

# Quarterly Gas System Operator Incentive Report

Q2 2015-2016 (July 2015 to September 2015)

## 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.

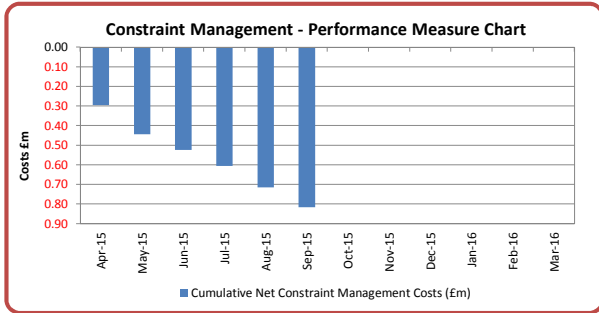
### [1.6 Ofgem Final Proposals](#)

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

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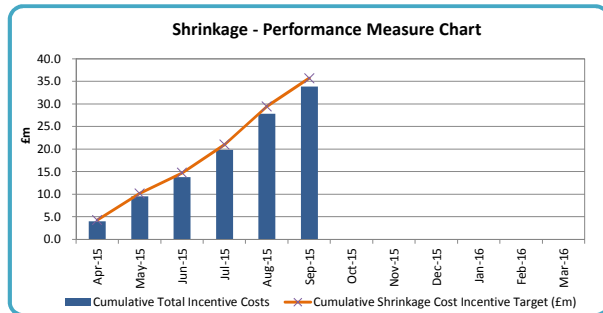
## Constraint Management



### Commentary

The chart shows the monthly cumulative Constraint Management operational performance measure. The end of Q2 performance for 2015/16 is a revenue of £816k.

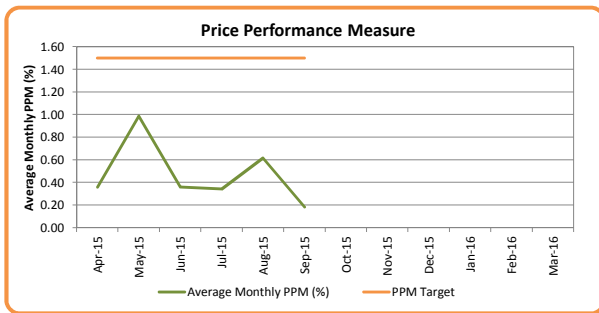
## Shrinkage



### Commentary

Q2 2015-16 Incentivised Costs are £33.9m compared to a target of £35.7m

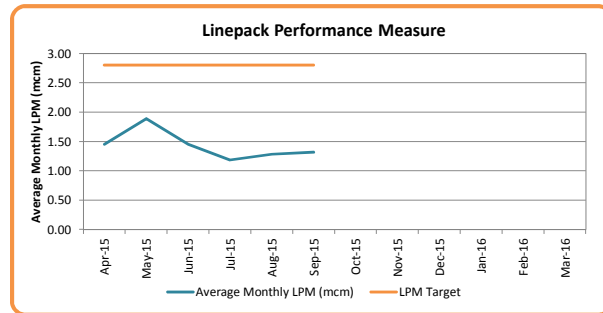
## Residual Balancing - Price



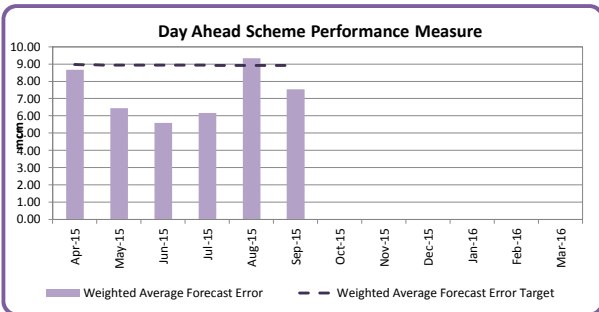
### Commentary

Over Q2 2015/16, the average price performance measure (0.38%) and linepack measure (1.26mcm) were both better than the respective targets (1.5% and 2.8mcm).

## Residual Balancing - Linepack



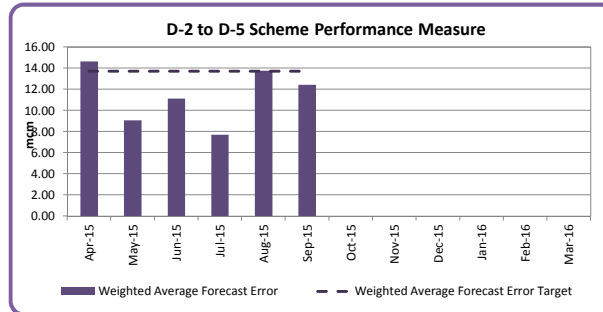
## Demand Forecasting - Day Ahead



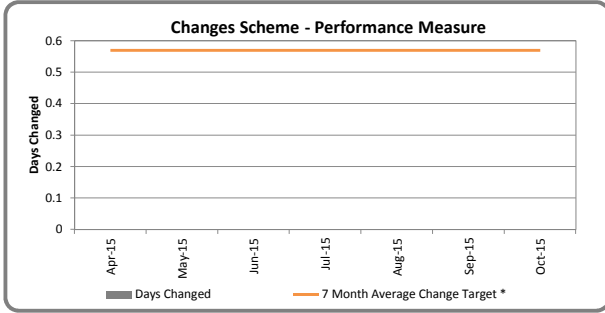
### Commentary

The weighted average forecast error for both incentives is below their respective target for this quarter.

## Demand Forecasting - D2 to D5



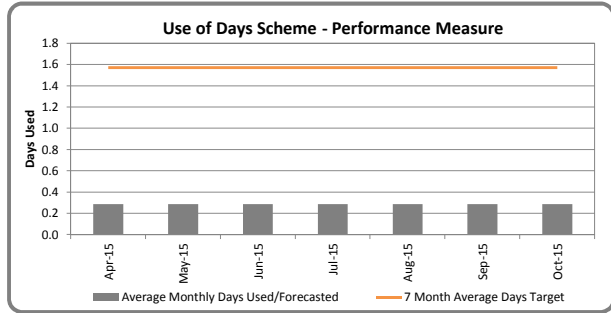
Maintenance - Changes to Maintenance Plan



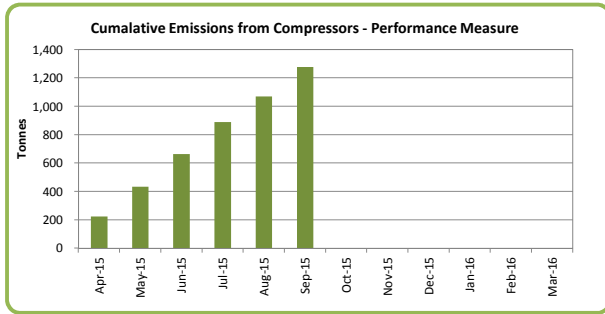
Commentary

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

Maintenance - Days of Maintenance Used



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

Q2 2015-2016 (July 2015 to September 2015)

## 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.

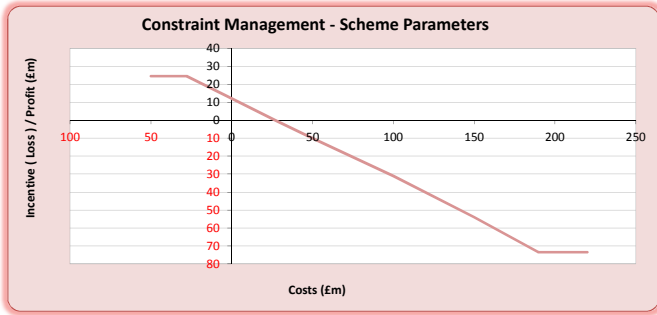
## Scheme Description

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

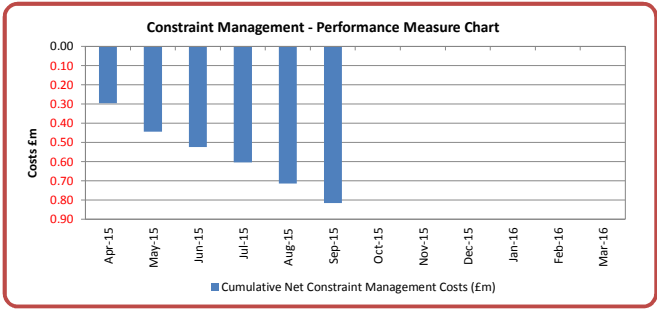
From 01 April 2013, National Grid Gas is subject to a new Constraint Management Incentive which has been set for 8 years and encompasses both Entry and Exit Capacity Constraint Management actions.

