

Quarterly Gas System Operator Incentive Report

Q4 2015-2016 (January 2016 to March 2016)

Introduction

1.1 Purpose

The purpose of this Gas System Operator Incentive Report is to provide information in respect of the performance measures that National Grid Gas is incentivised against during the relevant quarter in operating the gas transmission system.

1.2 Nature of the Information Contained in this Report

This publication contains performance measure information associated with the Gas System Operator Incentives, and is based on the latest information at the time of publication. As future quarters are published, the information on this report will be updated to reflect the latest information available at that time. Changes to preliminary data that occur after the publication of the relevant quarter's report will thus be visible in the graphs and tables of future reports.

1.3 Structure of the Report

This report contains a summary of the below incentives on the first sheet, and then covers the individual incentives in more detail:-

Constraint Management
Shrinkage
Residual Balancing
Demand Forecasting - Day Ahead and D-2 to D-5
Maintenance
Greenhouse Gas Emissions from Compressors

[1.4 Supporting Information](#)

The above link downloads a PDF document that summarises the Gas System Operator Incentive Schemes applicable from April 2013.

[1.5 Consultation Documents and Responses](#)

The above link opens a page on the National Grid website that contains any current System Operator Incentive Consultation Documents and any responses that have been received from interested parties.

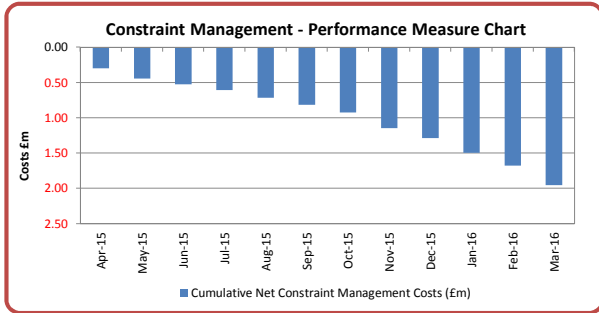
[1.6 Ofgem's Final Proposals](#)

The above link opens the Ofgem Final proposals document for all Gas System Operator Incentives applicable from April 2013

Quarterly Gas System Operator Incentive Report

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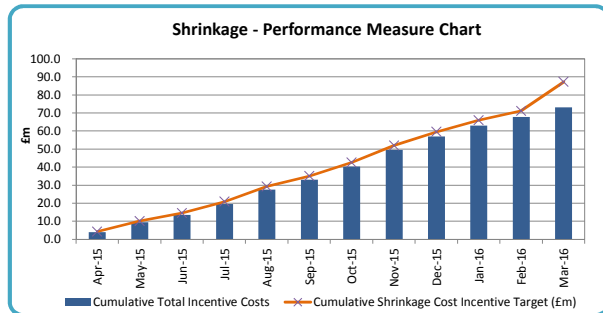
Constraint Management



Commentary

The chart shows the monthly cumulative Constraint Management operational performance measure. The end of Q4 performance for 2015/16 is a cumulative cost of £1.95m.

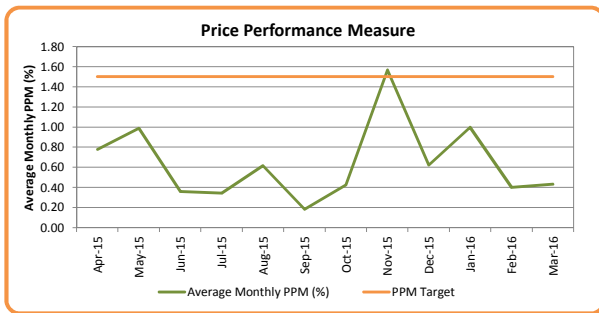
Shrinkage



Commentary

Total incentivised costs for 2015-16 were £73.2m compared to a target of £87.2m

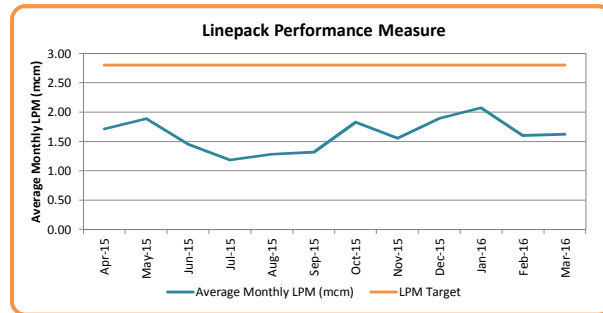
Residual Balancing - Price



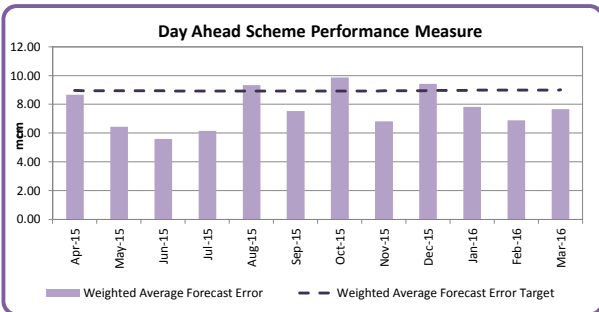
Commentary

Over Q4 2015/16, the average price performance measure (0.62%) and linepack measure (1.77mcm) were both better than the respective targets (1.5% and 2.8mcm).

