

*National Grid  
Gas Transmission*

nationalgrid

Our performance

2015/16



# Welcome



Welcome to our Gas Transmission performance summary for the third year under RIIO-T1 (Revenue = Incentives + Innovation + Outputs). We produce this report so that we can explain how we've performed to our customers, stakeholders and end consumers

Under the RIIO contract our performance is assessed against five main outputs: **reliability and availability; environment; customer satisfaction; customer connections**; and, most importantly, **safety**. These outputs relate to the services we provide that our customers have told us are important to them. They also look to address some of the main challenges currently facing the gas transmission network.

In 2015/16 we have performed well against our outputs with generally consistent or improved performance compared to 2014/15. With regards to our **safety** output, we had one of our safest ever years with zero lost time injuries. Under our **reliability and availability** output we have undertaken an increasing amount of work to replace our ageing assets so we can maintain a safe and reliable network today and into the future. In our **environment** output we have been working hard to make sure that we comply with the latest emissions legislation including progressing compliance works at Peterborough, Huntingdon and Aylesbury compressor sites. In our **customer satisfaction** output we have attained above-target satisfaction scores and we have been using your feedback to create detailed action plans to help us improve even further. Lastly, with regard to our **customer connections** output, we have met all of our commitments and issued eight full connection offers in the appropriate timescales.

As well as establishing the outputs we must deliver, the regulatory framework also determines the **revenue** that we can recover from our customers. In 2015/16, National Grid's Gas Transmission services amounted to around £19 of an average domestic bill, this being 2.7% of the average £706 gas bill.

Another way that our revenue is affected is through our performance in the different **incentive** areas. These incentives concentrate on areas where we can create value for the industry and consumers. We are able to retain a share of any value we create, but equally we can be penalised if we don't meet targets. In the past twelve months we have made good progress across our various incentives. Examples include making sure the network was unconstrained for the duration of the year and reducing the amount of days we needed to conduct planned summer maintenance to just two days; this is a 50% reduction compared to last year.

**Innovation** is an important aspect of all the work we do under RIIO. During 2015/16 we worked on 44 projects aimed at delivering efficiency and value for consumers across our five main output areas. Many of the projects are already achieving savings, including our Building Information Modelling work, which uses 3D laser scanning technology in the design, build and management of construction projects. This delivers access, construction, operation, cost and safety benefits before site work even commences.

As we move to the halfway point in our RIIO-T1 deal, we are looking to increase our asset health works, so we can ensure the safety and reliability of the system, while achieving best value for money for customers. We will also be looking at the future of gas and the implications for the Gas Transmission network. We believe that gas has a critical role to play in the future energy mix and during 2016/17 we will put forward our view on potential future scenarios. In particular, we will be looking at what these futures could mean for the investment in, and operation of, our network.

In this report, you will find details of how we have performed against our five main output areas, examples of how we're innovating in the Gas Transmission business to increase efficiency, and how our revenue makes up a part of the end consumer's domestic bill. We hope that you find it useful and we welcome your feedback on how we can improve our report in the future.

**Nicola Shaw**  
Executive Director, UK



Safety First



# Who we are and what we do

National Grid Gas plc owns and operates the UK high-pressure gas network.

The system comprises a network of 7,660km pipelines, operated at pressures of up to 94 bar, which transports bulk supplies of pressurised gas to centres of demand across the UK. The gas enters the system from one of the country's coastal terminals or storage facilities and is moved to exit points by pipelines and a series of compressor stations placed at strategic intervals on the network. At the exit points, gas is transferred to eight Distribution Networks (DNs) for onward transportation to domestic and industrial customers, or to directly connected customers including storage sites, power stations, large industrial consumers and interconnectors (pipelines to other countries).

**24** compressor stations

**7,660km** of high-pressure pipeline

**175** offtake points

**8** Distribution Networks that we connect to

**94 bar** is our maximum operating pressure

*Alongside this report we have published our data tables which support the Finance section in detailing our actual expenditure for 2015/16 and forecast expenditure for the remainder of RIIO-T1. To view these tables please visit [www.talkingnetworkstx.com/How-we-are-doing.aspx](http://www.talkingnetworkstx.com/How-we-are-doing.aspx)*

*For more investor-related information then please follow the relevant link [investors.nationalgrid.com](http://investors.nationalgrid.com)*

*We have also created two companion publications that provide a more condensed overview of our 2015/16 performance. These can be viewed at [www.talkingnetworkstx.com/How-we-are-doing.aspx](http://www.talkingnetworkstx.com/How-we-are-doing.aspx)*



# Our regulatory framework

RIO introduced a range of principles that are relevant to our performance.

The RIO regulatory framework was implemented by Ofgem in 2013/14 and will last for eight years. Under this framework we have a set of outputs, as outlined on pages 7–14, that we have agreed with stakeholders. We deliver these outputs in return for an allowance that we have agreed with our regulator Ofgem.

We've outlined some of the principles that impact our performance below:

## Cost performance is shared with customers

One of the principles introduced under the RIO framework is the concept of a sharing factor. This works by sharing any over or underperformance against allowances between us and customers. Under this, for every £1 of any efficiency we achieve, 56p of this is passed on to customers. Therefore, when we have achieved an efficiency, this flows through to ultimately reduce end consumer bills. The opposite is also true, so underperformance, i.e. spending more than allowances to deliver the output, will mean this overspend is shared between us and customers.