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 of £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						

## Commentary

The chart shows the monthly cumulative Constraint Management operational performance measure. The end of Q2 performance for 2015/16 is a revenue of £816k.

# Shrinkage

Q2 2015-2016 (July 2015 to September 2015)

## 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.

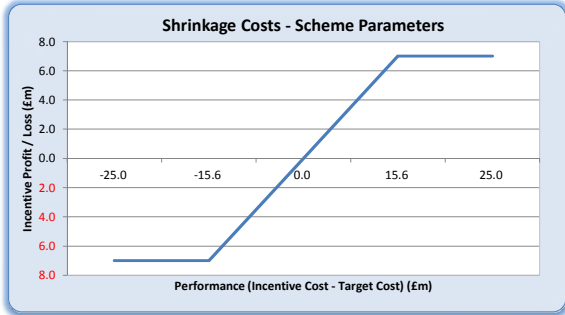
## Scheme Description

Performance Measure - Shrinkage Costs (£m).

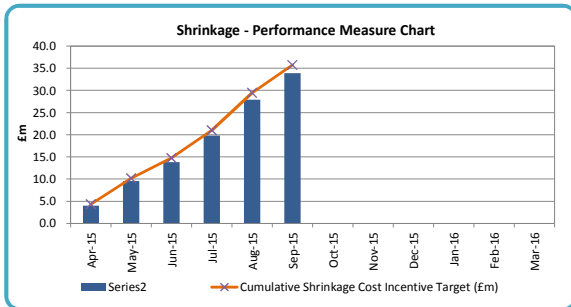
The form of the Shrinkage Incentive is a bundled cost minimisation incentive across all components of shrinkage, with a target principally derived from an energy procurement cost benchmark.

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.

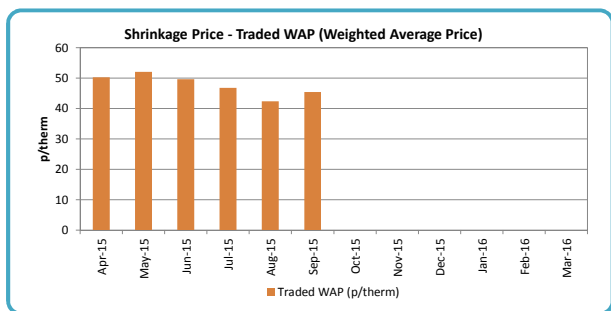
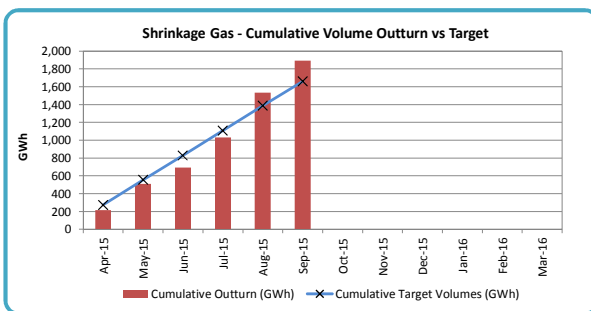


## Performance



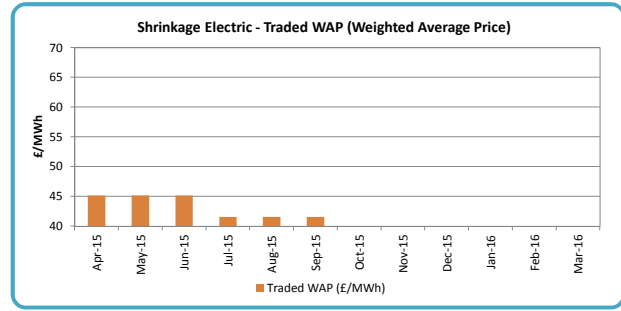
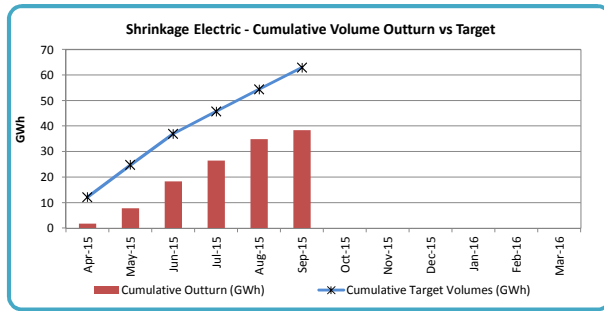
## Supporting Data (Overall - Gas and Elec)

	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	5.6	4.2	6.0	8.1	6.0						
Cumulative Total Incentive Costs (£m)	4.0	9.6	13.8	19.8	27.9	33.9						
Shrinkage Cost Incentive Target (£m)	4.3	5.9	4.6	6.3	8.5	6.2						
Cumulative Shrinkage Cost Incentive Target (£m)	4.3	10.2	14.7	21.0	29.5	35.7						



## 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	359.8						
Cumulative Outturn (GWh)	215.9	510.2	693.4	1030.8	1533.7	1893.5						
Incentivised Cost of Gas (£m)	3.7	5.0	3.3	5.3	7.4	5.6						
Target Volumes (GWh)	272.6	281.7	272.6	281.4	281.4	272.3						
Cumulative Target Volumes (GWh)	272.6	554.4	827.0	1108.4	1389.7	1662.0						
Traded WAP (p/therm)	50.3	52.1	49.6	46.8	42.4	45.4						



### 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						
Cumulative Outturn (GWh)	1.8	7.8	18.3	26.5	34.9	38.4						
Incentivised Cost of Electricity (£m)	0.3	0.6	0.9	0.7	0.7	0.4						
Target Volumes (GWh)	12.2	12.6	12.2	8.8	8.8	8.5						
Cumulative Target Volumes (GWh)	12.2	24.8	37.0	45.8	54.5	63.0						
Traded WAP (£/MWh)	45.2	45.2	45.2	41.6	41.6	41.6						

### Commentary

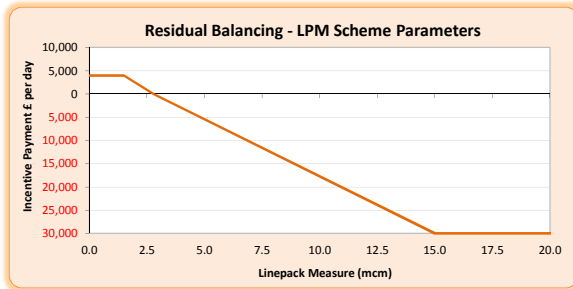
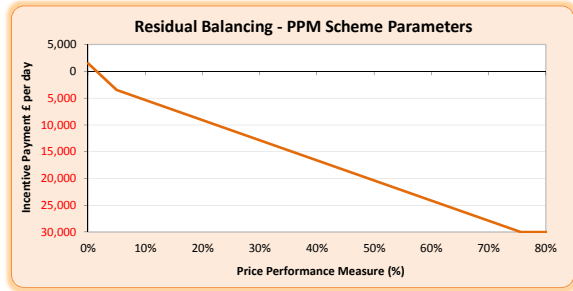
Q2 2015-16 Incentivised Costs are £33.9m compared to a target of £35.7m

# Residual Balancing

Q2 2015-2016 (July 2015 to September 2015)

## Scheme Purpose

The purpose of this scheme is to incentivise the daily balancing of supply and demand whilst minimising the impact of any actions on market prices. The incentive is split into 2 elements, the Price Performance Measure (PPM) and the Linepack Performance Measure (LPM).