Residual Balancing - Linepack



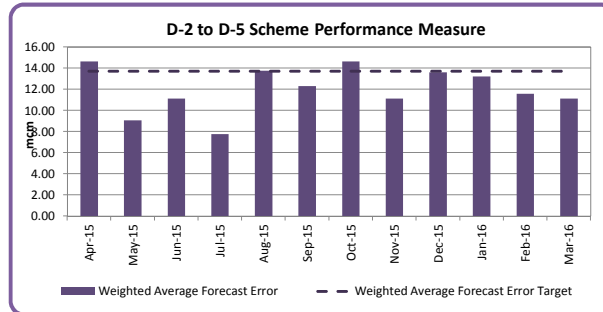
Demand Forecasting - Day Ahead



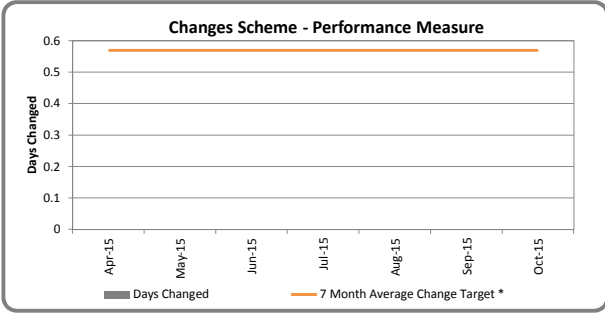
Commentary

The weighted average forecast error for both incentives is below their respective target, with Day Ahead average for Q4 7.47mcm against the target of 8.99mcm and D-2 to D-5 average for Q4 11.98mcm against the target of 13.7mcm

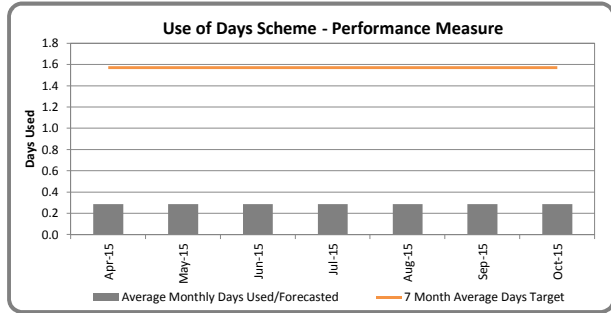
Demand Forecasting - D2 to D5



Maintenance - Changes to Maintenance Plan



Maintenance - Days of Maintenance Used

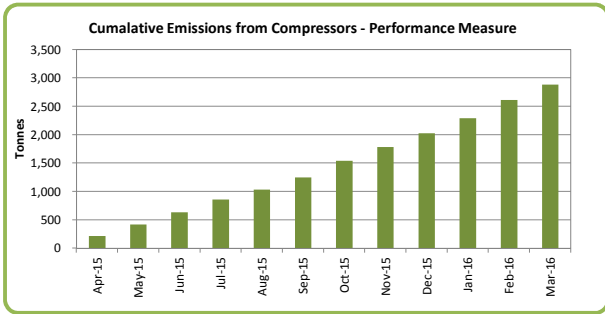


Commentary

Maintenance day changes are zero against a full year target of 4. Maintenance days called are 2 against a target of 11.

The maintenance incentive period is from April 15 to Oct 15 and this has now closed therefore the above table will remain as per the reported position of October 15 with no change.

Greenhouse Gas Emissions from Compressors



Commentary

In general during the summer period we expect to see lower levels of emissions than during the peak winter period

Constraint Management

Q4 2015-2016 (January 2016 to March 2016)

Scheme Purpose

The purpose of this scheme is to incentivise an efficient overall cost of System Operator Constraint Management actions through efficient system operation and the optimisation of strategies. National Grid Gas is obliged to release obligated levels of capacity significantly in excess of peak demand at both entry and exit points on the network. In the instances where we believe we cannot accommodate Shipper's flow requirements associated with booked capacity, we undertake constraint management actions.

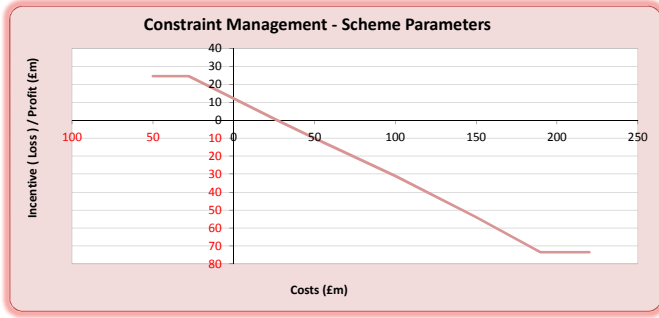
Scheme Description

Performance Measure:- Entry and Exit operational constraint management cost.