## Incentives are encouraging better ways of working

Another way that our revenue is affected is through our performance in the different incentive areas. These incentives concentrate on areas where we can create value for the industry and consumers. We can retain a share of any value we create, but we can also be penalised if we don't meet targets. You can read more about our performance against the incentive schemes in our Performance scorecard on pages 4 and 5.

$$R = I + I + O$$

REVENUE      OUTPUTS  
INCENTIVES      INNOVATION

## Finding a better way in everything we do

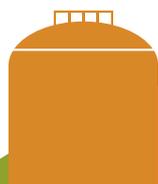
Innovation is at the heart of the RIO regulatory framework and we work to find a better way in everything we do. The RIO contract introduced two relevant funds to support innovation projects: the Network Innovation Allowance (NIA) and the Network Innovation Competition (NIC). You can read more about these, and the types of projects that we are working on, in the Innovation section on page 15.

## Outputs delivered change allowances (uncertainty mechanism)

In some areas, the outputs to be delivered over the RIO period are uncertain. This could be because we were uncertain of the volume of work required to be delivered or because of new legislation emerging. To address this, we have an opportunity to apply to Ofgem for further funding in specific areas in May 2018. This is called an uncertainty mechanism. You can find examples of the areas in which we can apply for further funding in the Uncertainty Mechanisms section on page 3.

For more information on our innovation activities please visit:  
[www2.nationalgrid.com/uk/our-company/innovation/](http://www2.nationalgrid.com/uk/our-company/innovation/)

ofgem



# Finance

The RIIO framework determines our regulatory cost allowance and the revenues that we are allowed to recover. This has been set by Ofgem through to 2021.

In return for these cost allowances we have committed to deliver the outputs our stakeholders have asked us for. In 2015/16 we spent £314m of controllable costs across the Gas Transmission business and forecast £346m (2015/16 prices) in allowances. Together with uncontrollable costs and incentive performance, this contributes to overall revenue collected of approximately £1bn in 2015/16.

Over the full RIIO-T1 price control we forecast that we will spend £3,184m (2015/16 prices) compared to an allowance of £3,235m<sup>1</sup> (2015/16 prices).

Our eight-year forecast spend has increased by £66m compared to last year and our adjusted allowance has decreased by around £15m. These changes are due to a number of factors, including increased asset health spend, increased allowance for cyber and data centres and reduced spend on complying with the Industrial Emissions Directive. You can find more information about our costs in the data tables that accompany this publication: [www.talkingnetworkstx.com/How-we-are-doing.aspx](http://www.talkingnetworkstx.com/How-we-are-doing.aspx)

## Uncertainty Mechanisms

As we've described in the 'Our Regulatory Framework' section, we have an opportunity to apply to Ofgem for further funding in specific areas in May 2018. These are generally areas where we were unsure of the costs or solutions required at the time of submitting our RIIO business plan. Our uncertainty mechanisms include improving our physical security at some of our sites, dealing with customer land compensation claims, meeting emissions legislation requirements and managing unexpected, one-off events such as the replacement of the Humber Estuary pipeline.

## Case study Humber Estuary Pipeline

The Feeder 9 pipeline that spans the Humber Estuary is a key transportation route for gas entering the UK at the Easington terminal on the East coast. The pipeline is buried under the sediment in the estuary, but became exposed due to the strong and unpredictable tidal currents. A temporary solution over the past six years involved placing gravel bags and concrete mattresses on the pipeline to keep it in place. But this is a critical pipeline and we know from previous experience of the tidal conditions in the Humber Estuary that we need a permanent solution. In our RIIO-T1 submission we were given funding for initial engineering activities and to gain planning permission. As part of the planning process we have worked closely with stakeholders to establish the best solution and to minimise the impact of our works on the local community. A pipeline tunnel solution to replace the existing pipeline was determined to be the best option, and we expect to begin construction later this year. We will be going back to Ofgem in May 2018 to request funding for the remainder of the project. If you'd like to find out more about Feeder 9 you can visit the project page: [www2.nationalgrid.com/UK/In-your-area/Projects/River-Humber-Pipeline/](http://www2.nationalgrid.com/UK/In-your-area/Projects/River-Humber-Pipeline/)



Concrete mattresses used to protect the existing Feeder 9 pipeline

<sup>1</sup> This includes Avonmouth allowances. The Avonmouth output is subject to Mid Period Review determination. Ofgem have proposed to remove £169m of allowances in 09/10 prices. We have also adjusted the regulatory reported spend to provide a more accurate view of our performance (the regulatory reported spend would be £3,107m without this adjustment).

# Performance scorecard

The table below is split into our five main output areas under RIIO-T1. It contains details about our targets and our within-year performance.

**Red** – missed an annual output and forecast to miss the remainder of our output targets.

**Amber** – missed an annual output but on course to achieve remaining output targets/successful achievement of annual output but risk of failure on remaining output targets.