## Scheme Description

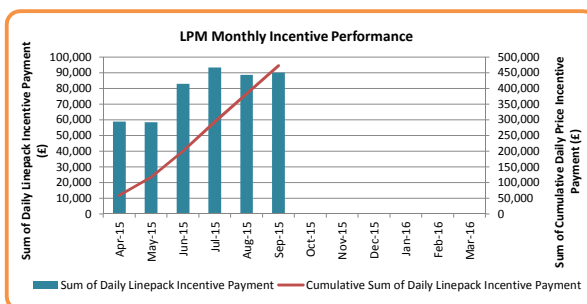
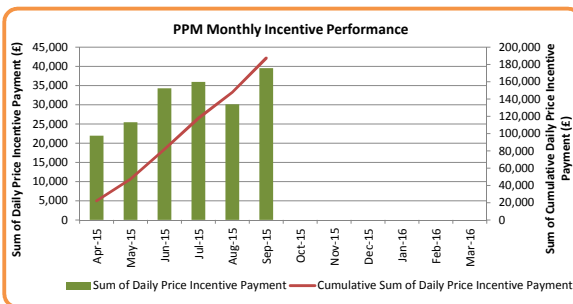
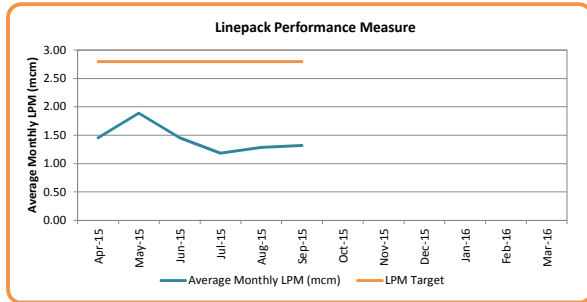
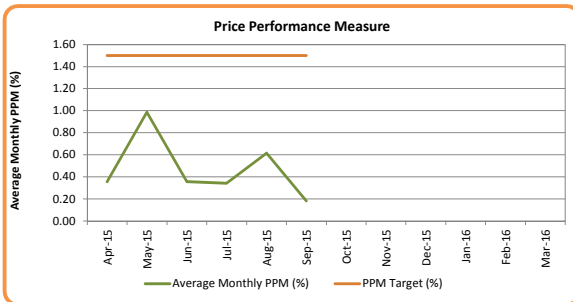
Performance Measure:- for PPM, the difference between any National Grid Gas Trades, divided by SAP (System Average Price). For LPM, the absolute difference between opening and closing NTS Linepack over a Gas Day.

The Price Element (PPM) incentivises National Grid Gas to execute any Residual Balancing trades at prices that are in a small range compared to the System Average Price (SAP) for the day. The PPM is defined as the difference between the highest and lowest prices at which National Grid Gas trades, divided by SAP. The target is a price spread of 1.5% of SAP. If the PPM is below 1.5% on a given day, then National Grid Gas receives an incentive payment up to a maximum of £1,500. Conversely, if the PPM is above 1.5%, then National Grid Gas incurs a penalty up to a maximum of £30,000.

The Linepack Element (LPM) incentivises National Grid Gas to minimise any changes between opening and closing NTS linepack over a gas day (i.e. to achieve a balance between the supply and demand on the Gas Day). This is intended to ensure that any system imbalances are resolved on the relevant day, such that the costs of resolving any imbalances are targeted to those responsible for the imbalance. The target is a linepack change of 2.8 mcm. If the LPM is below 2.8 mcm on a given gas day, then National Grid Gas receives an incentive payment of up to £4,000. Conversely if the LPM is above 2.8 mcm then National Grid Gas incurs a penalty of up to £30,000.

The Sum of all the daily payments for linepack and price performance under the Residual Balancing incentive are annually capped at £2m and collared at -£3.5m.

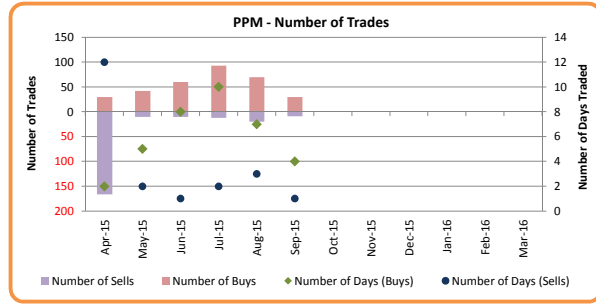
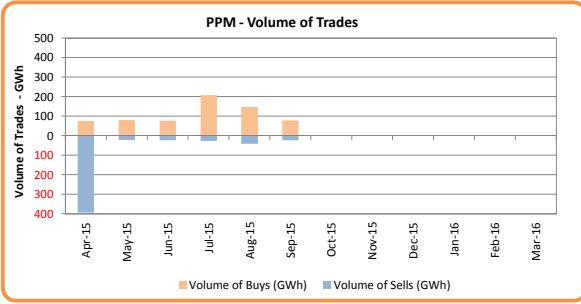
## Performance



## 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
Price	Sum of Daily Price Incentive Payment	£21,950	£25,412	£34,284	£35,929.15	£30,103.27	£39,511.69					
	Cumulative Sum of Daily Price Incentive Payment	£21,950	£47,362	£81,646	£117,575	£147,678	£187,190					
	Average Monthly PPM (%)	0.36	0.99	0.36	0.34	0.62	0.18					
	Min PPM (%)	0	0	0	0	0	0					
	Max PPM (%)	3.70	15.41	3.70	3.50	9.31	2.73					
PPM Target (%)	1.5	1.5	1.5	1.5	1.5	1.5						
Linepack	Sum of Daily Linepack Incentive Payment	£58,963	£58,448	£83,009	£93,506	£88,771	£90,132					
	Cumulative Sum of Daily Linepack Incentive Payment	£58,963	£117,412	£200,420	£293,926	£382,697	£472,829					
	Average Monthly LPM (mcm)	1.45	1.89	1.45	1.19	1.29	1.32					
	Min LPM (mcm)	0.14	0.15	0.06	0.03	0.01	0.00					
	Max LPM (mcm)	7.58	4.50	4.27	4.93	4.21	2.73					
LPM Target (mcm)	2.8	2.8	2.8	2.8	2.8	2.8						

## 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						
Volume of Sells (GWh)	-392.7	-21.5	-22.4	-26.2	-40.3	-22.6						
Number of Buys	30	42	60	93	70	30						
Number of Sells	166	10	10	12	20	9						
Number of Days (Buys)	2	5	8	10	7	4						
Number of Days (Sells)	12	2	1	2	3	1						
Sell Min Price (p/therm)	43.6	42.0	42.1	41.8	37.0	39.0						
Sell Max Price (p/therm)	48.2	43.2	42.3	42.1	41.1	39.1						
Buy Min Price (p/therm)	46.4	44.3	42	43.4	38.7	42						
Buy Max Price (p/therm)	54	55	46	46	44.75	43.5						

## Commentary

Over Q2 2015/16, the average price performance measure (0.38%) and linepack measure (1.26mcm) were both better than the respective targets (1.5% and 2.8mcm).

