



National Grid Gas

System Operator Incentives

2018/19 Supporting Information
December 2019

Version 11

nationalgrid

Contents

Introduction

Introduction to the Gas System Operator Incentives	3
--	---

Financial Incentive Schemes

Entry Capacity and Exit Capacity Constraint Management	7
Transportation Support Services	9
NTS Shrinkage	11
Demand Forecasting	13
Residual Balancing	16
Maintenance	18
Greenhouse Gas Emissions	21
Customer and Stakeholder Satisfaction	23

Financial Performance

Financial Performance	25
-----------------------	----

Incentive Payment Charges

Impact of Incentive Payments on Charges	28
---	----



1

Introduction

Introduction to the Gas System Operator Incentives

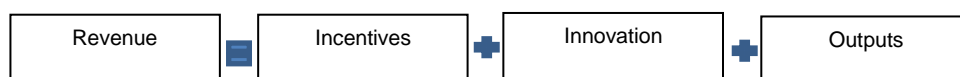
1. National Grid Gas (National Grid) operates the high-pressure Gas National Transmission System (NTS) in Great Britain. This System Operator (SO) function is subject to Licence¹ obligations and several financial incentive arrangements.
2. These incentive arrangements are designed to minimise the overall cost of system operation to consumers, to consider environmental impacts and to support the efficient operation of the wholesale gas market, to deliver outputs which provide benefits to the industry and consumers.
3. These benefits include direct financial benefit from reductions in the costs associated with operating the gas transmission network and ensuring that we are adjusting key outputs with customer and consumer value.
4. The various incentive schemes provide a focus on key areas where National Grid can create value for the industry and consumers, allowing National Grid to retain a share of any value created (or to be penalised should targets not be met).

Background

5. This document was produced following feedback received through responses to consultation papers and industry events. This document summarises the Gas SO Incentive Schemes and details their performance to date.

Incentive Development for RIIO-T1

6. The current incentive arrangements are part of the RIIO-T1 Framework, the first Transmission price control under Ofgem's new model of regulation and will run from April 2013 to March 2021.



7. RIIO aims to use incentives to promote the innovation needed to deliver agreed outputs, such as safety, reliability and reduced environmental impact.
8. RIIO's goal is a reliable and sustainable energy network that gives consumers – today's and tomorrow's – value for money.
9. National Grid operated several incentive schemes prior to the RIIO-T1 Framework. Table 1 summarises the changes to those schemes and the new schemes that commenced at the start of RIIO-T1.

¹ The National Grid Gas Plc Gas Transporter Licence in respect of the NTS

Incentive Review

10. Most of the incentive schemes agreed for the RIIO-T1 price control period were set for an eight-year period but some were set for a shorter time.
11. Where new incentives were introduced or where incentives had been substantially changed, the incentives (known as Shallow Incentives) were set for a shorter period to enable the effectiveness to be assessed before committing to longer timescales.
12. Incentive reviews took place in 2015 and 2018 for the Maintenance, Demand Forecasting (D-2 to D-5) and Greenhouse Gas Emissions incentives. These incentives were retained, where changes were made to scheme parameters these are reflected in the performance tables in Section 3. Table 1 summarises the incentives and changes that commenced at the start of RIIO-T1.

Table 1: Summary of incentive development for TIIO-T1

Incentive Scheme	Incentive
Entry Capacity and Exit Capacity Constraint Management	New financial scheme, in April 2013, set for 8 years.
Transportation Support Services	New financial scheme in April 2013. This incentive expired on 30 th September 2018.
NTS Shrinkage	Incentive scheme retained in April 2013, set for a further 8 years.
Residual Balancing	Incentive scheme retained in April 2013, set for a further 8 years.
Day Ahead Demand Forecasting	Incentive scheme retained in April 2013, set for a further 8 years.
Demand Forecasting (D-2 to D-5)	New financial scheme Set for 3 years and then reviewed for 2016/17 (set for 2 years) and reviewed for 2018/19 (set for 3 years).
Greenhouse Gas Emissions	Incentive scheme retained April 2013. Set for 3 years and then reviewed for 2016/17 (set for 2 years) and reviewed for 2018/19 (set for 3 years).
Maintenance	New financial scheme. Set for 3 years and then reviewed for 2016/17 (set for 2 years) and reviewed for 2018/19 (set for 3 years).
Operating Margins	Financial scheme discontinued in April 2013, replaced with new licence obligation ² . <ul style="list-style-type: none"> • Requirement for National Grid to procure OM in an economic and efficient manner, to report on its annual procurement and to promote competition in its provision.
Data Publication	Financial scheme discontinued in April 2013, replaced with new licence obligation ³ . <ul style="list-style-type: none"> • Requirement for National Grid to publish key assumptions in development of future energy scenarios, winter & summer outlooks and operational data.
UAG (Unaccounted for Gas)	Incentive scheme discontinued in April 2013, replaced with new licence obligation. <ul style="list-style-type: none"> • Requirement to continue witnessing meter validations and carry out data centred investigations into the causes of UAG.
Customer and Stakeholder Satisfaction	New financial scheme, in April 2013, set for 8 years.

² Special Condition 8C: Procurement of Operating Margins

³ Special Condition 8F: Provision of information

Further Information

13. Further information on the Gas SO Incentives is available on our website via this link: <https://www.nationalgridgas.com/about-us/system-operator-incentives>.
14. Please contact the team directly at incentives@nationalgrid.com if you have any queries or would like to submit any feedback on this document.

Version Control

Version Number	Date of Publication	Changes Made
1.0	October 2009	First issue.
2.0	May 2010	Update for incentive schemes in place from April 2010.
2.1	August 2010	Update of 2009/10 incentive scheme performance.
3.0	June 2011	Update for incentive schemes in place from April 2011.
4.0	April 2012	Update for incentive schemes in place from April 2012.
5.0	April 2013	Update for incentive schemes in place from April 2013.
5.1	May 2013	Update to include Entry Capacity and Exit Capacity Constraint Management, Transportation Support Services and Customer and Stakeholder Satisfaction schemes in place from April 2013.
6.0	October 2014	Update to all sections to include 2013/14 data and graphs.
7.0	August 2015	Update to include scheme changes from renegotiation of Incentives from 2015/16 and with performance for 2014/15.
8.0	August 2016	Update with performance from 2015/16 and relevant updates for 2016/17 targets.
9.0	September 2017	Update with performance from 2016/17 and relevant updates for 2017/18 targets.
10.0	October 2018	Update with performance from 2017/18 and relevant updates for 2018/19 targets.
11.0	December 2019	Update with performance from 2018/19 and relevant updates for 2019/20 targets.



2

Financial Incentive Schemes

Entry Capacity and Exit Capacity Constraint Management

Purpose

15. The Constraint Management Incentive is designed to incentivise National Grid to maximise available capacity on the network and minimise constraint management costs through the efficient and economic planning and operation of the NTS. We therefore release as much capacity as possible, develop effective constraint management strategies and make economic and efficient NTS investment and planning decisions.
16. This benefits our customers, and ultimately end consumers, as the costs of commercial constraint management actions to the Industry are mitigated or minimised and balanced against NTS investment whilst maximising access to the NTS.
17. A robust Constraint Management Incentive drives an effective strategy which delivers value to Industry and end consumers who share in the benefit of strong performance.