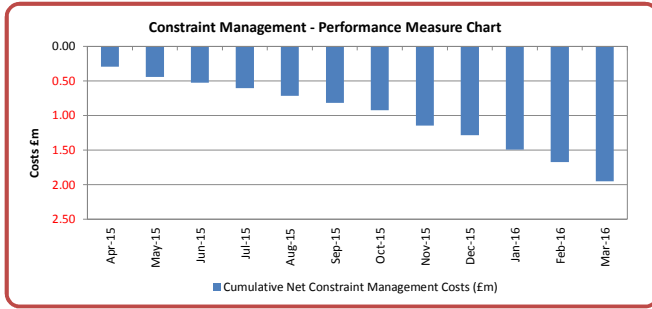
From 01 April 2013, National Grid Gas is subject to a new Constraint Management Incentive which has been set for 8 years and encompasses both Entry and Exit Capacity Constraint Management actions.

Incentive performance is driven by the difference between the net constraint management costs over a year and a target value for such costs.

For 2015/16 the target cost comprises £27m for entry and exit operational constraint management, with National Grid Gas accruing 44.36% of the revenue or loss (the sharing factor).



Performance



Supporting Data

| | Apr-15 | May-15 | Jun-15 | Jul-15 | Aug-15 | Sep-15 | Oct-15 | Nov-15 | Dec-15 | Jan-16 | Feb-16 | Mar-16 |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Cumulative Net Constraint Management Costs (£m) | -0.30 | -0.44 | -0.52 | -0.60 | -0.71 | -0.82 | -0.92 | -1.15 | -1.29 | -1.49 | -1.67 | -1.95 |

Commentary

The chart shows the monthly cumulative Constraint Management operational performance measure. The end of Q4 performance for 2015/16 is a cumulative cost of £1.95m.

Shrinkage

Q4 2015-2016 (January 2016 to March 2016)

Scheme Purpose

The purpose of this scheme is to incentivise an efficient overall cost of shrinkage through efficient system operation and energy procurement.
 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.

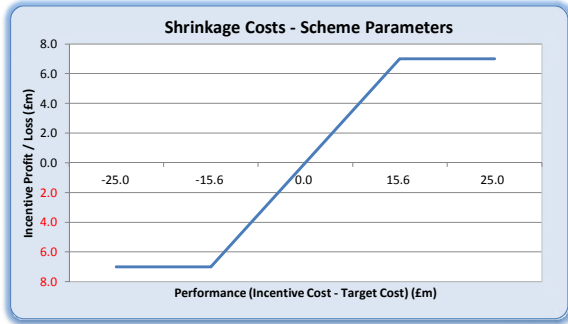
Scheme Description

Performance Measure - Shrinkage Costs (£m).

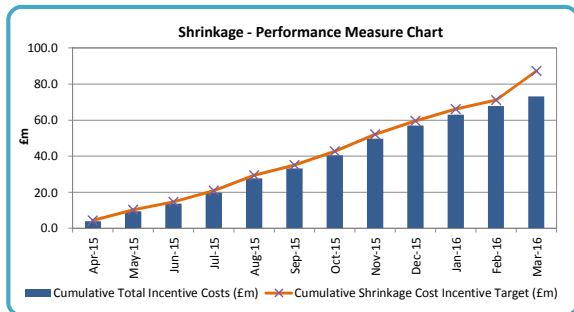
The form of the Shrinkage Incentive is a bundled cost minimisation incentive across all components of shrinkage, with a target principally derived from an energy procurement cost benchmark.

This "Energy Procurement Target" is derived from a volume forecast and variance. This is multiplied by gas and electricity reference prices to derive a cost target.

This incentive has been set for 8 years beginning on 01 April 2013. If total spend against the incentive is below the target, National Grid Gas receives a payment equivalent to 45% of the underspend, with a cap of £7m. Conversely, if total spend against the incentive is in excess of the target, National Grid Gas incurs a penalty of 45% of the overspend, collared at £7m.