**Green** – successful achievement of an annual output and on target to meet the remainder of our output targets.

Safety outputs		
Our output	Target	Performance
Comply with Health and Safety Executive (HSE) legislation	100%	On track
Meet requirements for Critical National Infrastructure (CNI)	Meet BEIS requirements by 2021	On track

Reliability and availability outputs		
Our output	Target	Performance
Maintain our security of supply obligations in Scotland (Network Flexibility)	Ensure compliance with 1 in 20 obligations by 2020	Strategy in place to ensure compliance
Deliver pipeline solution to manage the closure of a Liquefied Natural Gas storage facility at Avonmouth	Deliver solution by 2018	Risk-based solution adopted
Meet our targets for investing in our assets to maintain their health (Network Output Measures targets)	Deliver network replacement outputs in accordance with the licence	In aggregate, on track to deliver 8-year target
Replace Feeder 9 (pipeline that runs across the Humber Estuary)	Achieve planning consent ahead of re-opener submission	On target – planning consent approved August 2016
Deliver benchmark performance for maintenance outage days	11 days (Remote Valve Operations)	2 maintenance days called
Minimise National Grid driven changes to maintenance planning	3.99 days	No changes
Meet constraint management target	£26.99m allowable costs for entry/exit capacity	£0m actual cost
Meet target for Transmission Support Services and for Constrained Liquefied Natural Gas and Long Run contracting	£8.9m allowable cost	£0m cost
Deliver existing capacity obligations in accordance with UNC, Licence and Gas Act	All UNC, Licence and Gas Act capacity obligations to be met in full	System issues impacted a minority of auctions. All changes corrected
Deliver accurate 13:00 day ahead demand forecasting	9.00 mcm average forecast error	7.75 mcm average
Deliver accurate demand forecasting at the two to five days ahead stage	13.7 mcm average forecast error	12.09 mcm average
Meet target for residual balancing linepack performance measure	<2.80 mcm average daily change	1.62 mcm average daily
Meet target for the difference in the amount of gas held in our pipes on our network from the beginning to the end of the day	Average daily difference between maximum and minimum price paid, to be within 1.5% of System Average Price (SAP)	Difference 0.64% of SAP
Procure Operating Margins in an economic and efficient manner	Incur operating margins costs efficiently and publish report on the steps taken to promote competition	Operating margins strategy aligned to target, report published to time

Environment outputs		
Our output	Target	Performance
Develop an integrated and cost-effective plan to ensure the remainder of our compressor units are compliant with IPPC and the Industrial Emissions Directive (IED)	Delivery date 2015	Plan submitted in May 2015
Undertake works at Peterborough and Huntingdon Compressor Stations as part of the Integrated Pollutions Prevention and Control (IPPC) legislation	Delivery date 2020	On track to deliver one new unit at each site as part of IPPC 3
Undertake works at Aylesbury Compressor Station to ensure compliance with IED	Delivery date 2020	On track to deliver Installation of catalytic converters
Report on our business carbon footprint	Publish in annual report	Published in our annual report <a href="http://investors.nationalgrid.com/">http://investors.nationalgrid.com/</a>
Meet greenhouse gas emissions targets	<2,744 tonnes	2,882 tonnes. Compressors required to run for longer (see Environment section, pages 10–11 for further detail).
Meet our targets for the amount and the cost of the fuel we use to run the network	<3,815 GWh usage target and <£87.2m cost target	4,592 GWh. Compressors required to run for longer (see Environment section, pages 10–11 for further detail). £73.2m

Customer satisfaction outputs		
Our output	Target	Performance
Undertake annual satisfaction survey with our customers and stakeholders.	Customer 6.9/10 Stakeholder 7.4 <sup>2</sup> /10	7.6 for customer 8.0 for stakeholder
Submit annual stakeholder engagement report	Cap of 9 and collar of 4	Achieved a score of 6.15

Customer connections outputs		
Our output	Target	Performance
Achieve our obligated times for delivering extra capacity on the system	Target of 24 months from the point of formal commitment	Compliant – No incremental capacity due for delivery this year
Meet timescales for connection applications as specified in UNC Modification 373 and comply with reasonable requests for a customer connection to the National Transmission System	2 business days for application acknowledgment 5 business days to confirm competent connection application 2 months for initial connection offer 9 months for full connection offer 3 months for a feasibility study report	Timescales met



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<sup>2</sup> This target and how it applies to the first three years of RIIO is currently under consultation with Ofgem.

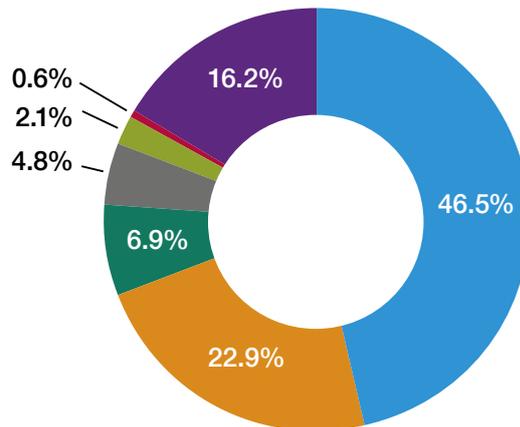
# Customer bill impact

Our regulatory framework defines our allowances, our performance against that determines the revenues we can recover from our customers.

We charge our customers for the services we provide. These network costs for both transmission and distribution make up about 23% of the average gas bill. Network costs include the cost of building, maintaining and operating the networks that deliver gas to our customers. For the Gas Transmission element, in 2015/16 approximately £19 of an average £706 domestic customer bill related to services we provide. This equates to 2.7% of a typical gas bill.

Our current forecast is that the Gas Transmission element of a domestic gas bill will fall by up to £1 by 2021.

## Understanding the gas bill



- Wholesale costs
- Network costs
- Environmental and social obligation costs
- Other direct costs
- Operating costs
- Supplier pre-tax margin
- VAT

Bill breakdown available from Ofgem, visit [www.ofgem.gov.uk/information-consumers/domestic-consumers/understanding-energy-bills](http://www.ofgem.gov.uk/information-consumers/domestic-consumers/understanding-energy-bills)



# Safety output

The safety of our workforce, the public and our assets, remains our top priority at National Grid.