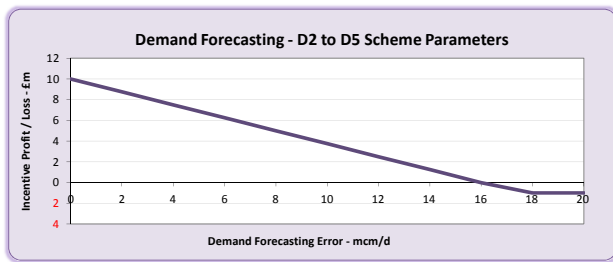
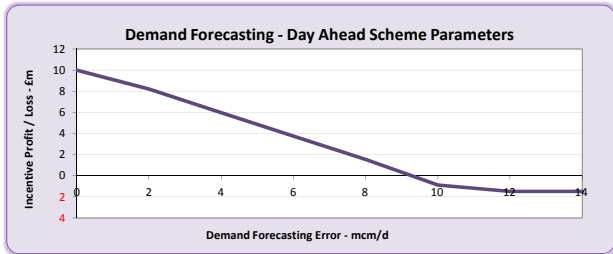


# Demand Forecasting

Q2 2015-2016 (July 2015 to September 2015)

## 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

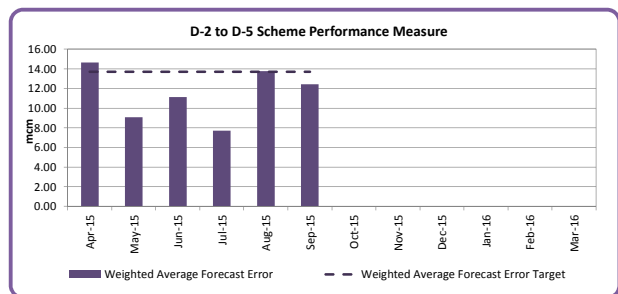
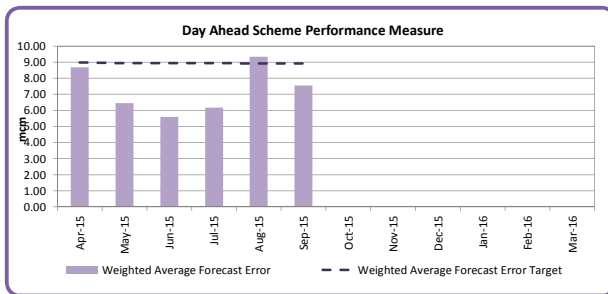
The Day Ahead scheme, has an incentive target of an annual average absolute forecast error of 8.5mcm with an adjustment for the level of short-cycle storage injection capability (to take into account the unpredictability of demand from short-cycle storage sites). The adjustment revises the day ahead 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						
	Weighted Average Forecast Error Target	8.97	8.94	8.94	8.93	8.93	8.93						
D-2 to D-5 Scheme	Weighted Average Forecast Error	14.64	9.07	11.12	7.71	13.78	12.42						
	Weighted Average Forecast Error Target	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 for this quarter.

# Maintenance

Q2 2015-2016 (July 2015 to September 2015)

## 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.

46. 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.

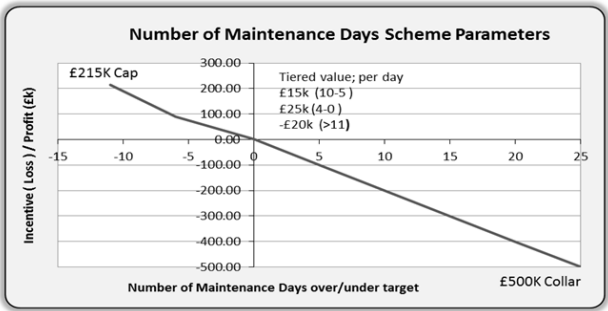
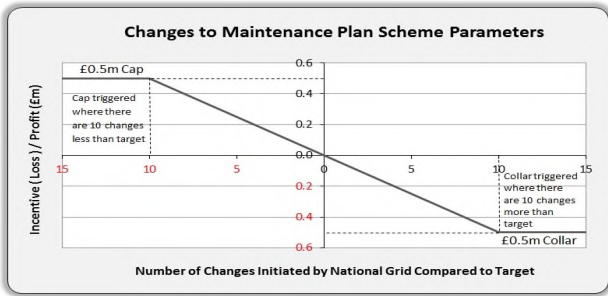
To minimise the impact of Maintenance work on customers, National Grid plan maintenance activities to align with periods which minimise disruption to customer operations. Where National Grid is able to align maintenance to periods which have no impact on customer contractual rights, National Grid will 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.

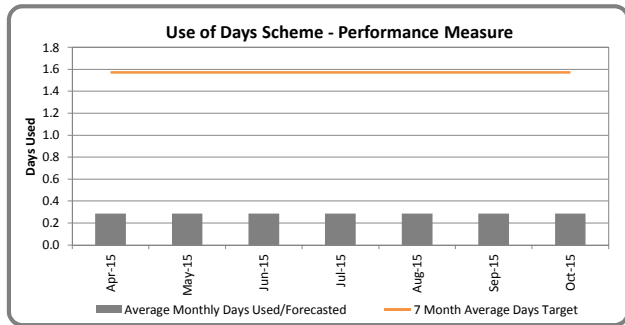
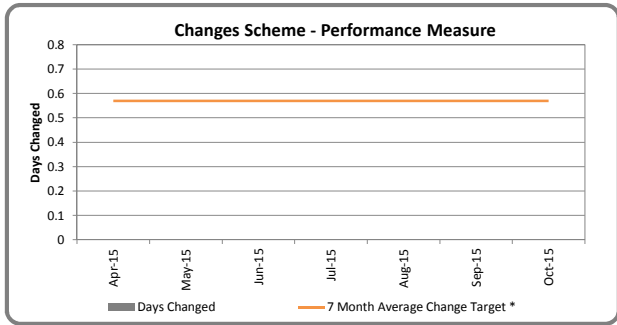
If the actual number of days changed is equal to target then incentive revenue is zero. If the actual number of days changed is less than the target then a payment of £50,000 per change below target is accrued up to a scheme cap of £0.5m (for 10 changes or more below target). If the actual number of 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											Total	
		Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	
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.

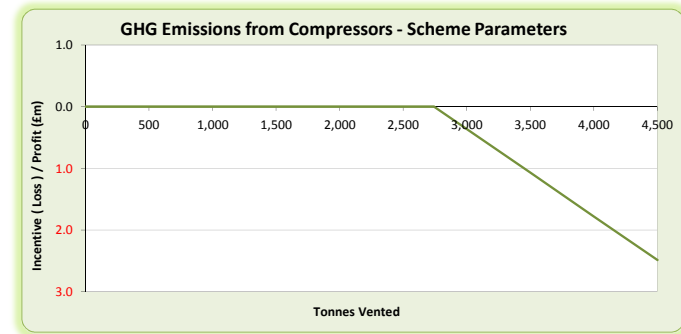
# Greenhouse Gas Emissions from Compressors

Q2 2015-2016 (July 2015 to September 2015)

## 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.



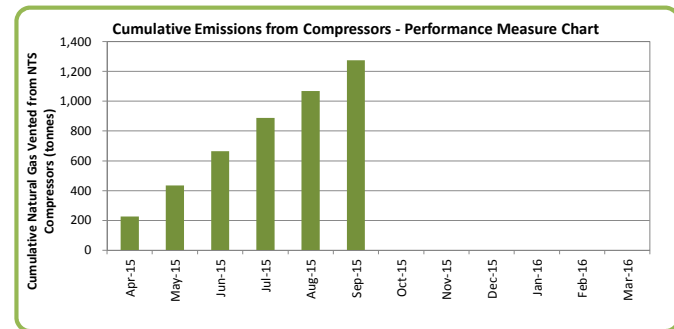
## Scheme Description

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	225.06	208.77	230.33	224.38	181.27	206.38						
Cumulative Natural Gas Vented from NTS Compressors	225.06	433.83	664.16	888.54	1069.81	1276.19						

## Commentary

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

# Quarterly Gas System Operator Incentive Report

Q2 2015-2016 (July 2015 to September 2015)