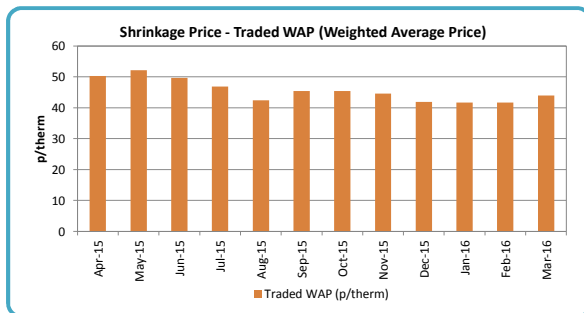
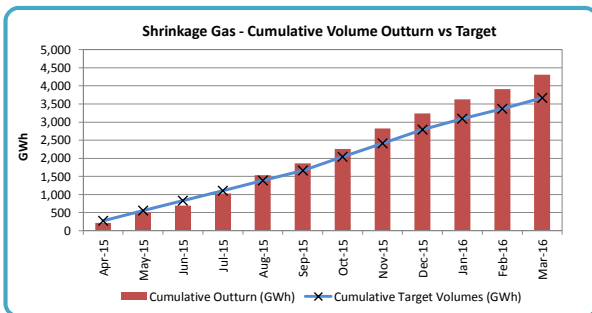


Performance



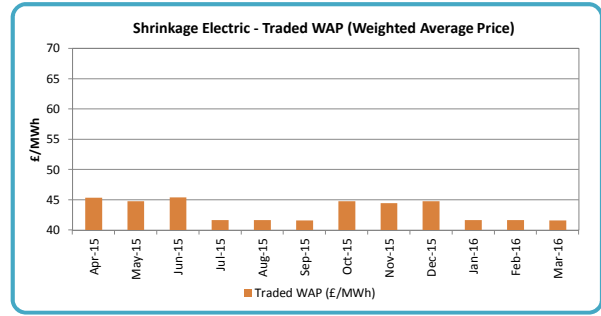
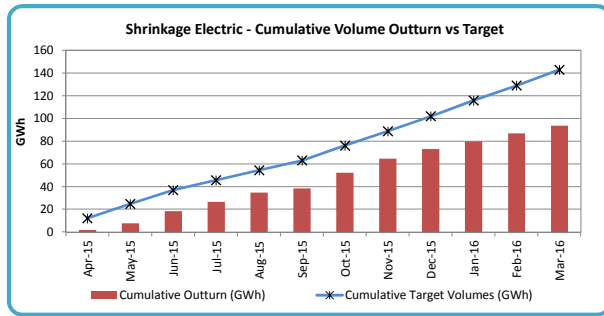
Supporting Data (Overall - Gas and Elec)

| | Apr-15 | May-15 | Jun-15 | Jul-15 | Aug-15 | Sep-15 | Oct-15 | Nov-15 | Dec-15 | Jan-16 | Feb-16 | Mar-16 |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Total Incentive Costs (£m) | 4.0 | 5.5 | 4.1 | 6.0 | 8.1 | 5.5 | 7.3 | 9.2 | 7.3 | 6.1 | 4.8 | 5.4 |
| Cumulative Total Incentive Costs (£m) | 4.0 | 9.5 | 13.6 | 19.6 | 27.7 | 33.1 | 40.5 | 49.7 | 57.0 | 63.1 | 67.8 | 73.2 |
| Shrinkage Cost Incentive Target (£m) | 4.3 | 5.9 | 4.5 | 6.3 | 8.5 | 5.7 | 7.6 | 9.4 | 7.5 | 6.5 | 5.1 | 16.0 |
| Cumulative Shrinkage Cost Incentive Target (£m) | 4.3 | 10.2 | 14.7 | 20.9 | 29.4 | 35.1 | 42.6 | 52.1 | 59.6 | 66.1 | 71.2 | 87.2 |



Supporting Data (Gas)

| | Apr-15 | May-15 | Jun-15 | Jul-15 | Aug-15 | Sep-15 | Oct-15 | Nov-15 | Dec-15 | Jan-16 | Feb-16 | Mar-16 |
|---------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Outturn - Shrinkage Gas (GWh) | 215.9 | 294.3 | 183.1 | 337.4 | 502.9 | 327.5 | 397.9 | 564.5 | 415.4 | 393.2 | 275.2 | 403.6 |
| Cumulative Outturn (GWh) | 215.9 | 510.2 | 693.4 | 1030.8 | 1533.7 | 1861.2 | 2259.1 | 2823.6 | 3239.0 | 3632.2 | 3907.4 | 4311.0 |
| Incentivised Cost of Gas (£m) | 3.7 | 4.9 | 3.2 | 5.3 | 7.4 | 5.1 | 6.2 | 8.1 | 6.4 | 5.3 | 4.0 | 5.3 |
| Target Volumes (GWh) | 272.6 | 281.7 | 272.6 | 281.4 | 281.4 | 272.3 | 380.1 | 367.8 | 380.1 | 300.5 | 281.1 | 300.5 |
| Cumulative Target Volumes (GWh) | 272.6 | 554.4 | 827.0 | 1108.4 | 1389.7 | 1662.0 | 2042.1 | 2409.9 | 2790.0 | 3090.5 | 3371.5 | 3672.0 |
| Traded WAP (p/therm) | 50.3 | 52.1 | 49.6 | 46.8 | 42.4 | 45.4 | 45.4 | 44.5 | 41.9 | 41.7 | 41.7 | 43.9 |