Description

18. The current regulatory and commercial frameworks oblige National Grid to release obligated levels of capacity, as stated in the National Grid Gas Transmission Licence. The obligated levels of capacity can be higher than the flows that the network can manage and so National Grid evaluates the most efficient solution to meet customer capacity requirements, considering the rules, tools and asset options available.
19. In the instances where National Grid believes that customers' flow requirements cannot be accommodated; constraint management actions may be undertaken in accordance with the Uniform Network Code and System Management Principles Statement⁴. These actions fall into two categories:
 - Operational constraint management – actions taken by National Grid to manage day to day issues on the network. Examples of such day to day issues include supply and demand patterns, unavailability of compression or maintenance outages; and
 - Investment constraint management – actions taken by National Grid to manage longer term issues associated with provision of additional capacity on the network. Examples of such longer term issues include where physical reinforcement is not delivered within the contracted timescale.
20. There are numerous commercial tools available to manage Operational and Investment constraints, which include but are not limited to:
 - Capacity Scaleback – scaling back in full or in part, the Interruptible Entry Capacity or Off-peak Exit Capacity allocated.
 - Capacity Buybacks – buying back sold Firm Entry or Exit Capacity;
 - Locational Energy Trades – buying or selling gas at specific locations on the NTS; and
 - Turn-Up/Turn-Down Contracts – contracts to manage longer term forecast constraint risk.
21. Incentive performance is driven by the difference between the revenue and cost components of the incentive scheme (as detailed in paragraphs 21 and 22 below) over a financial year, and is measured against the incentive target value.

⁴ For the System Management Principles Statement (SMPS) see: <https://www.nationalgridgas.com/document/127131/download>

22. The revenues that feed into this incentive are:

- Locational Energy sell actions and physical re-nomination incentive charges;
- Short term and long term Non-Obligated Entry and Exit capacity (capacity released over and above the obligated level);
- Interruptible Entry Capacity and Off Peak Exit Capacity;
- Within Day Firm Entry and Exit Capacity sales; and
- Entry overrun charges (the charges incurred when Users' flows exceed their capacity entitlements).

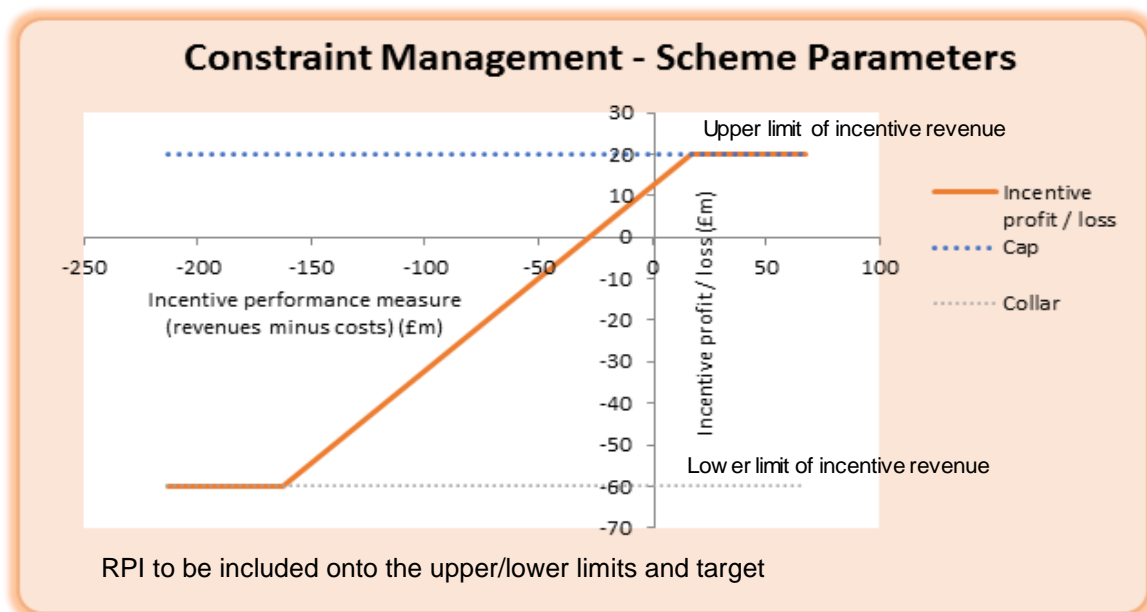
23. The costs that feed into this incentive, are those costs incurred as a result of using any of the UNC-defined constraint management tools.

24. National Grid receives an incentive revenue or penalty depending on whether the annual actual net costs are higher or lower than the incentive target for that year and is based on a calculation that incorporates the RIIO-T1 44.36% "Sharing Factor" whereby the remaining 55.64% is passed back to Shippers. This revenue or penalty feeds through charges two years after the financial year to which the incentive performance relates.

Scheme Parameters

25. The incentive scheme parameters for the operational part of the scheme are summarised in Figure 1.

Figure 1: Entry Capacity and Exit Capacity Constraint Management scheme



26. Using the 2018/19 retail price index (RPI) of 1.315, the National Grid overall 2018/19 Constraint Management Incentive scheme performance was £31.0m which resulted in £17.3m being returned to Customers via the RIIO-T1 sharing factor.

Transportation Support Services

Purpose

27. The Transportation Support Services (TSS) scheme incentivised National Grid to minimise the cost of procuring specific tools to support gas demand in the South West as an alternative to network investment. **The TSS incentive scheme expired mid-way through the incentive year on 30th September 2018.**

Description

28. TSS are additional tools available to National Grid to support provision of a network to meet a 1-in-20 peak day⁵ demand. These tools are substitutes for physical pipeline capacity and there were two forms:
- Long Run Contracting – This was comprised of commercial arrangements at five specifically named direct offtakes in the South West of the network. These ensured that National Grid retained the ability to manage the network following the introduction of the universal firm exit regime through Exit reform.
 - Constrained LNG – National Grid procured services at the Avonmouth⁶ LNG Storage Facility as a substitute for network investment during periods of high demand in the South West.
 - A Sharing Factor of 44.36% also applied to the TSS incentive, represents the percentage Sharing Factor that National Grid bears in respect of an overspend against allowances or retains in respect of an underspend against allowances. The remaining share is returned to the industry.

