuring and understanding venting decisions in the system. We believe it is in the interest of consumers to have more transparency in this area. We believe this should be achieved in two ways:

- Firstly, we believe that NGG should publish annually venting levels by each venting driver and provide a narrative on annual changes.
- Secondly, we believe NGG should carry out further work to understand the underlying drivers in this area and to develop cost-effective mitigations, underpinned by a cost-benefit-analysis. This should build on the encouraging results of the scheme of work NGG has undertaken on measuring GHG emissions as highlighted by NG in its business plan.

4.17. To support this research, we propose an incentive, where NGG can be rewarded if it delivers outputs that are in the interest of consumers. The main requirements of that research are that it should foster:

- i. Understanding (causes and driving factors) of venting events which are within and outside of the control of NG. NGG mentions in its business plan (see pages 46 and 47) that external factors are having an impact on its performance;
- ii. Transparency (accurate measurement) of venting; and

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<sup>2</sup> <https://www.ofgem.gov.uk/publications-and-updates/gas-system-operator-so-incentive-schemes-2013-final-proposals-consultation>

- iii. Cost-effective mitigations of emission venting events by NGG.

4.18. We propose that NGG may receive a one-off reward payment for the successful completion and implementation of the research findings subject to some specific criteria. Our initial view is that the total reward is capped at £400,000<sup>3</sup> and will be paid out in tranches for each successfully completed strand ((i), (ii) and (iii)).

4.19. In terms of specific criteria for each of the strands of work, we propose that:

- The research needs to be independently verified and the research findings and data need to be published to foster transparency and knowledge transfer;
- The implementation of these findings must be included in NGG's next business plan and the net social benefit to consumers of this scheme of work must be demonstrable by the end of the price control period, to ensure timeliness.

4.20. We propose to provide further guidance to the SO on this scheme if these proposals are implemented.

4.21. Once the scheme of work has been completed and robust data and monitoring is in place this could allow a more comprehensive review of the GHG emissions target.

### **Proposed timelines for the additional GHG incentive**

4.22. We propose the following milestones and timelines for the additional GHG incentive in Table 6 :

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<sup>3</sup> £400,000 is equivalent of a reduction in 305 tonnes of GHG emissions valued at the current value of methane gas emissions of £1,346, as valued by DECC. The rationale for the 305t reduction is that this reflects the expected reduction in emissions by the end of the price control period if a 3% year-on-year efficiency is applied.



**Table 6 – Milestones and Timelines**

<b>Milestone</b>	<b>Deadline</b>
<b>National Grid provides business plan</b>	By 31 January 2016
<b>Ofgem completes scrutiny and provides opinion on business plan</b>	By 30 April 2016
<b>National Grid delivers milestone as set out in its business plan</b>	By 1 December 2017
<b>Ofgem assesses achievement and directs value of incentive</b>	By 31 March 2018

## Appendices

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## Appendix 1 – Econometric analysis on D-2 to D-5 demand forecasting incentive

1.1. To quantitatively assess how much to tighten the new target, we focused on deriving the impact of NG's performance when accounting for the external factors in 2013/14. Using the key factors described by NG in its business plan and MIPI data, we estimated the improvement in performance attributed to NG. This resulted in our initial proposals of reducing the target by 2.3mcm to 13.7mcm. Table 7 below summarises the results of our econometric analysis.

**Table 7 - Summary of Econometric Analysis**

Variables	Coefficient	t-statistics	P-value
CWV	-0.18	-1.86	0.0634
Net medium range storage (mcm/d)	0.03	1.75	0.0810
Interconnector Net Flows (mcm/d)	0.04	2.44	0.0147
CCGT demand	-0.03	-1.45	0.1484
Average D2 to D5 Absolute Forecasting Error L.1 (mcm)	0.54	18.83	0.0000
Average D2 to D5 Absolute Forecasting Error L.2 (mcm)	-0.11	-3.88	0.0001
Model dummy variable	-2.27	-3.56	0.0004
R <sup>2</sup>	0.334		
Adjusted R <sup>2</sup>	0.330		
Significance F	<0.001		
Observations	1205		

## Appendix 2 - Consultation Response and Questions

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

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

1.4. Responses should be received by 24/11/2014 and should be sent to:

Leonardo Costa  
System and Wholesale Market Operations  
9 Millbank, London, SWP1 3GE  
0203 263 2764  
[soincentive@ofgem.gov.uk](mailto:soincentive@ofgem.gov.uk)

1.5. 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.

1.6. 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.

1.7. Next steps: Having considered the responses to this consultation, Ofgem intends to publish final proposals for the incentive in time for implementation on the 1 April 2015/16. Any questions on this document should, in the first instance, be directed to Leonardo Costa, details as above.

### **CHAPTER: One**

**Question 1:** Do you agree that our initial proposals provide a balanced risk/reward profile to the SO?

**Question 2:** Do you agree that the draft licence conditions we are publishing support the policy we are proposing?

## **CHAPTER: Two**

**Question 1:** From the consultation responses we gather that some stakeholders do not value the D-2 to D-5 forecasting service. We would welcome your views on why do you value or not value these incentives? Is there no demand for this service, or is the level of accuracy the issue?