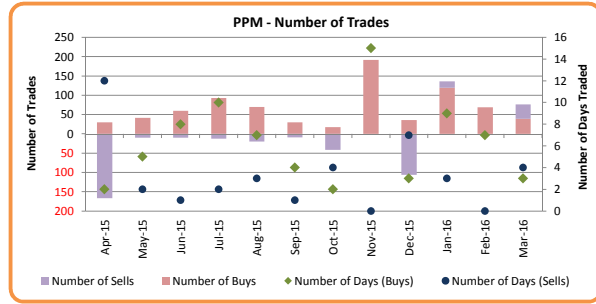
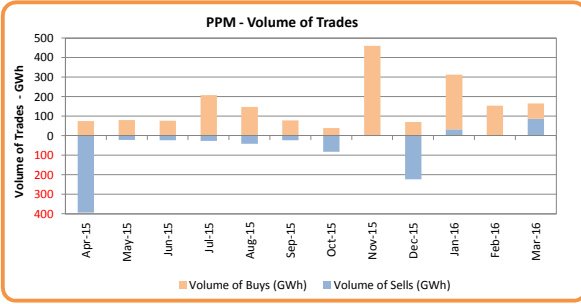
Supporting Data (Electricity)

| | Apr-15 | May-15 | Jun-15 | Jul-15 | Aug-15 | Sep-15 | Oct-15 | Nov-15 | Dec-15 | Jan-16 | Feb-16 | Mar-16 |
|---------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Outturn - Shrinkage Electricity (GWh) | 1.8 | 6.1 | 10.5 | 8.2 | 8.4 | 3.5 | 14 | 12 | 9 | 7 | 7 | 7 |
| Cumulative Outturn (GWh) | 1.8 | 7.8 | 18.3 | 26.5 | 34.9 | 38.4 | 52.2 | 64.6 | 73.3 | 80 | 87 | 94 |
| Incentivised Cost of Electricity (£m) | 0.3 | 0.6 | 0.9 | 0.7 | 0.7 | 0.4 | 1.2 | 1.1 | 0.9 | 0.8 | 0.8 | 0.1 |
| Target Volumes (GWh) | 12.2 | 12.6 | 12.2 | 8.8 | 8.8 | 8.5 | 13.1 | 12.7 | 13.1 | 14.0 | 13.1 | 14.0 |
| Cumulative Target Volumes (GWh) | 12.2 | 24.8 | 37.0 | 45.8 | 54.5 | 63.0 | 76.1 | 88.9 | 102.0 | 116 | 129 | 143 |
| Traded WAP (£/MWh) | 45.4 | 44.8 | 45.4 | 41.7 | 41.7 | 41.6 | 44.8 | 44.4 | 44.8 | 41.7 | 41.7 | 41.6 |

Commentary

Total Incentivised costs for 2015-16 were £73.2m compared to a target of £87.2m

Trades



| | Apr-15 | May-15 | Jun-15 | Jul-15 | Aug-15 | Sep-15 | Oct-15 | Nov-15 | Dec-15 | Jan-16 | Feb-16 | Mar-16 |
|--------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Volume of Buys (GWh) | 75.8 | 81.3 | 77.1 | 208.3 | 147.9 | 80.0 | 39.7 | 460.8 | 70.6 | 281.0 | 154.5 | 78.7 |
| Volume of Sells (GWh) | -392.7 | -21.5 | -22.4 | -26.2 | -40.3 | -22.6 | -81.5 | 0.0 | -222.7 | 33.2 | 0.0 | 87.0 |
| Number of Buys | 30 | 42 | 60 | 93 | 70 | 30 | 18.0 | 192.0 | 36.0 | 120.0 | 69.0 | 39.0 |
| Number of Sells | -166 | -10 | -10 | -12 | -20 | -9 | -41.0 | 0.0 | -106.0 | 16.0 | 0.0 | 38.0 |
| Number of Days (Buys) | 2 | 5 | 8 | 10 | 7 | 4 | 2.0 | 15.0 | 3.0 | 9.0 | 7.0 | 3.0 |
| Number of Days (Sells) | 12 | 2 | 1 | 2 | 3 | 1 | 4.0 | 0.0 | 7.0 | 3.0 | 0.0 | 4.0 |
| Sell Min Price (p/therm) | 43.6 | 42.0 | 42.1 | 41.8 | 37.0 | 39.0 | 35.0 | | 30.1 | 29 | | 25 |
| Sell Max Price (p/therm) | 48.2 | 43.2 | 42.3 | 42.1 | 41.1 | 39.1 | 39.5 | | 37.6 | 32.5 | | 28.3 |
| Buy Min Price (p/therm) | 46.4 | 44.3 | 42 | 43.4 | 38.7 | 42 | 41.0 | 33.5 | 32.7 | 31.0 | 29.4 | 28.05 |
| Buy Max Price (p/therm) | 54 | 55 | 46 | 46 | 44.75 | 43.5 | 41.9 | 40.0 | 39.3 | 36.5 | 32.4 | 31.45 |