## 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.

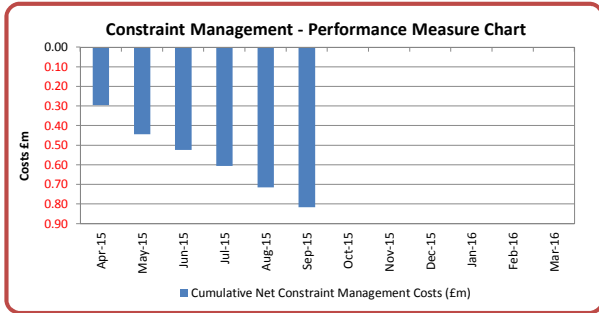
### [1.6 Ofgem Final Proposals](#)

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

Q2 2015-2016 (July 2015 to September 2015)

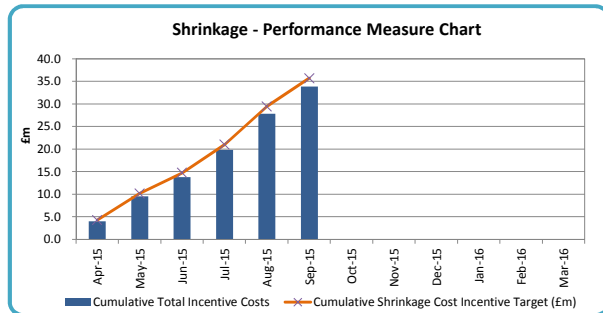
## Constraint Management



### Commentary

The chart shows the monthly cumulative Constraint Management operational performance measure. The end of Q2 performance for 2015/16 is a revenue of £816k.

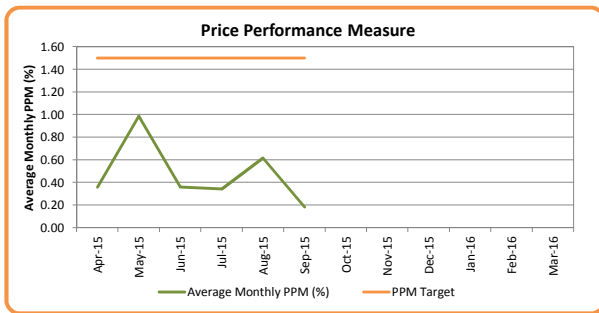
## Shrinkage



### Commentary

Q2 2015-16 Incentivised Costs are £33.9m compared to a target of £35.7m

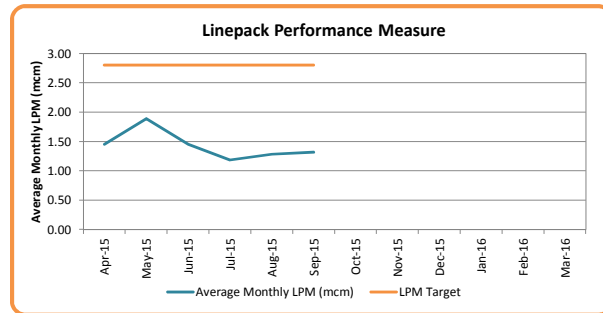
## Residual Balancing - Price



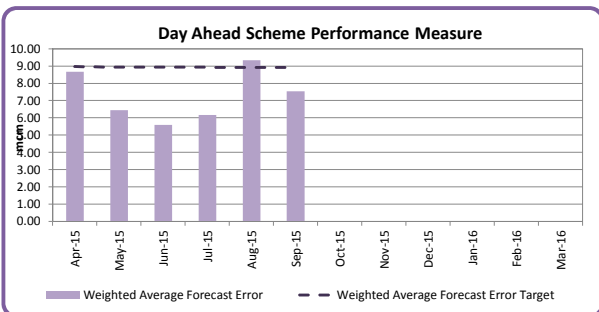
### Commentary

Over Q2 2015/16, the average price performance measure (0.38%) and linepack measure (1.26mcm) were both better than the respective targets (1.5% and 2.8mcm).

## Residual Balancing - Linepack



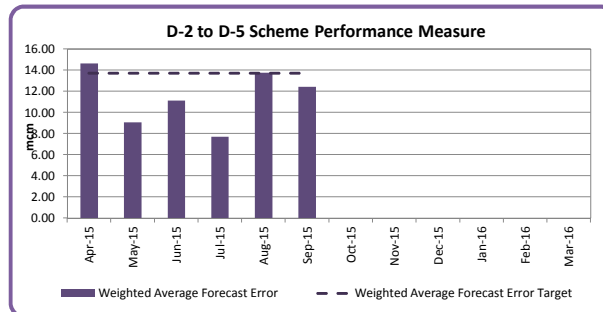
## Demand Forecasting - Day Ahead



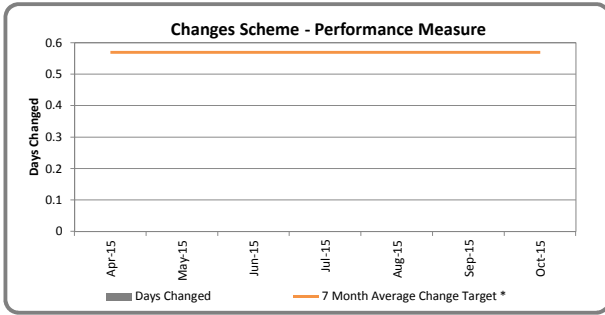
### Commentary

The weighted average forecast error for both incentives is below their respective target, with Day Ahead average for Q2 7.68mcm against the target of 8.93mcm and D-2 to D-5 average for Q2 11.30mcm against the target of 13.7mcm

## Demand Forecasting - D-2 to D5



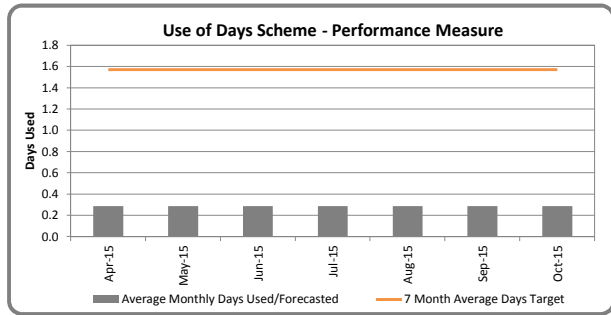
Maintenance - Changes to Maintenance Plan



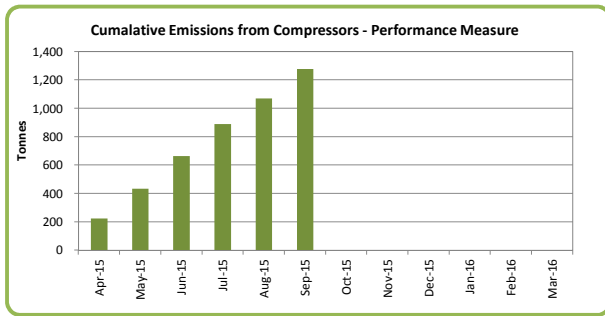
Commentary

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

Maintenance - Days of Maintenance Used



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

Q2 2015-2016 (July 2015 to September 2015)

## 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.

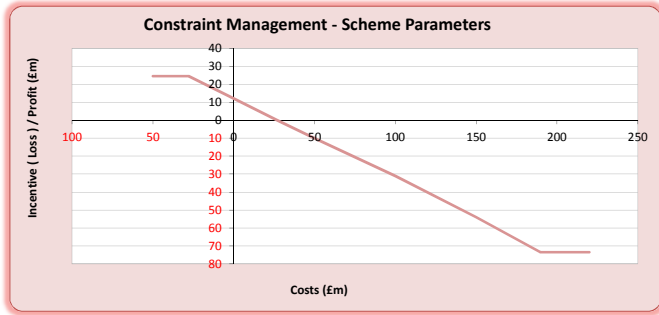
## Scheme Description

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

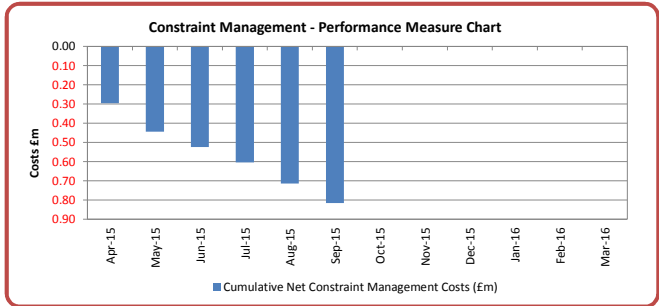
From 01 April 2013, National Grid Gas is subject to a new Constraint Management Incentive which has been set for 8 years and encompasses both Entry and Exit Capacity Constraint Management actions.