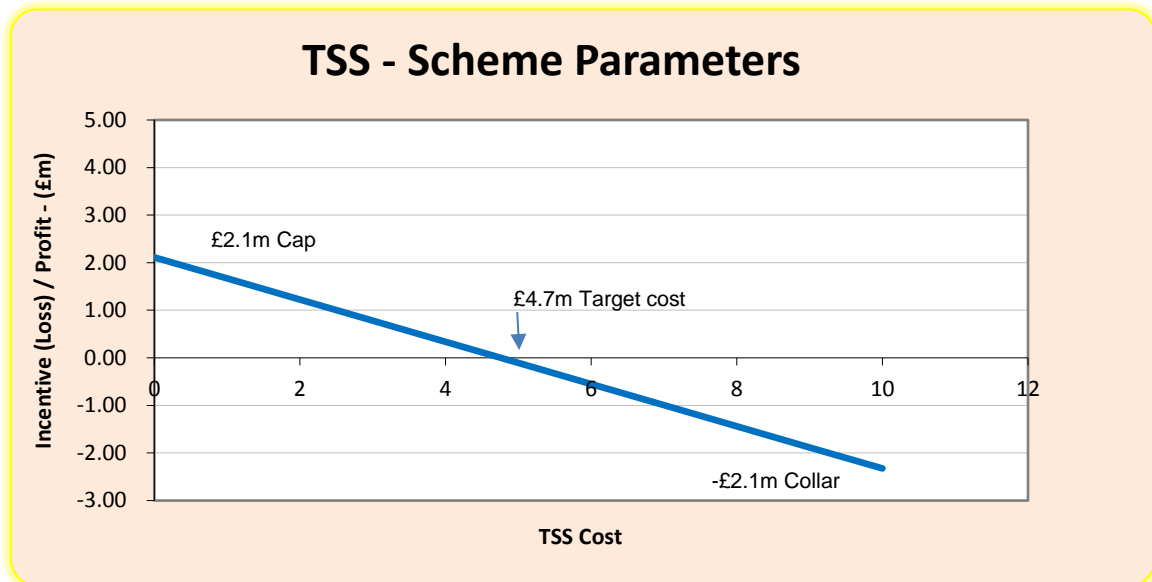
⁵ 1 in 20 peak day demand is the level of daily demand that, in a long series of winters, with connected load held at the levels appropriate to the winter in question, would be exceeded in one out of 20 winters, with each winter counted only once.

⁶ Avonmouth LNG Storage Facility closed within the 2016/17 incentive year.

Scheme Parameters

29. The incentive scheme parameters are summarised in Figure 2.

Figure 2: Transportation Support Services scheme



30. Using Retail price index (RPI) of 1.315, The National Grid overall 2018/19 TSS Incentive scheme performance cost was £0.00 which resulted in £2.6m being returned to Customers, with the sharing factor.

NTS Shrinkage

Purpose

31. The aim of the NTS Shrinkage incentive scheme is to minimise the overall cost of shrinkage we incur in our role as NTS Shrinkage Provider through efficient system operation and energy procurement. These costs are recharged back to users as part of NTS commodity charges.

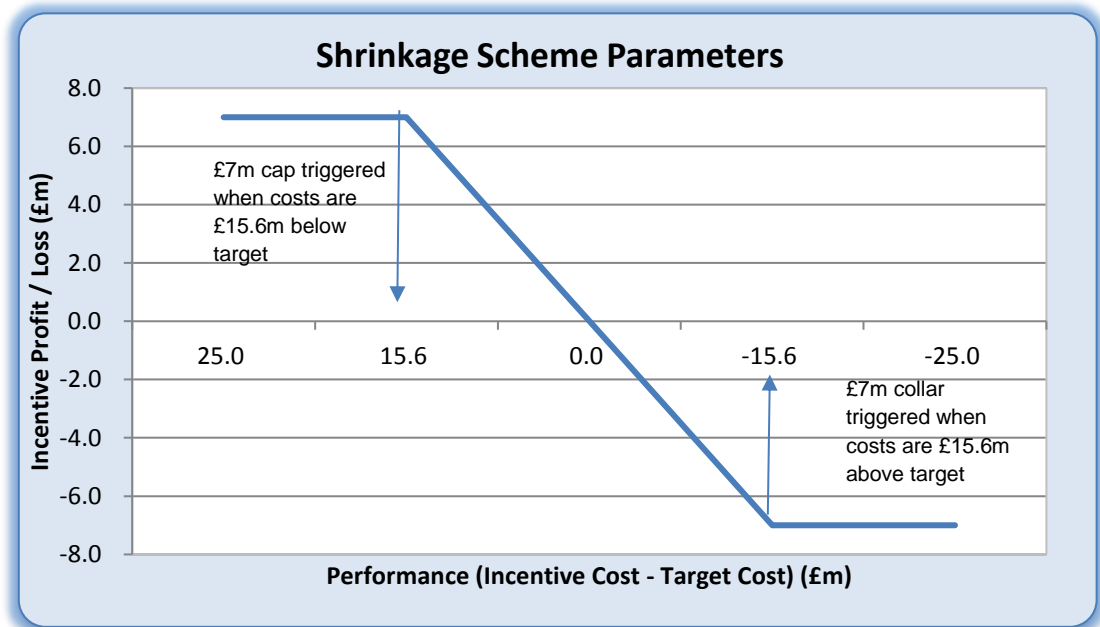
Description

32. NTS Shrinkage covers the gas and electrical energy which is used in operating NTS compressors, and the gas that cannot be accounted for and billed in the measurement and allocation process. The components that comprise NTS Shrinkage falls into three categories:
 1. Compressor Fuel Use (CFU): The energy used to run compressors to transport gas through the NTS. For gas-driven compressors, this is Own Use Gas (OUG). For electrically-driven compressors, this is Electric Compressor Energy (ECE); This is a metered known value.
 2. Calorific Value (CV) Shrinkage (CVS): The energy which cannot be billed due to the provisions of the Gas (Calculation of Thermal Energy) Regulations 1996 (amended in 1997); This is a calculated value, and,
 3. Unaccounted for Gas (UAG): The quantity of gas which remains after considering all measured inputs and outputs from the system, OUG consumption, CVS and the daily change in NTS linepack. UAG can be both Meter error or Data error. Therefore, if you take NTS Shrinkage gas, deduct OUG & CVS, you are left with UAG
33. The form of the NTS Shrinkage incentive is a bundled cost minimisation incentive across all components of shrinkage, with a target principally derived from an energy procurement cost benchmark.
34. This 'Energy Procurement Target' is derived from a volume forecast and variance (the difference between the forecast and actual volume outturn). This is multiplied by gas and electricity reference prices for forwards procurement (of the forecast volume) and prompt procurement (of the variance volume) to derive a cost target. The volume forecast consists of CFU, CVS and UAG volumes determined in accordance with an NTS Shrinkage Methodology Statement published by National Grid.
35. The overall cost target is also subject to:
 - An adjustment for comparison of outturn CFU and CVS volumes compared to 'efficient' levels;
 - An allowance for the Transmission Network Use of System (TNUOS) charges incurred in respect of electrically driven compressors; and
 - An adjustment for other shrinkage costs, including environmental scheme compliance, electricity supply charges and other energy trading costs.
 - If total spend against the incentive is below the target, National Grid receives a payment equivalent to 45% of the under spend, subject to a limit of £7m. Conversely, if total spend against the incentive is more than the target, National Grid incurs a penalty of 45% of the overspend, subject to a limit of £7m.
 - 45% represents the percentage Sharing Factor that National Grid bears in respect of an overspend against allowances or retains in respect of an underspend against allowances. The remaining share is borne by or returned to the industry

Scheme Parameters

36. The incentive scheme parameters are summarised in Figure 3 below.

Figure 3: Shrinkage incentive scheme parameters



37. In managing the 2018/19 Shrinkage and Emissions Incentive Scheme National Grid incurred costs of £77.2m. Against the total incentive target of £94.8m, this represents a £17.6m outperformance. With the sharing factor of 45% National Grid retained £7.0m and returned £10.6m with the customers.