Commentary

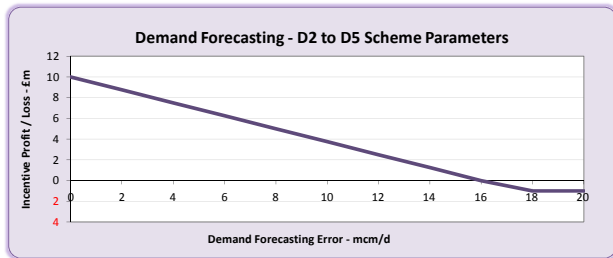
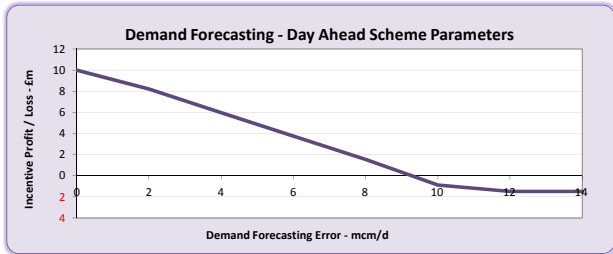
Over Q4 2015/16, the average price performance measure (0.62%) and linepack measure (1.77mcm) were both better than the respective targets (1.5% and 2.8mcm).

Demand Forecasting

Q4 2015-2016 (January 2016 to March 2016)

Scheme Purpose

The purpose of this scheme is to incentivise improvements in the accuracy of the Demand Forecasts issued by National Grid Gas. There are 2 separate incentives under Demand Forecasting, with one scheme measuring the accuracy of the forecasts issued at 2, 3, 4 and 5 days ahead and the other measuring accuracy of the day ahead scheme



Scheme Description

The Day Ahead scheme, has an incentive target of an annual average absolute forecast error of 8.5mcm with an adjustment for the level of short-cycle storage injection capability (to take into account the unpredictability of demand from short-cycle storage sites). The adjustment revises the day ahead demand forecasting target absolute error of 8.5mcm and is capped at an additional 1mcm.

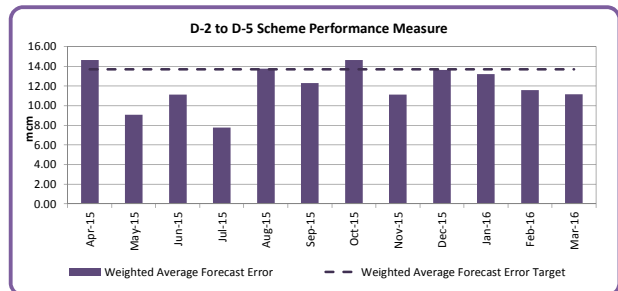
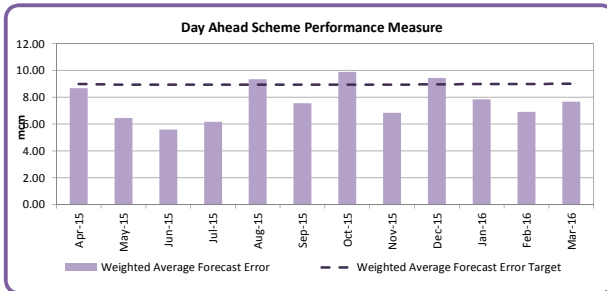
This incentive has been set for eight years commencing 1st April 2013. The daily forecast error is calculated as the difference (in mcm) between the day ahead forecast NTS throughput value and the actual throughput value on the appropriate day of the year. The annual average absolute forecast error is the sum of the daily forecast errors which themselves are weighted according to the relevant day's demand as a proportion of annual demand in the relevant incentive year. Therefore forecasting accuracy on high demand days has a greater impact on performance than accuracy on lower demand days.

The Day Ahead target for demand forecasting error for 2015/16 is 8.95 mcm, this is subject to change when new storage sites are active. The incentive payment is capped at £10m and collared at -£1.5m.

In respect of the D-2 to D-5 scheme, for 2015/16 National Grid has an incentive target of an annual average absolute forecast error of 13.7mcm. There is no adjustment for the level of short-cycle storage injection capability. This incentive has been set for three years commencing 1st April 2015.

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 according to the relevant day's demand as a proportion of annual demand in the relevant incentive year. From this perspective, accuracy on high demand days has a greater impact on performance than accuracy on lower demand days.