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						

## Commentary

The chart shows the monthly cumulative Constraint Management operational performance measure. The end of Q2 performance for 2015/16 is a revenue of £816k.

# Shrinkage

Q2 2015-2016 (July 2015 to September 2015)

## 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.

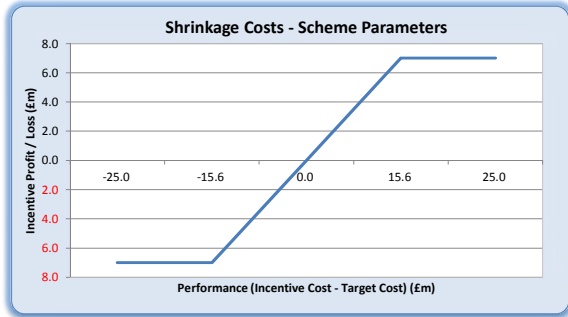
## Scheme Description

Performance Measure - Shrinkage Costs (£m).

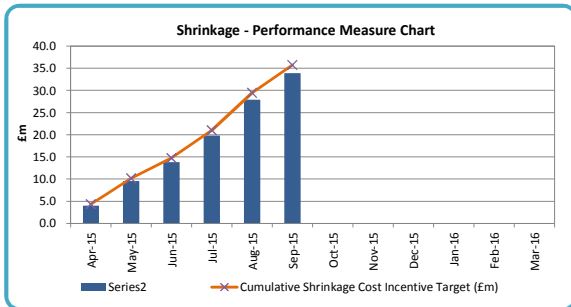
The form of the Shrinkage Incentive is a bundled cost minimisation incentive across all components of shrinkage, with a target principally derived from an energy procurement cost benchmark.

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.

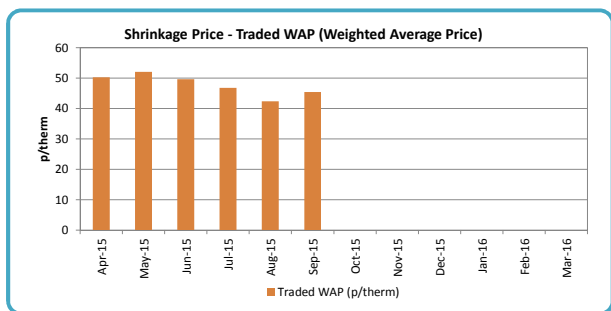
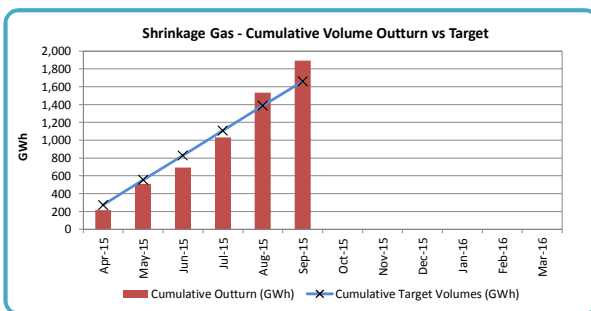


## Performance



## Supporting Data (Overall - Gas and Elec)

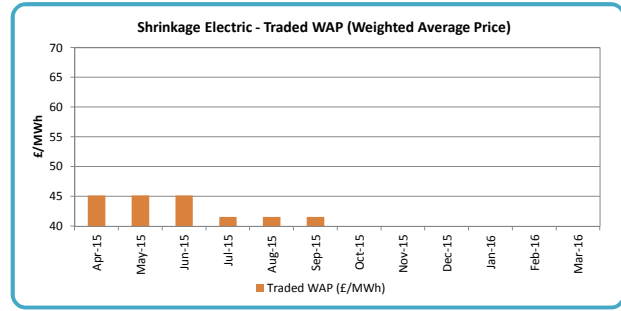
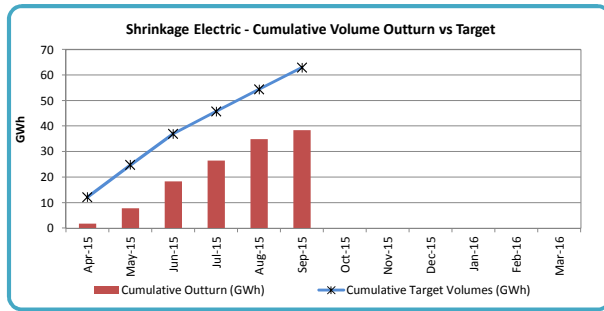
	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16
Total Incentive Costs (£m)	4.0	5.6	4.2	6.0	8.1	6.0						
Cumulative Total Incentive Costs (£m)	4.0	9.6	13.8	19.8	27.9	33.9						
Shrinkage Cost Incentive Target (£m)	4.3	5.9	4.6	6.3	8.5	6.2						
Cumulative Shrinkage Cost Incentive Target (£m)	4.3	10.2	14.7	21.0	29.5	35.7						



## 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	359.8						
Cumulative Outturn (GWh)	215.9	510.2	693.4	1030.8	1533.7	1893.5						
Incentivised Cost of Gas (£m)	3.7	5.0	3.3	5.3	7.4	5.6						
Target Volumes (GWh)	272.6	281.7	272.6	281.4	281.4	272.3						
Cumulative Target Volumes (GWh)	272.6	554.4	827.0	1108.4	1389.7	1662.0						
Traded WAP (p/therm)	50.3	52.1	49.6	46.8	42.4	45.4						





### 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						
Cumulative Outturn (GWh)	1.8	7.8	18.3	26.5	34.9	38.4						
Incentivised Cost of Electricity (£m)	0.3	0.6	0.9	0.7	0.7	0.4						
Target Volumes (GWh)	12.2	12.6	12.2	8.8	8.8	8.5						
Cumulative Target Volumes (GWh)	12.2	24.8	37.0	45.8	54.5	63.0						
Traded WAP (£/MWh)	45.2	45.2	45.2	41.6	41.6	41.6						

### Commentary

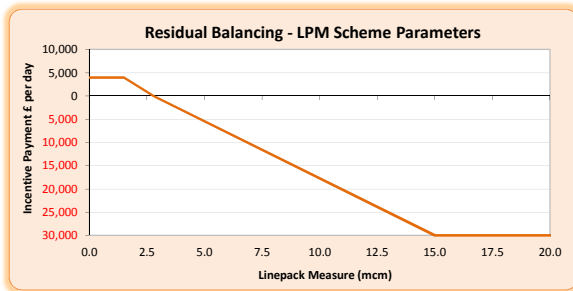
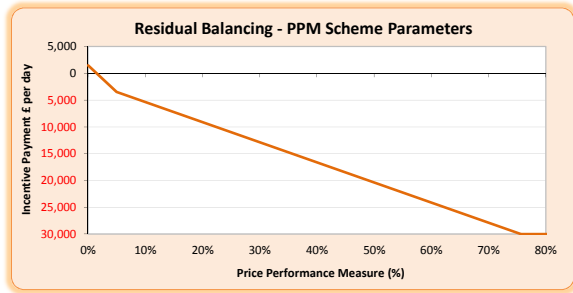
Q2 2015-16 Incentivised Costs are £33.9m compared to a target of £35.7m

# Residual Balancing

Q2 2015-2016 (July 2015 to September 2015)

## Scheme Purpose

The purpose of this scheme is to incentivise the daily balancing of supply and demand whilst minimising the impact of any actions on market prices. The incentive is split into 2 elements, the Price Performance Measure (PPM) and the Linepack Performance Measure (LPM).