We aim to deliver world-class safety performance which is crucial to our customers, the communities we serve and to the reputation of our business.

An important indicator of the extent to which we've met our safety obligations is the employee Injury Frequency Rate (IFR). In 2015/16 we ended the year on an extremely low rate of 0.07 in our UK business. We also had no employee lost time injuries (LTIs). We did, however, have two contractor LTIs that were both slip/fall injuries. As a result we have undertaken a number of initiatives with our contractors including reviewing and re-issuing Safety, Health and Environment (SHE) roles and responsibilities.

Other initiatives implemented throughout 2015/16 include a company-wide safe driving campaign. This included publishing an updated driving policy, introducing an improved driver risk management system, attendance by over 6,000 employees at a safe driving briefing, and online and on-the-road driver training for at-risk employees.

Additionally, we have undertaken a number of initiatives aimed at promoting mental and physical health in the workplace, including managing cancer at work, mental wellbeing, nutrition and cardiovascular risk.

Another important way in which we deliver our safety obligations is by maintaining our network so we can make sure that it remains safe and reliable. Investment in the health of our assets is prioritised according to the condition of the assets and their criticality to the safe operation of our network. You can find more information about this subject in the Reliability and availability section on page 8.

We are also on track to meet requirements for protecting our assets that are deemed to be essential for securing UK infrastructure. This includes enhancing surveillance and fencing at some of our key sites.

We have undertaken a number of innovation projects related to safety. One example is our removable composite transition pieces (CTP) project.

## Case study

### Removable Composite Transition Pieces (CTP) project

The National Transmission System (NTS) has approximately 300 locations where large diameter Gas Transmission pipes pass through reinforced concrete walls. Currently a variety of seals are used to prevent water, soil and pipe surround materials from passing through the interface between the wall and pipe. Many of these seals are known to be failing (for example by allowing seepage and grit to enter the space between the pipe and surrounding concrete) typically due to the breakdown of the seal materials and/or settlement of the pipe. Where such failures are occurring there's a risk that the protective coating to the pipeline can become damaged and corrosion can take place.

Under the CTP project we have developed a plastic seal that plugs the gap between the pipe and wall (pictured). Technicians can easily remove it, inspect the pipe for damage and then replace it in a fast and simple operation. This makes it safer and easier to inspect and repair failed seals. It could also save up to £5m as we predict that we will need to install up to 60 of these CTP units over the next six years.



# Reliability and availability output

## The reliability and availability of our transmission network is vital to our customers.

We aim to minimise any instances where we're unable to supply gas to customers directly connected to our network.

In 2015/16 we continued to provide high levels of reliability and availability for our customers to input and offtake gas from our system. The network was unconstrained for the duration of the year and we implemented a number of improvement strategies aimed at managing customer capacity requirements. This included optimising compressor strategies so we could make sure that key assets were available to support predicted flows and planned maintenance work.

In addition, we minimised the impact of our routine maintenance activities on customer supply by scheduling most of our works at the same time as customer-planned outages. This meant that for 2015/16 we were able to reduce the number of maintenance days we used from four days to just two days.

In 2015/16 there was just one short unplanned system event at the offtake supporting Deeside power station. This lasted for a partial gas day and resulted in a loss of flow to the offtake. We were able to make sure that restoration was prompt, which meant we could minimise disruption to our customers.

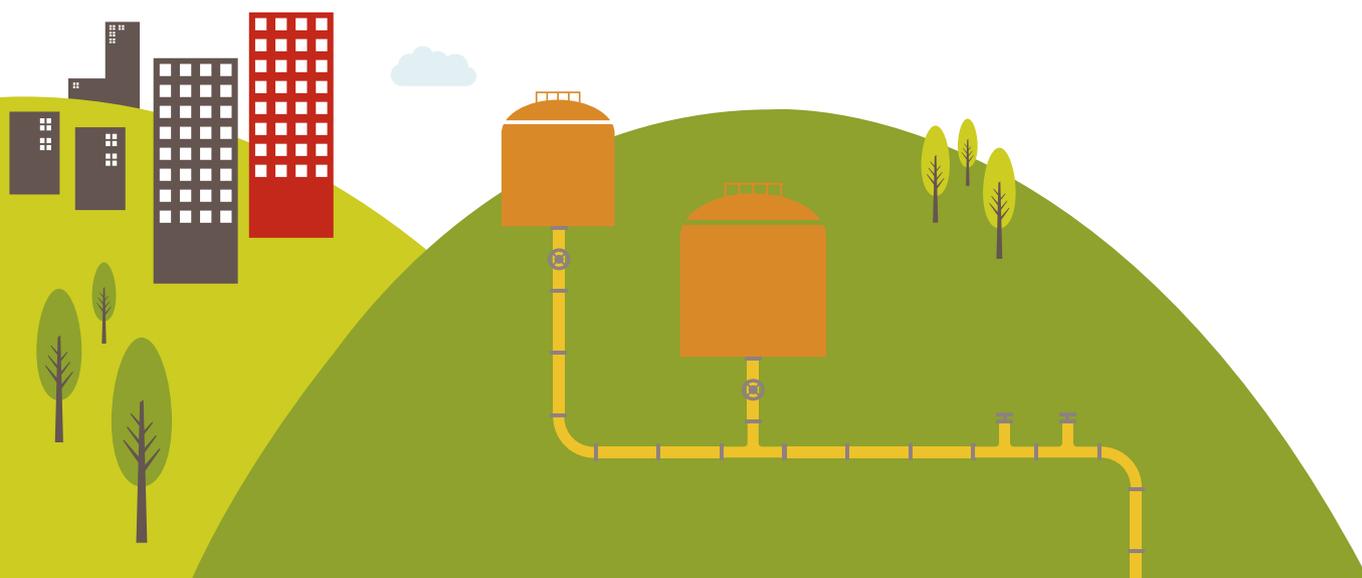
## Maintaining the health and reliability of our network