Performance



Supporting Data

| | | Apr-15 | May-15 | Jun-15 | Jul-15 | Aug-15 | Sep-15 | Oct-15 | Nov-15 | Dec-15 | Jan-16 | Feb-16 | Mar-16 |
|-------------------|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Day Ahead Scheme | Weighted Average Forecast Error | 8.67 | 6.45 | 5.60 | 6.16 | 9.34 | 7.54 | 9.89 | 6.84 | 9.43 | 7.84 | 6.90 | 7.67 |
| | Weighted Average Forecast Error Target | 8.97 | 8.94 | 8.94 | 8.93 | 8.93 | 8.93 | 8.93 | 8.94 | 8.97 | 8.99 | 8.99 | 9.00 |
| D-2 to D-5 Scheme | Weighted Average Forecast Error | 14.64 | 9.07 | 11.12 | 7.77 | 13.78 | 12.30 | 14.64 | 11.14 | 13.62 | 13.22 | 11.59 | 11.15 |
| | Weighted Average Forecast Error Target | 13.70 | 13.70 | 13.70 | 13.70 | 13.70 | 13.70 | 13.70 | 13.70 | 13.70 | 13.70 | 13.70 | 13.70 |

Commentary

The weighted average forecast error for both incentives is below their respective target, with Day Ahead average for Q4 7.47mcm against the target of 8.99mcm and D-2 to D-5 average for Q4 11.98mcm against the target of 13.7mcm

Maintenance

Q4 2015-2016 (January 2016 to March 2016)

Scheme Purpose

The purpose of this scheme is to incentivise the efficient planning and execution of network maintenance impacting customers at direct exit connections from the NTS. In order 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).

Scheme Description

Performance Measure - Number of Maintenance Days and Changes Initiated by National Grid Gas to the Maintenance Plan.

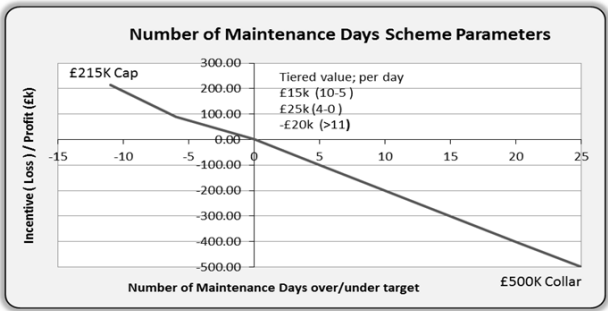
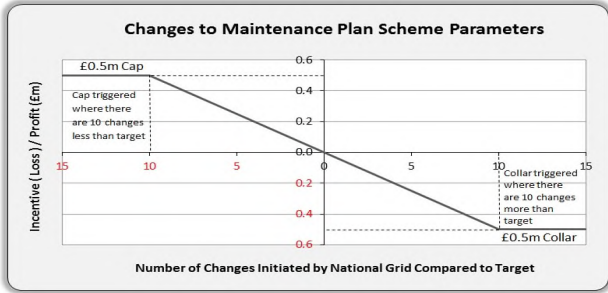
To minimise the impact of Maintenance work on customers, National Grid plan maintenance activities to align with periods which minimise disruption to customer operations. Where National Grid is able to align maintenance to periods which have no impact on customer contractual rights, National Grid will communicate the maintenance period as "Advice Notice Days". Where this is not possible and an outage or restriction on customer operations is required a "Maintenance Day" will be called. The Maintenance Incentive is therefore split in to the following two scheme components incentivising:

In respect of the Changes Scheme in 2015/16 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.

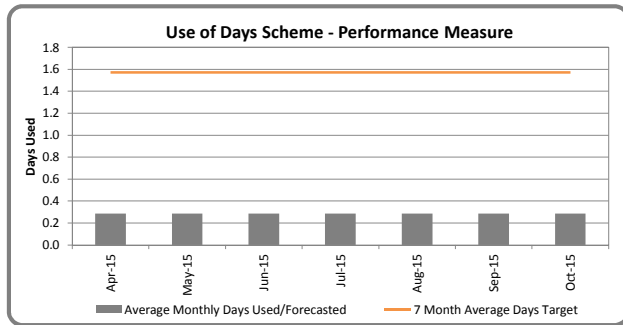
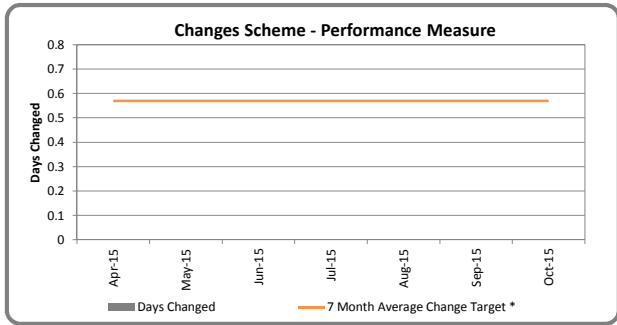
If the actual number of days changed is equal to target then incentive revenue is zero. If the actual number of days changed is less than the target then a payment of £50,000 per change below target is accrued up to a scheme cap of £0.5m (for 10 changes or more below target). If the actual number of days changed exceeds the target then a penalty of £50,000 per change in excess of the target is accrued to a scheme collar of -£0.5m (for 10 changes or more above target).