## Scheme Description

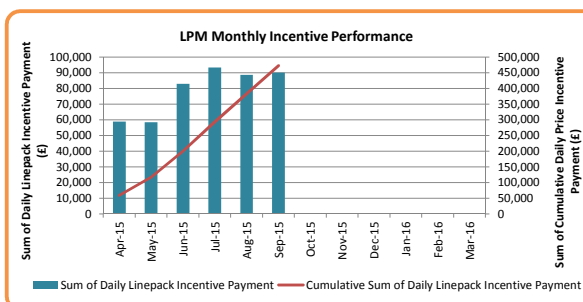
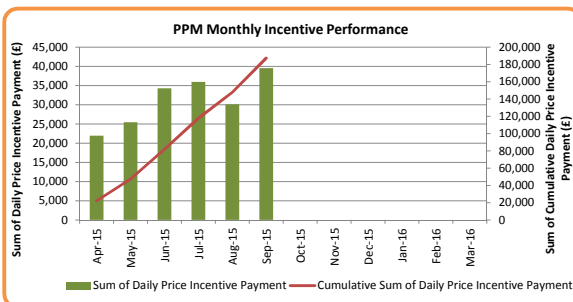
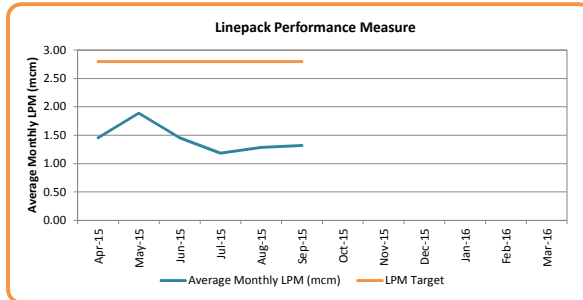
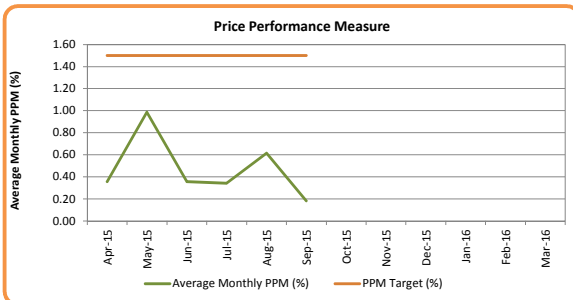
Performance Measure:- for PPM, the difference between any National Grid Gas Trades, divided by SAP (System Average Price). For LPM, the absolute difference between opening and closing NTS Linepack over a Gas Day.

The Price Element (PPM) incentivises National Grid Gas to execute any Residual Balancing trades at prices that are in a small range compared to the System Average Price (SAP) for the day. The PPM is defined as the difference between the highest and lowest prices at which National Grid Gas trades, divided by SAP. The target is a price spread of 1.5% of SAP. If the PPM is below 1.5% on a given day, then National Grid Gas receives an incentive payment up to a maximum of £1,500. Conversely, if the PPM is above 1.5%, then National Grid Gas incurs a penalty up to a maximum of £30,000.

The Linepack Element (LPM) incentivises National Grid Gas to minimise any changes between opening and closing NTS linepack over a gas day (i.e. to achieve a balance between the supply and demand on the Gas Day). This is intended to ensure that any system imbalances are resolved on the relevant day, such that the costs of resolving any imbalances are targeted to those responsible for the imbalance. The target is a linepack change of 2.8 mcm. If the LPM is below 2.8 mcm on a given gas day, then National Grid Gas receives an incentive payment of up to £4,000. Conversely if the LPM is above 2.8 mcm then National Grid Gas incurs a penalty of up to £30,000.

The Sum of all the daily payments for linepack and price performance under the Residual Balancing incentive are annually capped at £2m and collared at -£3.5m.

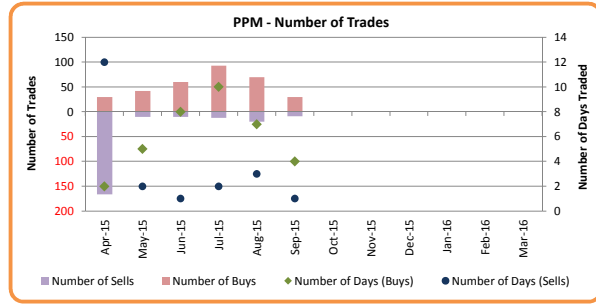
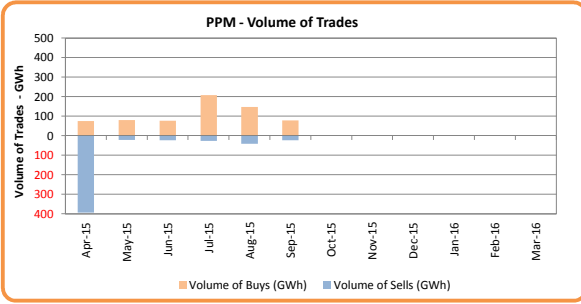
## Performance



## 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
Price	Sum of Daily Price Incentive Payment	£21,950	£25,412	£34,284	£35,929.15	£30,103.27	£39,511.69					
	Cumulative Sum of Daily Price Incentive Payment	£21,950	£47,362	£81,646	£117,575	£147,678	£187,190					
	Average Monthly PPM (%)	0.36	0.99	0.36	0.34	0.62	0.18					
	Min PPM (%)	0	0	0	0	0	0					
	Max PPM (%)	3.70	15.41	3.70	3.50	9.31	2.73					
PPM Target (%)	1.5	1.5	1.5	1.5	1.5	1.5						
Linepack	Sum of Daily Linepack Incentive Payment	£58,963	£58,448	£83,009	£93,506	£88,771	£90,132					
	Cumulative Sum of Daily Linepack Incentive Payment	£58,963	£117,412	£200,420	£293,926	£382,697	£472,829					
	Average Monthly LPM (mcm)	1.45	1.89	1.45	1.19	1.29	1.32					
	Min LPM (mcm)	0.14	0.15	0.06	0.03	0.01	0.00					
	Max LPM (mcm)	7.58	4.50	4.27	4.93	4.21	2.73					
LPM Target (mcm)	2.8	2.8	2.8	2.8	2.8	2.8						

## 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						
Volume of Sells (GWh)	-392.7	-21.5	-22.4	-26.2	-40.3	-22.6						
Number of Buys	30	42	60	93	70	30						
Number of Sells	166	10	10	12	20	9						
Number of Days (Buys)	2	5	8	10	7	4						
Number of Days (Sells)	12	2	1	2	3	1						
Sell Min Price (p/therm)	43.6	42.0	42.1	41.8	37.0	39.0						
Sell Max Price (p/therm)	48.2	43.2	42.3	42.1	41.1	39.1						
Buy Min Price (p/therm)	46.4	44.3	42	43.4	38.7	42						
Buy Max Price (p/therm)	54	55	46	46	44.75	43.5						

## Commentary

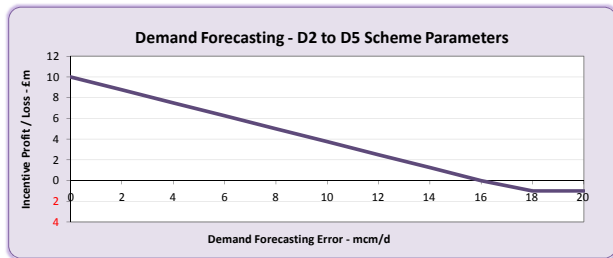
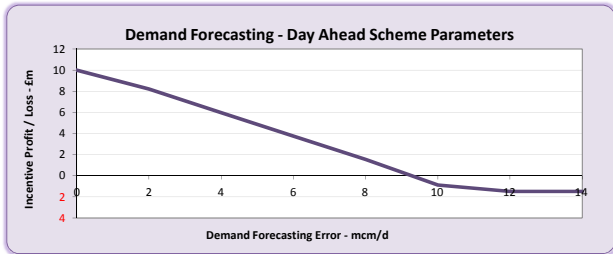
Over Q2 2015/16, the average price performance measure (0.38%) and linepack measure (1.26mcm) were both better than the respective targets (1.5% and 2.8mcm).