Under the RIIO price control, we introduced measures to assess the health and criticality of different assets on our network. This determines how we should invest to keep our network reliable and safe both now, and into the future. Network Output Measures (NOMs) are currently being used as a proxy for network risk and to help us to target investment in the right areas to manage this risk. Our asset health approach focuses on resolving issues identified with the condition or performance of our assets. We prioritise investment according to the condition of the assets and their criticality to the safe operation of our network. We aim to maintain the health of our assets as efficiently as we can by considering appropriate remedial activities, including refurbishment and replacement.

During 2015/16 we have doubled our volume of asset health improvement work and have plans to further increase this in 2016/17. Comparing the end of 2015/16 with the end of 2014/15, the additional work has resulted in fewer assets across the NTS that fall into the highest risk category.

We are forecasting additional asset health work that will require us to invest above our allowances over the RIIO-T1 period. This forecast overspend is based on our improved understanding of the health of our assets and the work we need to carry out to efficiently provide the levels of service, reliability and safety our customers expect.

This area remains one of our biggest challenges as an increasing proportion of our assets approach the end of their design life. We are working hard to overcome these challenges through innovative projects across our output areas. One example of this is at Bacton Gas Terminal where we have used innovative techniques to improve efficiency and safety.

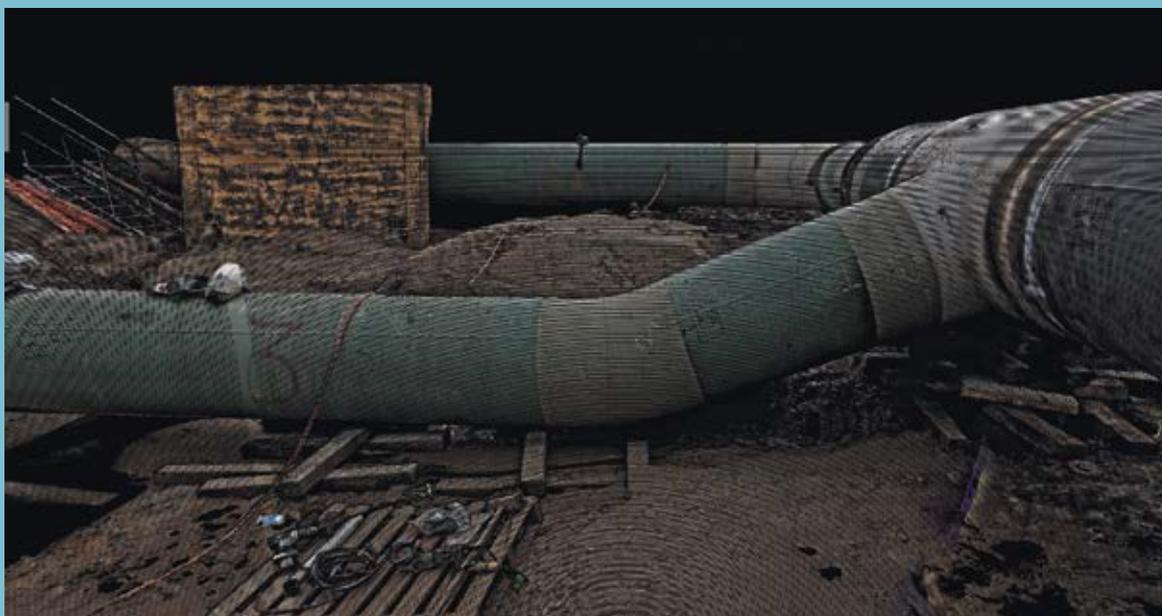


### Case study

## Bacton Gas Terminal and the use of Building Information Modelling (BIM)

Bacton is a key entry point for gas into the UK. It was built in 1969 and is in a coastal environment which accelerates degradation such as corrosion. In 2015/16 we carried out decommissioning work, isolating a former high-pressure plant to manage the

safety hazards at the site and meet the requirements of Regulation 4 of the Control of Major Accident Hazards (COMAH) Regulations. We used our BIM innovation project which uses 3D laser scans during the as-built phase, reducing the time to complete this piece of work by two-thirds, compared to traditional methods. BIM was key to achieving our delivery timescales and provided efficiencies during the design review processes, minimising the likelihood of alterations during the delivery phase.



3D As Built – an example section of the laser-scanned pipework that will provide improved knowledge on the pipework after burial.



# Environment output

Minimising the impact our business has on the environment is important both to us and our customers.

We recognise that our business can have a big impact on the environment, so we constantly look for ways to improve our performance and reduce emissions. We have set ourselves a company-wide target to reduce our greenhouse gas emissions by 45% by 2020 compared to 1990 levels. Our current forecast is that we will achieve this target.

The majority of the emissions in Gas Transmission are from the necessary energy use in gas- and electric-driven compressors. In 2015/16 our emissions increased because we needed to run our compressor fleet for longer. These increased running hours were mainly due to changes in gas supply and demand patterns that meant we needed to run our compressors to move gas from where it was entering the system to where it was needed in the UK.