**Question 2:** Do you agree with the proposed target of 13.7 mcm? If not, what else should we consider when setting the target? Please provide evidence if possible.

**Question 3:** Do you agree with the parameters (static error rate with equal weighting and not adjuster for volatility)? If not, why, and what alternatives do you believe we should consider? Please provide evidence for this.

**Question 4:** Do you agree with the proposed cap and floor? If not, why, and what alternatives do you believe we should consider? Please provide evidence for this.

## **CHAPTER: Three**

**Question 1:** Do you agree with the proposed halving of the percentage target for changes to maintenance days target?

**Question 2:** Do you agree with the inclusion of Advice Notes in the changes to maintenance days target?

**Question 3:** Do you agree with the proposed target of 11 for Remote Valve Operations (RVOs)? Does the reallocation of the incentive revenue provide an appropriate challenge to incentivise continued performance?

**Question 4:** Do you agree with the removal of In-Line Inspections (ILIs) from the maintenance days target?

## **CHAPTER: Four**

**Question 1:** Do you agree with the proposed emissions target? If not, please provide reasons and evidence to underpin these.

**Question 2:** Do you agree with not using a dead band for the emissions target? If not, please provide reasons and evidence to underpin these.

**Question 3:** Do you agree with the proposal to encourage NGG to publish annually venting data by area of control and a narrative on annual changes? If not, please provide reasons and evidence to underpin these.

**Question 4:** Do you agree with the proposed additional incentive for NGG to (i) carry out further research into the causes and interdependencies of venting events and (ii) research cost effective mitigations of venting events within the sphere of

control of the SO, underpinned by a cost-benefit-analysis? If not, please provide reasons and evidence to underpin these.

**Question 5:** Do you agree with the proposed one-off incentive 'reward', criteria and value? If not, please provide reasons and evidence to underpin these.

**Question 6:** Do you agree with the proposed timeline for this additional incentive? If not, please provide reasons and an alternative timeline.

## Appendix 3 - Glossary

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### A

#### The Authority/Ofgem/GEMA

Ofgem is the Office of Gas and Electricity Markets, which supports the Gas and Electricity Markets Authority (The Authority or GEMA), the body established by Section 1 of the Utilities Act 2000 to regulate the gas and electricity markets in Great Britain.

### B

#### Balancing charges

Charges that National Transmission System (NTS) users pay for differences between their inputs and offtakes from the NTS and for differences between its nominated and delivered quantities.

### C

#### Cap

The maximum incentive payment the SO is permitted to receive as part of an incentive scheme (this may also be subject to a 'sharing factor').

#### Consumer

In considering consumers in the regulatory framework we consider users of network services (for example, generators, users) as well as domestic and business end consumers, and their representatives.

#### Compressor Station

An installation on the 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.

### F

#### Floor

The maximum loss the SO can make as part of an incentive scheme (this may also be subject to a 'sharing factor').

### L

#### Licence conditions (obligations)

Obligations placed on the network companies to meet certain standards of performance. The Authority (GEMA) has the power to take appropriate enforcement action in the case of a failure to meet these obligations.

### **N**

#### National Grid Electricity Transmission (NGET)

NGET is the Transmission System Operator for Great Britain. As part of this role it is responsible for procuring balancing services to balance demand and supply and to ensure the security and quality of electricity supply across the Great Britain Transmission System.

#### National Grid Gas Plc (NGG)

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

#### National Transmission System (NTS)

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**

#### Outputs

What the SOs are expected to deliver.

### **P**

#### Price control

The control developed by the regulator to set targets and allowed revenues for network companies. The characteristics and mechanisms of this price control are developed by the regulator in the price control review period depending on network company performance over the last control period and predicted expenditure in the next.

### **R**

#### RIIO-T1

RIIO-T1 is the first transmission price control review under the new regulatory framework known as RIIO (Revenue = Incentives + Innovation + Outputs). The RIIO model builds on the previous RPI-X regime, but is designed to better meet the investment and innovation challenge by placing much more emphasis on incentives to drive the innovation needed to deliver a sustainable energy network at value for money to existing and future consumers.

### **S**

#### Stakeholder



Stakeholders are those parties that are affected by, or represent those affected by, decisions made by network companies and Ofgem. As well as consumers and companies involved in the energy sector, this would for example include Government and environmental groups.

### Storage (gas)

Installations owned by Gas Distribution Networks (GDNs) and storage capacity contracted from third parties e.g. salt cavities, liquefied natural gas (LNG), storage vessels and gas holders. Gas storage is required to balance diurnal and seasonal variations in supply and demand.

### System Operator (SO)

The entity charged with operating either the GB electricity or gas transmission system. NGET is the SO of the high voltage electricity transmission system for GB. NGT is the SO of the gas NTS for GB.

### V

### (Compressor) venting

Operational emissions from the gas compressors for the purposes of maintaining system pressure.

## Appendix 4 - Feedback Questionnaire

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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:

**Andrew MacFaul**  
Consultation Co-ordinator  
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9 Millbank  
London  
SW1P 3GE  
andrew.macfaul@ofgem.gov.uk