The Use of Days Scheme incentivises National Grid to minimise the number of Maintenance Days it uses to undertake Remote Valve Operations[1]. In 2015/16 National Grid has an annual incentive target (in days) of 11.

If the actual number of Maintenance Days used for these activities is equal to the target above target). then 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 £0.715m. 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).



Performance



Supporting Data

| | | Maintenance Period | | | | | | | | | | | | |
|--------------------|--------------------------------------|--------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|
| | | Apr-15 | May-15 | Jun-15 | Jul-15 | Aug-15 | Sep-15 | Oct-15 | Nov-15 | Dec-15 | Jan-16 | Feb-16 | Mar-16 | Total |
| Changes Scheme | Days Changed | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | 0 |
| | 7 Month Average Change Target * | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | | | | | | 4.0 |
| Use of Days Scheme | Average Monthly Days Used/Forecasted | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | | | | | | 2 |
| | 7 Month Average Days Target | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | | | | | | 11.0 |

* Target number of days changed is 14.5% of the total maintenance Days in the plan.

Commentary

Maintenance day changes are zero against a full year target of 4. Maintenance days called are 2 against a target of 11.

The maintenance incentive period is from April 15 to Oct 15 and this has now closed therefore the above table will remain as per the reported position of October 15 with no change.

Greenhouse Gas Emissions from Compressors

Q4 2015-2016 (January 2016 to March 2016)

Scheme Purpose

The purpose of this scheme is to encourage National Grid Gas to consider the environment when venting from NTS Compressors.

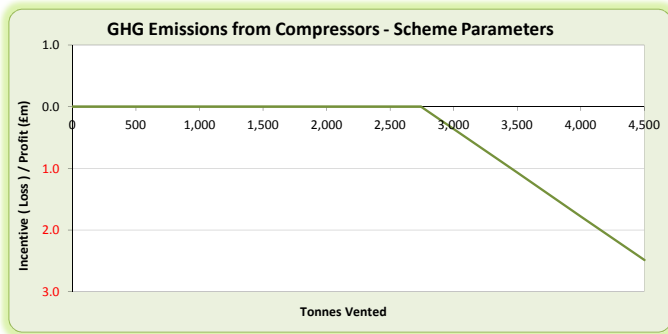
Compressors are utilised to increase pressures in parts of the NTS and to move gas from the sources of supply to areas of demand. The need to operate an individual compressor on any given day will depend on a number of circumstances including the sources of demand and supply, the prevailing network conditions and the need to accommodate maintenance and construction plans.

Scheme Description

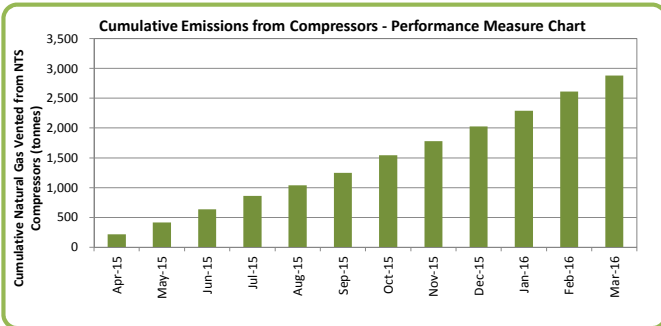
Performance measure - tonnes of Greenhouse Gases vented from NTS Compressors.

This scheme incentivises National Grid Gas 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 such as vent fans or oil pumps.

This incentive has been set for 3 years commencing from 01 April 2013. For every tonne vented above the target (2,744 tonnes of Greenhouse Gas Vented), National Grid Gas is subject to a penalty of approximately £1,417, equivalent to £100,000 for every 71 tonnes vented above the target. As a "downside only" scheme, National Grid Gas does not receive any payment for target outperformance.



Performance



Supporting Data

| | Apr-15 | May-15 | Jun-15 | Jul-15 | Aug-15 | Sep-15 | Oct-15 | Nov-15 | Dec-15 | Jan-16 | Feb-16 | Mar-16 |
|--|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|---------|
| Natural Gas Vented from NTS Compressors | 213.95 | 202.82 | 217.35 | 225.46 | 175.76 | 209.92 | 295.39 | 240.71 | 245.93 | 261.55 | 323.68 | 269.18 |
| Cumulative Natural Gas Vented from NTS Compressors | 213.95 | 416.77 | 634.12 | 859.58 | 1035.35 | 1245.26 | 1540.66 | 1781.37 | 2027.31 | 2288.86 | 2612.54 | 2881.72 |

Commentary

In general during the summer period we expect to see lower levels of emissions than during the peak winter period