Demand Forecasting Incentive Schemes

Purpose

38. We are incentivised to publish national gas demand forecasts over a range of timescales to the industry. These forecasts assist the industry in making efficient physical and commercial decisions to balance supply to, and from, the NTS. Consumers benefit from cheaper gas as accurate demand forecasts mean that shippers have more time to procure the cheapest gas.

Description

39. The national demand forecasts published by National Grid for day ahead (D-1) and for two to five days ahead (D-2 to D-5) are a key tool for the UK gas industry in ensuring the economic balancing of gas supply and demand. The provision of timely and accurate forecasts aid in ensuring efficient operation from both a physical and commercial perspective, ultimately reducing operating costs which directly impact on end consumers gas bills. National Grid strives to continually optimise its forecasting processes, to deliver greater accuracy and increased consumer benefit.

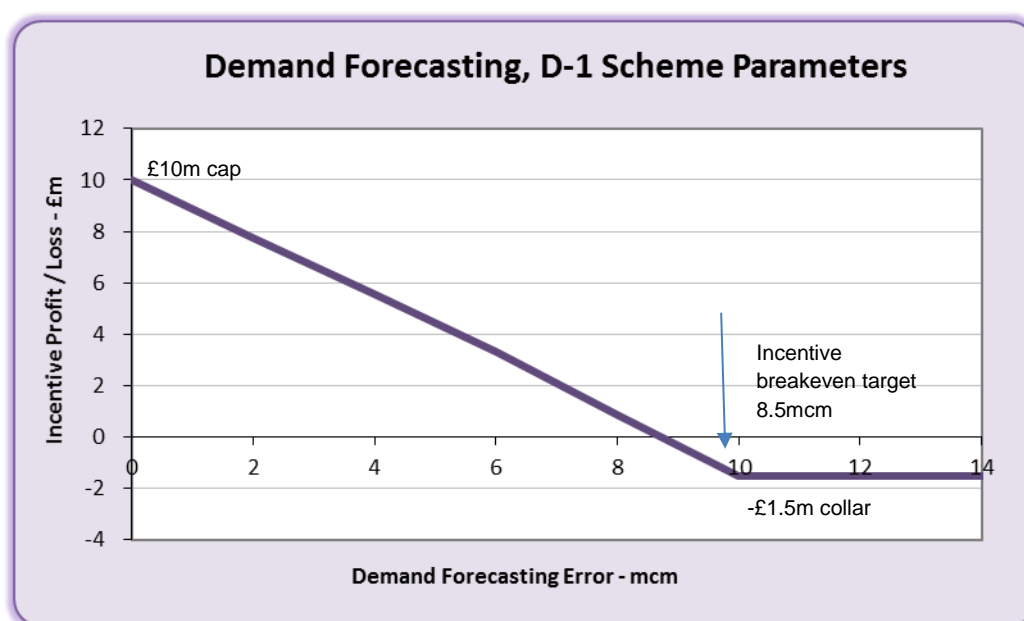
The D-1 Scheme

40. National Grid has an incentive breakeven target of an annual weighted average absolute forecast error of 8.5mcm. However, there is an adjustment for the level of short-cycle storage injection capability that is designed to consider the unpredictability of demand from short-cycle⁷ storage sites. The storage adjustment is capped at an additional 1mcm and therefore has the potential to revise the D-1 demand forecasting target to 9.5mcm.
41. The daily forecast error is calculated as the difference (in mcm) between the D-1 forecast NTS throughput value and the actual throughput value on the appropriate day of the year. The annual average absolute forecast error is the sum of the daily forecast errors, which themselves are weighted per the relevant day's demand as a proportion of annual demand in the relevant incentive year. This means that forecasting accurately on high demand days has a greater impact on performance than on lower demand days.
42. If National Grid has a demand forecast error below the breakeven target, an incentive payment will be received. However, if the forecast error is greater than the target, an incentive penalty will be applied.

Scheme Parameters

43. The D-1 incentive scheme parameters are summarised in Figure 4 below.

Figure 4: Demand Forecasting D-1 scheme parameters



44. An average annual forecast error of 0.85mcm below the base target (7.65mcm) would result in National Grid earning £1.5m, and an error of 0.85mcm above the base target (9.35mcm) would result in National Grid being penalised by the same amount. The latter represents the highest loss that National Grid is exposed to under this incentive. The maximum payment that National Grid can receive is £10m⁸.

⁷ Details of the storage sites that are utilised in the calculation are published on National Grid's website at: <https://www.nationalgridgas.com/about-us/system-operator-incentives>. The document is located under "Data and documents", click "Demand Forecasting" section and select the latest "Quality of Day Ahead Demand Forecasting Short Cycle Storage Sites" file

⁸ A payment of this scale would require forecast error to be between zero and 1mcm (dependant on the target adjustment). A zero-forecast error would mean a zero error on every daily forecast in the year.

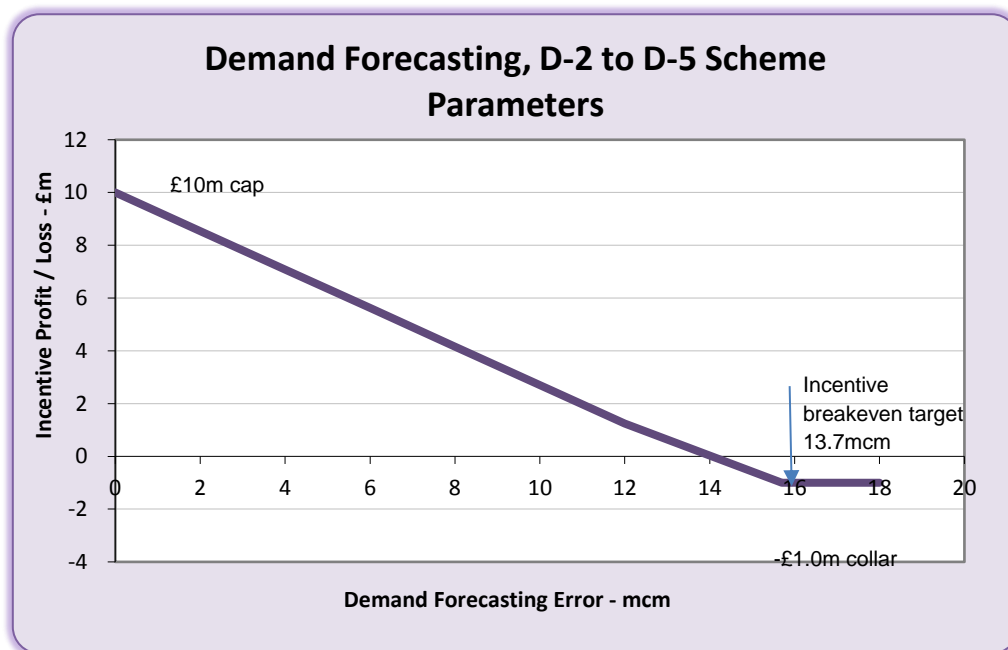
The D- 2 to D-5 Scheme

45. National Grid has an incentive target of an annual average absolute forecast error of 13.7mcm. Unlike the D-1 scheme, there is no adjustment for the level of short-cycle storage injection capability.
46. The overall forecast error is equal to the average annual forecast error of the four timed forecasts for the incentive year. The annual error for each timed forecast is derived as the sum of daily forecast errors weighted per the relevant day's demand as a proportion of annual demand in the relevant incentive year. This means that accuracy on high demand days has a greater impact on performance than accuracy on lower demand days.
47. Like the Day Ahead incentive scheme, if National Grid's forecast error is below the target, an incentive payment will be received. However, if the forecast error is greater than the target then an incentive penalty will be applied.