# Demand Forecasting

Q2 2015-2016 (July 2015 to September 2015)

## 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.

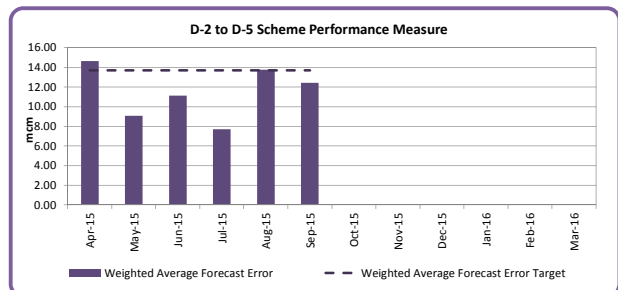
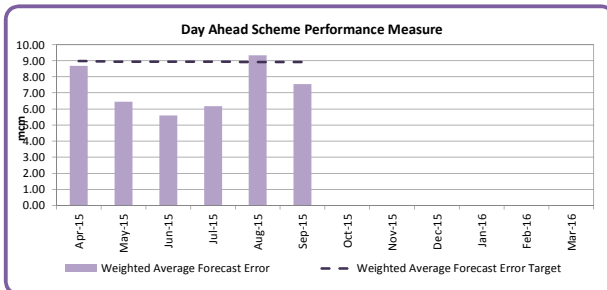
This incentive has been set for eight years commencing 1st April 2013. The daily forecast error is calculated as the difference (in mcm) between the day ahead forecast NTS throughput value and the actual throughput value on the appropriate day of the year. The annual average absolute forecast error is 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						
	Weighted Average Forecast Error Target	8.97	8.94	8.94	8.93	8.93	8.93						
D-2 to D-5 Scheme	Weighted Average Forecast Error	14.64	9.07	11.12	7.71	13.78	12.42						
	Weighted Average Forecast Error Target	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 Q2 7.68mcm against the target of 8.93mcm and D-2 to D-5 average for Q2 11.30mcm against the target of 13.7mcm

# Maintenance

Q2 2015-2016 (July 2015 to September 2015)

## 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.

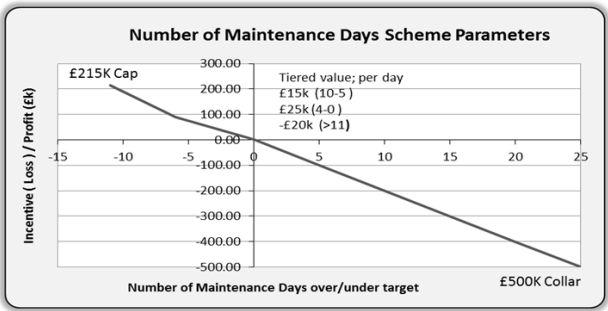
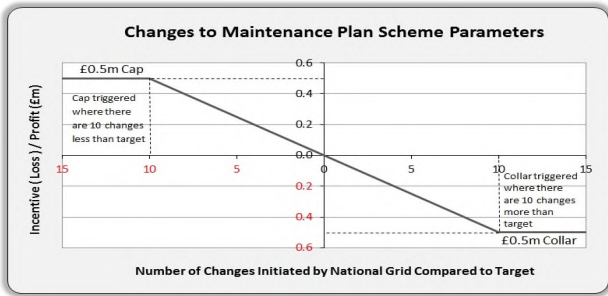
To minimise the impact of Maintenance work on customers, National Grid plan maintenance activities to align with periods which minimise disruption to customer operations. Where National Grid is able to align maintenance to periods which have no impact on customer contractual rights, National Grid will 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.

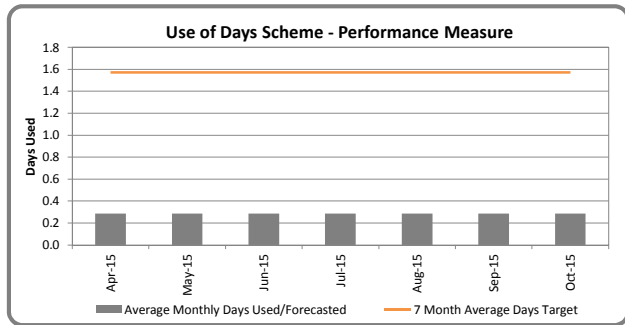
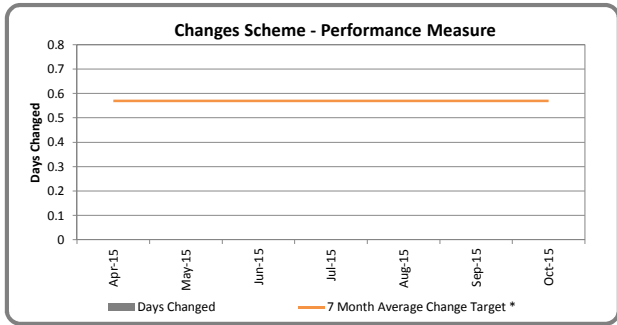
If the actual number of days changed is equal to target then incentive revenue is zero. If the actual number of days changed is less than the target then a payment of £50,000 per change below target is accrued up to a scheme cap of £0.5m (for 10 changes or more below target). If the actual number of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

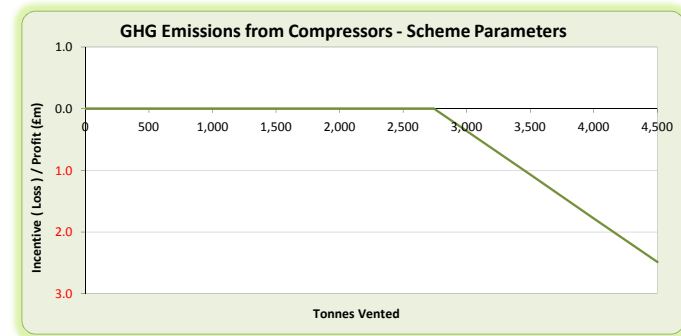
# Greenhouse Gas Emissions from Compressors

Q2 2015-2016 (July 2015 to September 2015)

## 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.



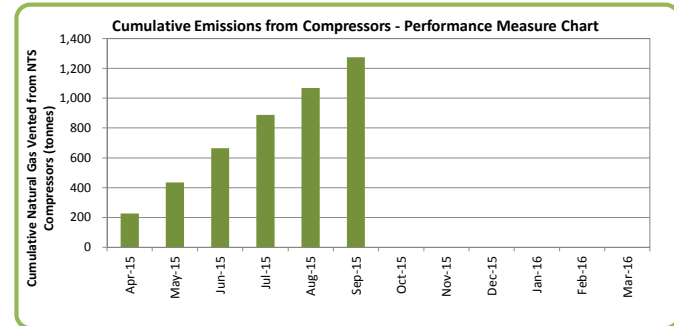
## Scheme Description

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 Ventd), 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 Ventd from NTS Compressors	225.06	208.77	230.33	224.38	181.27	206.38						
Cumulative Natural Gas Ventd from NTS Compressors	225.06	433.83	664.16	888.54	1069.81	1276.19						

## Commentary

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