This had implications for our performance against some of our environmental incentives (please see Performance scorecard on pages 4 and 5 for further information) including the volume element of our shrinkage incentive (which is a target for how much gas we use to run the network) and our greenhouse gas emissions incentive. In these areas we have made process improvements, for example, to help eliminate non-essential venting of gas. This will contribute towards meeting our targets for the remainder of the RIIO-T1 period.

## Environmental legislation

The Industrial Emissions Directive (IED) has been in force since 2013. It places strict controls on industrial emissions, specifically emissions of carbon monoxide (CO) and nitrogen oxide (NOx) from our compressor units. A number of our older compressors cannot meet these new limits, so we need to determine whether to replace them, use derogations under the IED or decommission the units. During 2015/16 we submitted our plan detailing how we intend to comply with this legislation. We also continued work to reduce emissions at some of our highest priority compressor sites including Peterborough, Huntingdon and Aylesbury.

At Peterborough and Huntingdon compressor stations the feasibility and conceptual designs of the Front End Engineering Design (FEED) studies were completed in 2015/16 by our design contractor. Planning applications were submitted for both sites and both applications have now been approved. Early works at Huntingdon will commence in 2016/17 with Peterborough following in 2017/18. We will continue to evaluate these works as we progress so we can make sure we're providing the most efficient solution for our customers.

At Aylesbury, the existing gas turbines were unique to our network because they were compliant with the NOx emission limits but not with CO emissions limits.

In addition to IED, the Medium Combustion Plant (MCP) Directive will be transposed into UK legislation by 19 December 2017, with compliance dates ranging from 2025 to 2030. The MCP Directive seeks to regulate emissions from plant with a net thermal input below 50 MW. The directive fills the regulatory gap at EU level between large combustion plants (> 50 MWth), covered under the IED and smaller appliances (heaters and boilers <1 MWth) covered by the Ecodesign Directive. There are 26 of our compressors and a number of other combustion plant that are captured under MCP. During 2016/17 we will begin to develop our plans to comply with this legislation.



### Case study

## Aylesbury Catalytic Converters

The gas turbines used at our Aylesbury compressor station are not used at any of our other compressor sites. So, when we started developing a solution to achieve IED compliance, we looked at other industries to understand what technologies could be used to reduce CO emissions. Based on this research, we developed an innovative solution that achieves the required CO emissions to air by using an oxidation catalyst located in the exhaust stack. This option represents the most economic and efficient option at the site and means we can continue using our existing assets rather than needing to replace them.

The detailed design work for the catalyst installation has been completed and construction on both gas turbine units is underway with planned completion in Q4 2016. The installation of the catalyst and the necessary weather protection results in an increase in stack height. Planning application under the Town and Country Planning Act for the increased stack height was granted in Q3 2015.



New exhaust stack and catalyst abatement system at Aylesbury compressor station.



# Customer satisfaction output

## We continue to make customer and stakeholder engagement a fundamental priority for our business.

Throughout 2015/16 we have worked hard to improve our customer and stakeholder satisfaction. Every year we survey our customers and stakeholders to understand what they think and feel about the services we provide. For 2015/16 both the customer satisfaction and stakeholder satisfaction scores were above our RIIO targets; we achieved 7.6/10 for customer satisfaction against a target of 6.9, and 8.0/10 for stakeholder satisfaction<sup>3</sup>.

Our stakeholder engagement score, which is assessed by an independent panel, fell by 1% from 6.25 to 6.15/10. The panel's feedback recognised that although we had made improvements, they expect more each year and therefore a more significant change is required to maintain or improve our score. We intend to incorporate this feedback into our 2016/17 engagement activities.

## Turning feedback into action

Obtaining feedback is really important to us so we know whether we're delivering what our customers and stakeholders need and to the standard they expect. In 2015/16 we sought customer and stakeholder feedback on the relevance of our annual survey questions. To address the issues raised by our stakeholders, we have undertaken a full review of the survey and appointed a new independent research agency. As a result, the survey questions have been adapted and tailored so our customers and stakeholders are clear about which subject we want their views on. We have also moved to a trigger-based approach where we survey our customers and stakeholders following specific events. This means we can gain more relevant and timely feedback on our interactions.

In order to then translate customer and stakeholder feedback into actions, we held eight internal workshops for the main customer- and stakeholder-facing teams within Gas Transmission. These workshops reviewed the results of the surveys, and used the feedback to produce action plans so we can focus on the things our customers and stakeholders have told us are important to them, and that we can improve on. Throughout this process we aim to keep our customers and stakeholders informed so that they are clear on the linkage between their feedback and our actions. This approach will continue throughout 2016/17.

## AA1000 Stakeholder Engagement Standard

Our customer and stakeholder engagement strategy is now aligned to AA1000SES, an internationally-recognised standard for stakeholder engagement excellence. It is a framework for assessing, designing, implementing and communicating stakeholder engagement and setting a benchmark to work against. We are using this standard and have aligned our strategy so we can make systematic and coordinated improvements to the way we engage across the whole of our Gas Transmission business.

We commissioned AccountAbility, the organisation that created AA1000SES, to complete a detailed independent assessment of our stakeholder engagement strategy and our processes and practice. The assessment concluded that National Grid is at the advanced stage on the AA1000SES Maturity Ladder. The health check, alongside our specific stakeholder feedback, has helped us to understand where we need to improve.