Scheme Parameters

48. The scheme parameters are summarised in Figure 5 below.

Figure 5: Demand Forecasting D-2 to D-5 scheme parameters



49. An average annual forecast error of 1.37mcm below the target (12.33mcm) would result in National Grid earning £1m, and an error of 1.37mcm more than the target (15.07mcm) would result in National Grid being penalised by the same amount. The latter represents the highest loss that National Grid is exposed to under this incentive. The maximum payment that National Grid can receive is £10m at zero forecast error.
50. In managing the 2018/19 Demand Forecasting incentive scheme, we had an absolute forecasting average error of 8.90mcm (D-1) and 12.44mcm (D2-5) incurring a penalty of £0.86m and revenue of £0.19m respectively, with an overall performance of -£670k.

Residual Balancing

Purpose

51. In our role as the residual balancer we are required to balance supply and demand on the gas day to help ensure the NTS remains within safe operating limits. The residual balancing incentive benefits the end consumer by ensuring we fulfil this obligation by minimising both our activity in the market and the impact it has on the market prices when it is deemed necessary to trade gas to balance the network.

Description

52. The incentive contains two elements; the Price Performance Measure (PPM) and the Linepack Performance Measure (LPM).

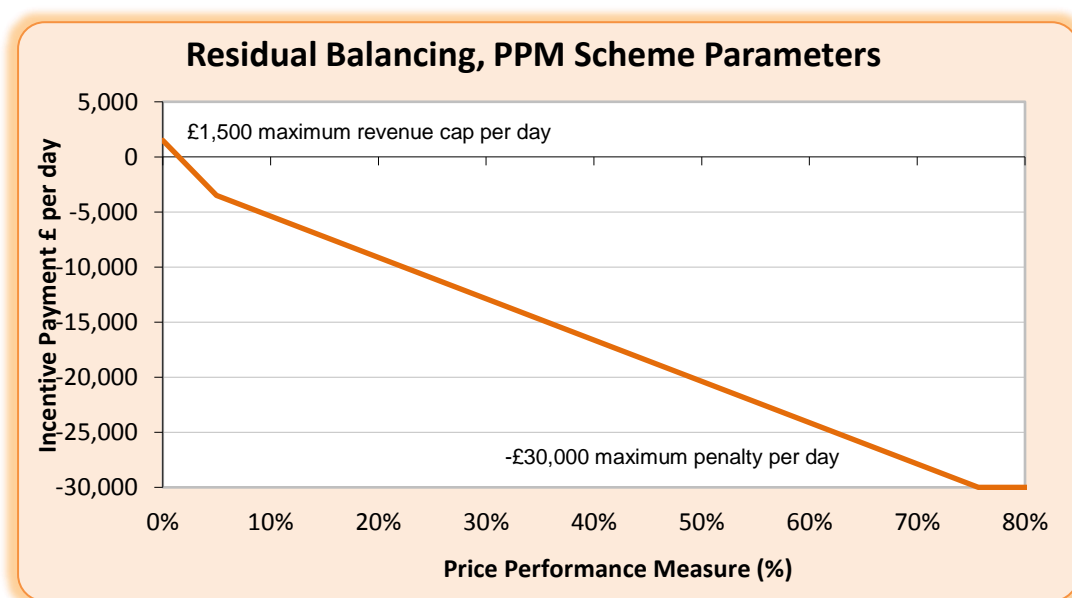
- a. The price performance measure (PPM) evaluates the impact National Grid has on the market in its Residual Balancing role by measuring the price range of its trading actions compared to the System Average Price (SAP). This incentivises the System Operator to minimise the impact it has on market prices. The target is a price spread of 1.5% of SAP.
- b. The linepack performance measure (LPM) incentivises National Grid to minimise differences in linepack volumes between the start and end of each gas day. This is to ensure that any system imbalances are resolved, and that any associated costs are levied across those system users responsible for that day's imbalance. The target is a linepack change of 2.8mcm.

53. The sum of all the daily payments for the PPM and LPM under the Residual Balancing incentive are annually capped at £2m and collared at £3.5m.

Scheme Parameters

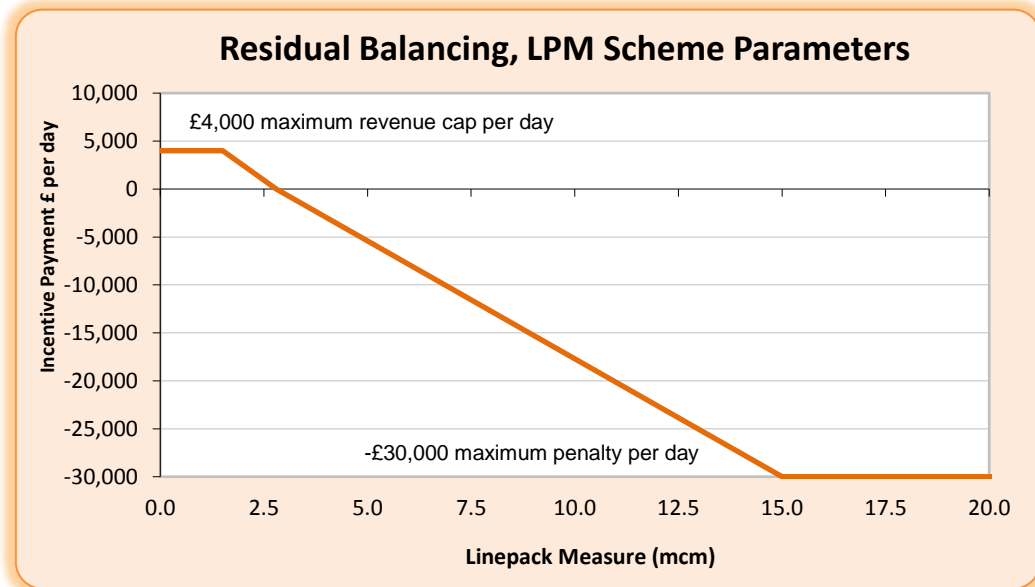
54. The PPM and LPM each have their own incentive structures, which apply to each Gas Day in the incentive year. The scheme parameters are summarised in Figure 6 and Figure 7 below.

Figure 6: Residual Balancing PPM scheme parameters



55. If the PPM is below 1.5% on a given Gas Day, then National Grid receives an incentive payment up to a maximum of £1,500. Conversely if the PPM is above 1.5%, then National Grid incurs a penalty up to a maximum of £30,000.

Figure 7: Residual Balancing LPM scheme parameters



56. If the LPM is below 2.8mcm on a given Gas Day, then National Grid receives an incentive payment up to a maximum of £4,000. This maximum applies at 1.5mcm, so there is no incentive for National Grid to balance the system beyond this point. Conversely if the LPM is above 2.8mcm, then National Grid incurs a penalty up to a maximum of £30,000.
57. In managing the Residual Balancing incentive scheme for 2018/19. The LPM element for achieved a daily average linepack performance of 1.9 mcm. And the PPM element achieved an average price spread of 0.73% of SAP, overall this represents a £1.0m outperformance.

Maintenance

Purpose

58. To incentivise the efficient planning and execution of network maintenance impacting customers at direct exit connections⁹ from the NTS. The maintenance incentive is therefore split into two scheme components:

- a. Maintenance Day Changes Incentive Scheme - minimisation of changes initiated by National Grid to the agreed maintenance plan

The aim of the Maintenance Day Changes incentive is to reduce the impact our maintenance activities have on customers should we make changes to our planned maintenance after 1 April for the forthcoming summer maintenance period. The incentive scope does not include changes which were initiated by customers, only those initiated by us.

- b. Maintenance Days Used Incentive Scheme - minimisation of the use of Maintenance Days to perform Remote Valve Operations maintenance

The Maintenance Days Used incentive is designed to reduce the impact we have on our customers when we undertake our routine maintenance activities. For 2018/19 the incentive only included maintenance days for Remote Valve Operations (RVO); the In-Line Inspections (ILIs) element of the scheme ceased in 2015/16.

Description

59. To ensure the ongoing reliability and integrity of the NTS in line with regulatory and safety requirements, National Grid is required to periodically undertake maintenance of the pipeline system. Where this work requires an outage, or to reduce the flexibility available (e.g. where steady gas flows may be required) at one or more direct exit connections, National Grid may 'call' one or more 'Maintenance Days' in accordance with the Uniform Network Code (subject to any site-specific limitations).

60. To minimise the impact of maintenance work on customers, National Grid plan maintenance activities to align with periods which minimise disruption to customer operations. Where National Grid can align maintenance to periods which have no impact on customer contractual rights, National Grid will communicate the maintenance period as "Advice Notice Days¹⁰". Where this is not possible and an outage or restriction on customer operations is required, a "Maintenance Day" will be called.

61. Every day we align maintenance with a customer it conservatively saves between £100k and £300k of plant downtime compared to if we had to turn a customer off, leading to reduced costs passed through to end consumers. This incentive generates circa £15m p.a. of consumer value.

⁹ Direct exit connections to the NTS include individual NTS Supply Points and NTS Connected System Exit Points, but exclude offtakes to Distribution Networks.

¹⁰ Where a single maintenance activity affects multiple NTS Exit Points on a day, this is construed as a single day for the purposes of the Maintenance Incentives

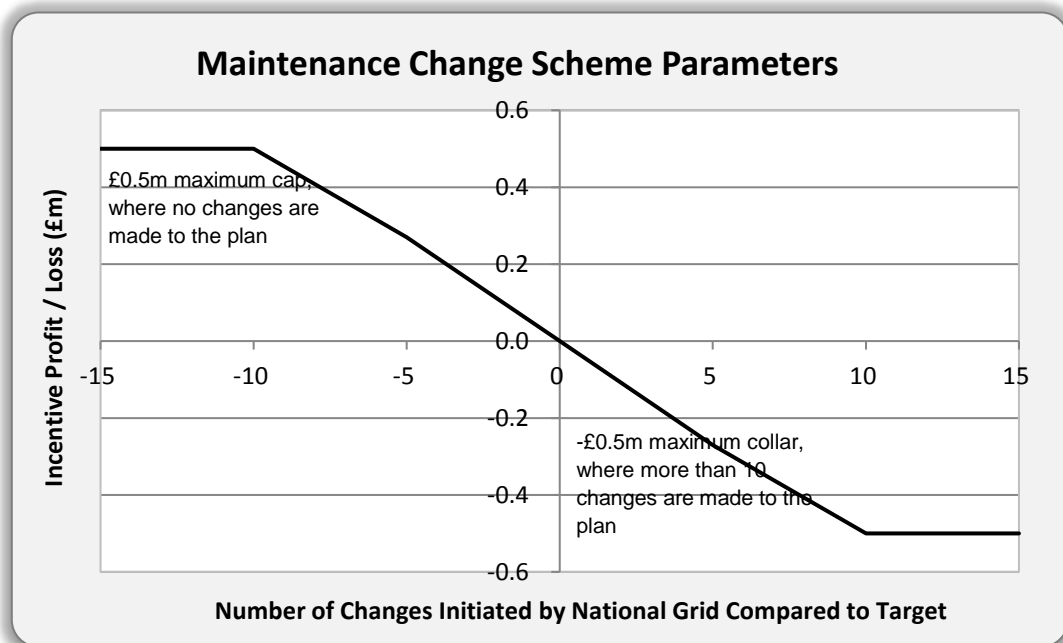
The Maintenance Day Changes Scheme

62. The target number of Maintenance Days or Advice Notice Days, subject to change initiated by National Grid (excluding changes made by National Grid pursuant to customer's request), is equal to 7.25% of the total number of maintenance plan days within the year. Changes within scope include changes to dates (including reduction or increases to the number of days for a specific job) or cancellation of days.
63. If the actual number of days changed is equal to target, the incentive revenue is zero. If the actual number of days changed is less than the target, then a payment per change below target is accrued up to a scheme cap of £0.5m. If the actual number of days changed exceeds the target, then a penalty per change more than the target is accrued to a scheme collar of -£0.5m.