<sup>3</sup> 7.4/10 is the current proposed target for customer satisfaction, although this value and its application is subject to an Ofgem consultation.

### Case study NGage App for reducing Unaccounted for Gas

Unaccounted for gas (UAG) is the quantity of gas that remains unaccounted for after all the gas that goes in and out of the National Transmission System (NTS) has been measured. It is largely the consequence of data and/or meter error. To further enhance UAG management and reduce the associated costs to our customers, we have developed a meter validation assessment tool (NGage), which was funded through the Network Innovation Allowance (NIA).

The NGage meter validation tool offers a 'free to use' meter validation software application that will enable third-party meter owners across the NTS to easily provide detailed meter validation data. During development we have listened to users and considered their feedback so we can improve the functionality of the app, which will increase the breadth of its user base and offer real-time analysis. The app will also provide benefits for customers by reducing the time spent reviewing, logging and providing results.

We have informed our customers about NGage, through conferences, webinars and liaison visits, so we can encourage uptake of the tool. Our expectation is that through industry collaboration and sufficient take-up by third-party meter owners, there is a potential to start realising benefits from NGage from late 2016/17.



# Customer connections output

A connection to the NTS is essential for our customers to either input or offtake gas from the network.

In 2015/16 we have met our commitments, progressing all NTS connection applications received and issuing eight full connection offers in the appropriate timescales (one connection offer is due in 2016/17).

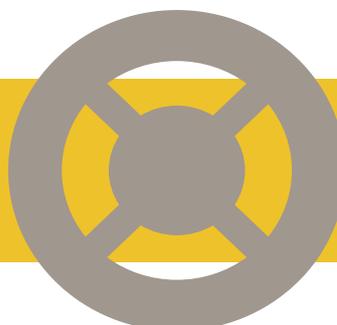
## Incremental Capacity and Planning and Advanced Reservation of Capacity Agreement (PARCAs)

We are working with our customers to facilitate potential exit and entry connections to the network. We remain committed to guiding potential customers through these specifications and all other facets of the regulatory frameworks in a timely fashion.

During the year we received a number of enquiries from customers regarding additional entry or exit capacity on the NTS. Although none of these enquiries has led to extra capacity being released this year, they have led to PARCAs being initiated and could potentially lead to signals being generated in the future.

## Case study Project CLoCC (Customer Low Cost Connections)

During 2014/15 and 2015/16 we worked with our customers and stakeholders to understand their future connection requirements, particularly for unconventional gas (e.g. bio methane or shale). This led to our successful Network Innovation Competition (NIC) submission and the launch of project CLoCC. Through CLoCC we're aiming to address the main obstacles that hold entry and exit customers back from getting connected. By opening up the network to more home-grown and unconventional gas customers, we increase the choices available for where our gas may come from in the future. This helps improve our energy security and maximise the potential for newer forms of UK gas. To reduce these barriers, our goal is to halve the cost of a connection to less than £1m, while reducing the time it takes from initial enquiry to being connected, to less than one year.



# Innovation

Our goal is to be known as the world's leading Gas Transmission business.

Our innovation portfolio, which contains 44 Network Innovation Allowance (NIA) projects, is designed to move us towards this goal and deliver benefits across our five main output areas.

Underpinning all our work is a partnership approach; one characterised by sharing best practice, striving for continual improvement and generating tangible benefits.

## Network Innovation Allowance

The RIIO framework has a number of ways of further encouraging us to deliver value to consumers. The Network Innovation Allowance (NIA) is to fund small-scale projects. Its aim is to promote collaboration with other companies to find ways to deliver benefits to network customers. In 2015/16 we spent £3.4m of the £4.7m allowable NIA expenditure. Particular successes this year have been projects such as the Renewable Power Trial and the Meter Validation Assessment Tool.

## Network Innovation Competition

The second innovation mechanism within the RIIO framework is called the Network Innovation Competition (NIC). This is where we compete with other network companies for funding. This is for the development and trialling of new technologies, operational and commercial arrangements. Particular successes in this area include Project CLoCC and Project GRAID – Gas Robotic Agile Inspection Device. Project GRAID is a partnership that's developing a revolutionary approach to managing the condition of pipework at our high-pressure gas installations. Through this innovative robotic system we will be able to generate meaningful data about the condition of our assets so we can maintain them more efficiently.

## Case study Renewable Power Trial

In our renewable power trial, we investigated the possibility of powering our block valve sites, which have no electricity connection, solely with renewable power. We currently have several hundred of these sites on the NTS, each requiring staff to visit the site when we need to turn off the valve. Our solution is the renewable power kiosk (pictured below). It is powered primarily by solar and wind, which eliminates the need to bring expensive power connections on site, and allows technicians to close valves remotely. This will mean that we are able to reduce costs associated with valve operation and reduce our environmental impact.