Scheme Parameters

64. The incentive scheme parameters are summarised in Figure 8 below.

Figure 8: Maintenance Change scheme parameters



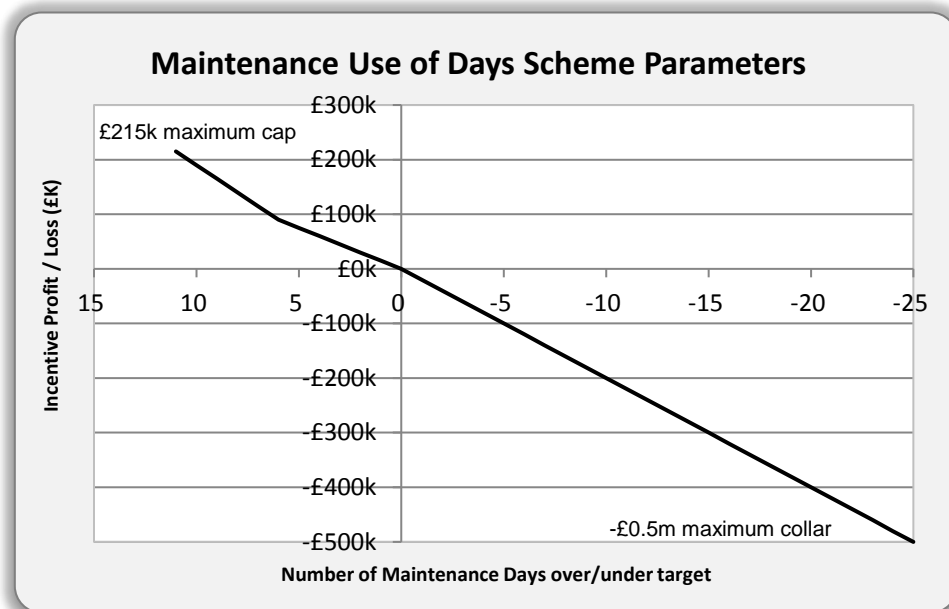
The Maintenance Days Used Scheme

65. The Use of Days scheme incentivises National Grid to minimise the number of Maintenance Days used to undertake Remote Valve Operations¹¹. National Grid has an annual incentive target (in days) of 11.
66. If the actual number of Maintenance Days used for these activities is equal to the target, the incentive revenue is zero. If the actual number of Maintenance Days used is less than target, National Grid receives a tiered payment between £15,000 and £25,000 each day below the target, up to a natural scheme cap of £0.215m. The first 5 days used at £25,000, followed by £15,000. If the actual number of Maintenance Days used exceeds the target, National Grid receives a penalty of £20,000 per day up to £0.5m (for 25 days or more above target).

Scheme Parameters

67. The incentive scheme parameters are summarised in Figure 9 below.

Figure 9: Maintenance Use of Days scheme parameters



68. In managing the Maintenance incentive scheme for 2018/19. The Days Changed element had zero changes and the Use of Days element were fully aligned this represents a maximum incentive outperformance of £0.715m.

¹¹ Valves are used to control the flow of gas and isolate pipelines in an emergency. To ensure the safe operation of the system, National Grid maintain key valves on an annual basis where they will need to be opened and closed to ensure operation, requiring a system bypass to maintain supply.

Greenhouse Gas Emissions

Purpose

69. The aim of the Greenhouse Gas Emissions (GHG) incentive scheme is to incentivise National Grid to reduce the amount of natural gas vented from our compressors (primarily methane), and to reduce the effect of our operational activities on the environment. This is important both to us, our customers and stakeholders and society as a whole.
70. The scheme incentivises National Grid to make the trade-off between choosing to depressurise compressor units (venting the gas within them) or to keep units on standby, which incurs costs associated with ancillary electrical equipment (vent fans, oil pumps etc.) and a level of emissions through the shaft seal. The incentive applies to both gas and electrically driven compressors.
71. The emissions allowance is set each year by Ofgem, (in tonnes), for each tonne of natural gas vented over the allowance we are subject to a price and cost payment, which is based on our NTS GT Licence formula using the latest non-traded carbon reference venting price published by The Department for Business, Energy and Industrial Strategy. For 2018/19 this price was £1,447¹² per tonne of natural gas vented.

Description

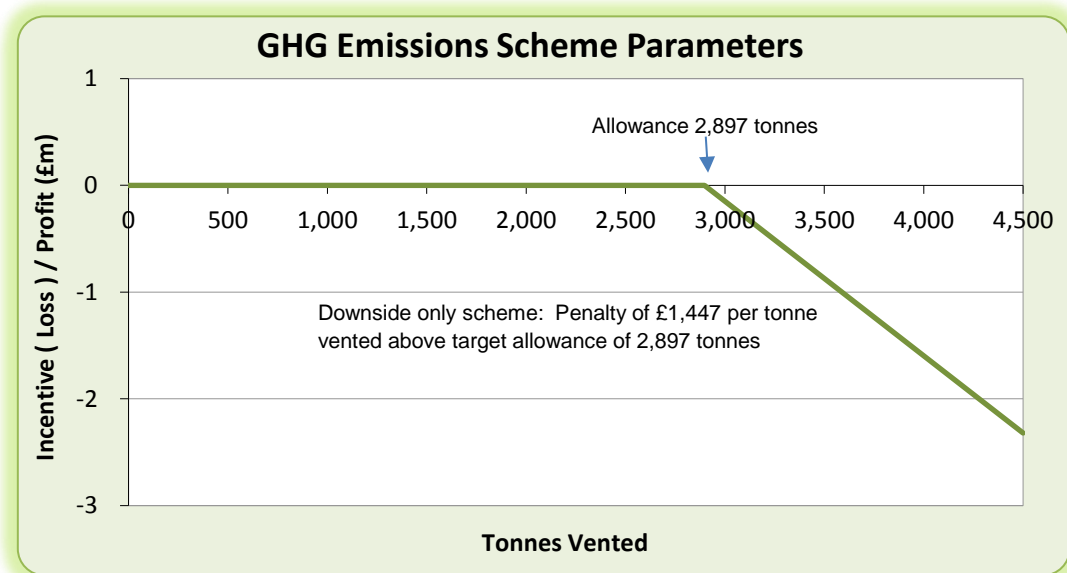
72. Compressors are used to increase pressure in parts of the NTS and to move gas from the sources of supply to areas of demand. To undertake this activity to deliver customer requirements, we will select the Best Available Technology (BAT) in accordance with the Industrial Emissions Directive (IED).
73. The need to operate an individual compressor on any given day depends on several factors, including the sources of supply and demand, the prevailing network conditions and the need to accommodate essential maintenance, emissions testing and construction plans.
74. The incentive compares actual venting quantities against a target level. For every tonne vented above this target, National Grid is subject to a penalty. As a 'downside only' unlimited scheme, National Grid does not receive any payment for target outperformance.
75. The GHG calculation methodology is externally audited on an annual basis.

¹² Based upon the Non-Traded Central Carbon Price as published by The Department for Business, Energy and Industrial Strategy and the venting equivalent factor that represents the number of tonnes of CO₂ equivalent.

Scheme Parameters

76. The scheme parameters are summarised in Figure 10 below.

Figure 10: Greenhouse Gas Emissions scheme parameters



77. For 2018/19, the target level is 2,897 tonnes, with a penalty of £1,447 per tonne vented above the target. This is equivalent to £100,000 for approximately every 69 tonnes vented above the target.
78. In managing the Greenhouse Gas Incentive scheme for 2018/19. The total emissions through compressors were less than our allowance, this represents a maximum incentive performance of £0.00m. (no penalty).

Customer and Stakeholder Satisfaction

Purpose

79. Ofgem incentivises us to improve the service we provide to our customers and stakeholders through a reward/penalty based on levels of customer and stakeholder satisfaction.
80. The aim of this output is to encourage these National Grid to be more outwardly focused and responsive to changing stakeholder needs. The arrangements include an incentive for customer and stakeholder engagement.