Renewable power kiosk



# How to contact us and other useful links

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If you have questions or opinions on this performance summary, please get in touch with us:

**Email:**

[talkingnetworkstransmission@nationalgrid.com](mailto:talkingnetworkstransmission@nationalgrid.com)

or using the have your say link on our Talking Networks website

[www.talkingnetworkstx.com/have-your-say.aspx](http://www.talkingnetworkstx.com/have-your-say.aspx)

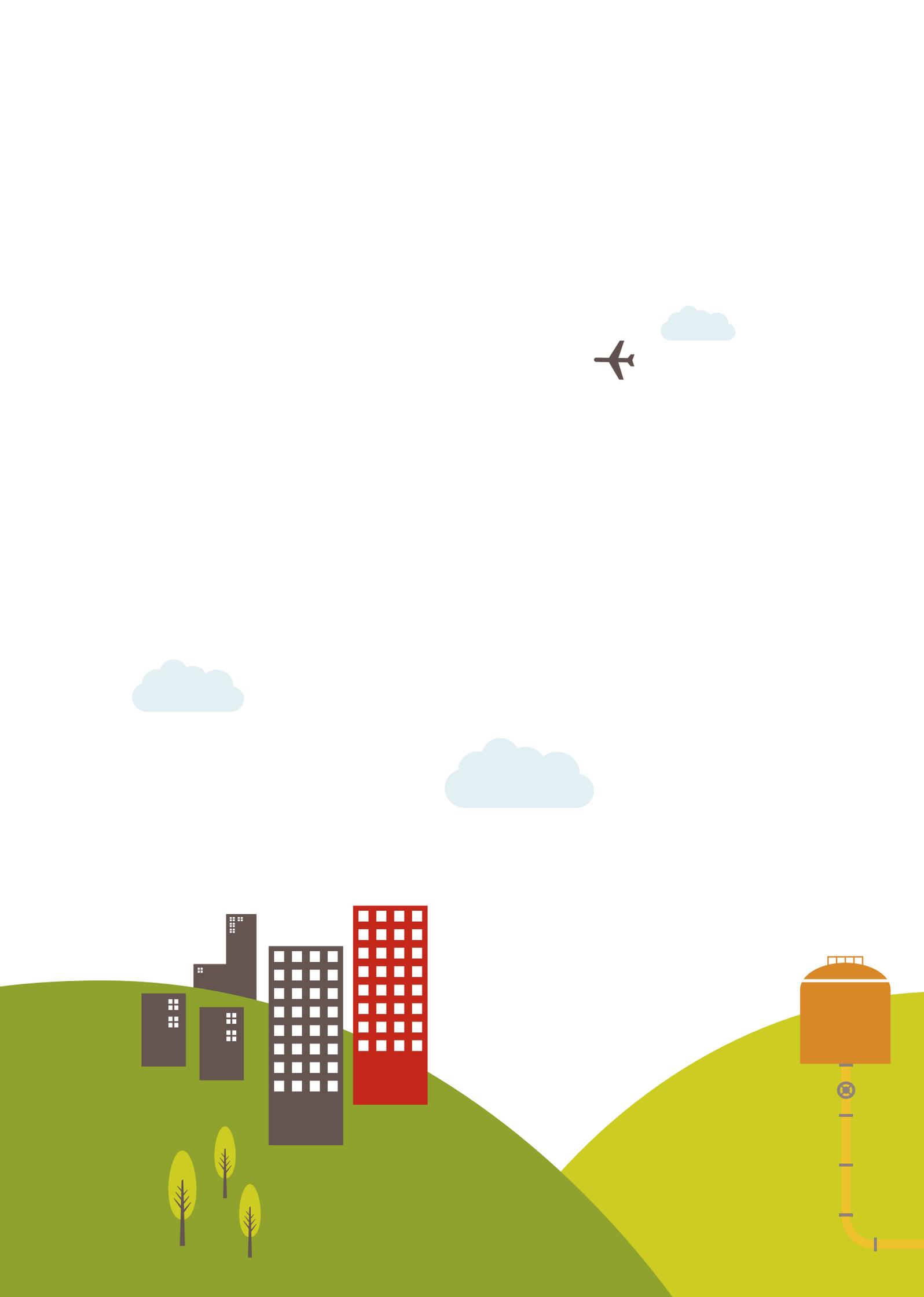
For further details on our total spend, forecasts and incentive performance and how this affects allowances, go to [www.talkingnetworkstx.com/General-Performance.aspx](http://www.talkingnetworkstx.com/General-Performance.aspx) to look at the tables published there.

To find out more about customer bills and the impact of network costs, visit [www.ofgem.gov.uk/consumers/household-gas-and-electricity-guide/understand-your-gas-and-electricity-bills](http://www.ofgem.gov.uk/consumers/household-gas-and-electricity-guide/understand-your-gas-and-electricity-bills)

For information on our innovation activities, visit [www2.nationalgrid.com/uk/our-company/innovation/](http://www2.nationalgrid.com/uk/our-company/innovation/)

For further information on our financial performance, visit our dedicated website at [www.investors.nationalgrid.com/](http://www.investors.nationalgrid.com/)





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These statements include information with respect to National Grid plc's financial condition, its results of operations and businesses, strategy, plans and objectives.

Words such as 'anticipates', 'expects', 'should', 'intends', 'plans', 'believes', 'outlook', 'seeks', 'estimates', 'targets', 'may', 'will', 'continue', 'project' and similar expressions, as well as statements in the future tense, identify forward-looking statements. Furthermore, this document, which is provided for information only, does not constitute summary financial statements and does not contain sufficient information to allow for as full an understanding of the results and state of affairs of National Grid plc and its subsidiaries, including the principal risks and uncertainties facing National Grid plc, as would be provided by the full Annual Report and Accounts, including in particular the Strategic Report section and the 'Risk factors' on pages 173 to 176 of National Grid plc's latest Annual Report and Accounts. Copies of the most recent Annual Report and Accounts are available online at [www.nationalgrid.com](http://www.nationalgrid.com) or from Capita Registrars. Except as may be required by law or regulation, National Grid plc undertakes no obligation to update any of its forward-looking statements, which speak only as of the date of this document. The content of any website references herein do not form part of this document.

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