Description

81. Customer and Stakeholder Satisfaction is an indicator of how satisfied customers and stakeholders are with National Grid. To reflect the importance of customer and stakeholder satisfaction, National Grid is incentivised to survey its customers and stakeholders to measure their overall satisfaction.
82. To measure satisfaction National Grid carries out surveys on a trigger based process to capture customer and stakeholder feedback in a timely and relevant manner. The survey asks customers to rate their overall satisfaction with National Grid Transmission on a scale of 1 to 10, where 1 is very dissatisfied and 10 is very satisfied for a range of services and engagement.
83. Our surveys cover both the 'System Operator' and 'Transmission Owner' aspects of our role to align with customers' and stakeholders' experience of how we operate as an integrated provider of transmission services.
84. The overall satisfaction score we receive from our customers and stakeholders translates to either a financial reward or a penalty equating to +/- 1% of our allowed annual revenue.



3

Financial Performance

Financial Performance

73. The following tables summarise National Grid's incentive performance.

74. Please note that incentive schemes often change from year to year so consideration should be given to this when comparing performance figures across years.

Table 2: Entry and Exit Capacity Constraint Management

Incentive Year	Incentive Target	Performance	Incentive performance
2013/14	£25.67m	£2.80m	£12.63m
2014/15	£26.18m	£2.27m	£12.62m
2015/16	£26.44m	£1.95m	£12.60m
2016/17	£27.02m	£2.96m	£13.28m
2017/18	£28.03m	£4.04m	£14.23m
2018/19	£31.04m	£2.11m	£13.77m

Table 3: Transportation Support Services

Incentive Year	Incentive Target	Performance	Incentive performance
2013/14	£8.41m	£0.03m	£3.70m
2014/15	£8.71m	£0.00m	£3.90m
2015/16	£8.87m	£0.00m	£3.93m
2016/17	£8.84m	£0.00m	£3.94m
2017/18	£9.21m	£0.00m	£4.09m
2018/19	£4.76m	£0.00m	£2.11m

Table 4: NTS Shrinkage

Incentive Year	Incentive Target	Performance	Out-performance	Incentive Performance
2011/12	£124.6m	£94.7m	£29.9m	£5.0m
2012/13	£114.9m	£101.6m	£13.3m	£3.3m
2013/14	£112.6m	£101.2m	£11.4m	£5.1m
2014/15	£87.95m	£77.17m	£10.78m	£4.8m
2015/16	£87.22m	£73.24m	£13.98m	£6.3m
2016/17	£76.12m	£70.49m	£5.62m	£2.53m
2017/18	£83.21m	£71.16m	£12.05m	£5.42m
2018/19	£94.76m	£77.16m	£17.60m	£7.00m

Table 5: Demand Forecasting, D-1

Incentive Year	Incentive Target	Performance	Incentive Performance
2011/12	2.75%	3.37%	£1.60m
2012/13	2.75%	3.82%	£1.60m
2013/14	9.40 mcm	8.69 mcm	£0.88m
2014/15	8.95 mcm	8.07 mcm	£1.54m
2015/16	9.00 mcm	7.75 mcm	£1.96m
2016/17	9.39 mcm	8.53 mcm	£1.51m
2017/18	9.03 mcm	8.24 mcm	£1.39m
2018/19	8.41 mcm	8.90 mcm	£0.86m

Table 6: Demand Forecasting Incentive, D-2 to D-5

Incentive Year	Incentive Target	Performance	Incentive Performance
2013/14	16.00 mcm	13.10 mcm	£1.60m
2014/15	16.00 mcm	12.55 mcm	£2.15m
2015/16	13.70 mcm	12.09 mcm	£1.17m
2016/17	13.70 mcm	12.39 mcm	£0.95m
2017/18	13.70 mcm	12.06 mcm	£1.19m
2018/19	13.70 mcm	12.44 mcm	£0.19m

Table 7: Residual Balancing

Incentive Year	Incentive Target (daily)		Performance (average, all days in year)		Incentive Performance
	Price	Linepack	Price	Linepack	
2011/12	1.5%	2.8 mcm	1.57%	2.46 mcm	£0.252m
2012/13	1.5%	2.8 mcm	1.69%	1.96 mcm	£0.647m
2013/14	1.5%	2.8 mcm	0.70%	1.90 mcm	£0.952m
2014/15	1.5%	2.8 mcm	0.96%	1.61 mcm	£1.088m
2015/16	1.5%	2.8 mcm	0.64%	1.62 mcm	£1.195m
2016/17	1.5%	2.8 mcm	0.95%	1.74 mcm	£1.060m
2017/18	1.5%	2.8 mcm	1.77%	1.99 mcm	£0.649m
2018/19	1.5%	2.8 mcm	0.73%	1.90 mcm	£0.997m

Table 8: Maintenance

Incentive Year	Incentive Target (days)		Performance (days)		Incentive performance
	Change To MD	Use of MD	Change To MD	Use of MD	
2013/14	6.24	72.30	0.00	31.00	£1.138m
2014/15	1.02	44.65	0.00	4.00	£0.864m
2015/16	3.99	11.00	0.00	2.00	£0.364m
2016/17	16.82	11.00	0.00	1.00	£0.690m
2017/18	20.37	11.00	0.00	1.00	£0.690m
2018/19	13.34	11.00	0.00	0.00	£0.715m

Table 9: Greenhouse Gas Emissions

Incentive Year	Incentive Target	Performance	Incentive Performance
2011/12	3,007 tonnes ¹³	3,000 tonnes	£0.000m
2012/13	3,007 tonnes	3,443 tonnes	-£0.353m
2013/14	2,917 tonnes	3,332 tonnes	-£0.541m
2014/15	2,829 tonnes	2,857 tonnes	-£0.039m
2015/16	2,744 tonnes	2,882 tonnes	-£0.195m
2016/17	2,897 tonnes	3,590 tonnes	-£1.008m
2017/18	2,897 tonnes	3,893 tonnes	-£1.363m
2018/19	2,897 tonnes	2,871 tonnes	£0.000m

¹³ Target quoted is mid-point between upper and lower limit (dead band)



4

Incentive Payment Charges

Impact of Incentive Payments on Charges

This section shows the link between incentive revenues and charges faced by Users.

75. National Grid's incentive payments are recovered from Shippers through the SO Commodity Charge, which National Grid has a reasonable endeavours obligation to only set twice a year on the 01 April and the 01 October.

76. National Grid publishes a quarterly update on the charges report, which contains either the actual SO Commodity Charge, or the latest forecast of the charge. This report also includes supporting data on how these charges have been calculated and can be found (with previous versions) on the National Grid website.

77. As a rule of thumb, an increase of £2m in the costs recovered through the SO commodity charge would correspond with an increase in the SO Commodity Charge of approximately 0.0001p/kWh applied to both entry and exit flows.

78. From 2013/14, revenues and costs in respect of the Entry Capacity and Exit Capacity Constraint Management and Transportation Support Services incentive schemes were reflected in the SO Commodity Charge within the second Formula Year following the Formula Year in which those revenues and costs were accrued.

79. Accordingly, incentive revenues and costs for 2018/19 (in respect of the two schemes specified above) will be reflected in SO Commodity Charges in 2020/21.

National Grid plc
National Grid House,
Warwick Technology Park,
Gallows Hill, Warwick.
CV34 6DA United Kingdom
Registered in England and Wales
No. 4031152

nationalgrid.com