31 July 2015

National Grid Gas Distribution in 2014/15
RRP supporting narrative

Purpose of Document

National Grid Gas Distribution (NGGD) has prepared this document on its business performance in 2014/15.This has been the second year of the new RIIO-GD1 price control that runs from 2013/14 to 2020/21 for our four networks; East of England (EoE), London (Ln), North West (NW) and West Midlands (WM).

As part of our stakeholder liaison for our RIIO business plan submission we are committed to publish each year our progress against our commitments in an annual stakeholder report, to be published in September each year.

This report provides further detailed information for stakeholders. However this is primarily for Ofgem to support our 2014/15 Regulatory Report Pack (RRP) and will be used to assess our progress against our RIIO plan commitments. The RRP pack describes our performance across a wide range of areas that include workload, standards of service, reliability, asset health and costs. The reporting pack has over 70 data tables, in an agreed format for all Gas Distribution Networks with supporting guidance notes.

As well as providing information on our 2014/15 performance, the report also provides forecasts based on a number of assumptions for the remainder of the price control. These forecasts will also be published in September.

Associated documents

Our performance for 2014-15

The 4 GDN RRP Summary tables

Contents

Executive Summary

National Grid Gas Distribution (NGGD) owns and operates four gas distribution networks comprising more than 131,000km of pipeline. It is our role to transport gas, safely and efficiently, to around 11 million homes and businesses. We manage our networks to keep our customers safe and warm. We also develop and trial new technologies to ensure our customers will benefit from safe, efficient and reliable networks long into the future.

Keeping the Public Safe and Warm

Safety is of paramount importance to National Grid and our continued commitment to improving safety standards has, again, seen NGGD deliver a safe and secure supply of gas in 2014/15 - meeting our emergency standards of service and providing ~~a~~ network reliability of 99.999%.

We are carrying out an HSE agreed programme of replacement work to remove the risk posed by old iron pipes which have the potential to fracture and give rise to sudden and significant escapes of gas, as a result of ground movement. To ensure that customers can continue to use gas safely in years to come we have invested to enhance our pipeline network and replace the old metal pipelines with more durable materials. In all networks we are ahead of our cumulative iron mains risk removal targets and our Network Output Measures have increased since 2013/14. However we have fallen short of the length target in the West Midlands network.

We provide a high quality gas emergency service which keeps the public safe in their homes and businesses. We respond to internal and external gas escapes and also to potential emissions of carbon monoxide from appliances. In 2014/15 we dealt with more than 430,000 reported gas emergencies, and delivered the required 97% standard of service in all of our networks.

In addition to exceeding emergency attendance standards, we increased the proportion of repairs completed within 12 hours. We did, however miss the Network Repair Risk target in three of our networks. An explanation of the repair risk performance in 2014/15 and the actions we are taking to meet the target going forward are covered in section 1 of the document.

We operate the national gas emergency contact centre, which takes calls and provides safety advice on behalf of all gas transporters in the UK. In the last reporting period we answered 92.96% of calls within 30 seconds – exceeding the required standard of 90%.

In 2014/15 we carried out more service pipe replacements than expected in Final Proposals. As a consequence of the number and duration of safety-driven jobs we carried out in Multi-Occupancy Buildings (MOBs), our planned interruption minutes were in excess of the allowance. With anticipated future workloads we expect this trend to continue during RIIO-GD1 in the London and East of England networks.

During 2014/15 we experienced a similar number of reported network escapes as in 2013/14. Leakage performance improved by 49 GWh relative to 2013/14 and is now 9% (138 GWh) better than the RIIO target. Other environmental measures have also been achieved. We completed nine commercial bio-methane connections, more than any other UK gas distribution network, including the first 100% food waste plant and the first commercial sewerage connection with Severn Trent Water.

In the process of doing this we have broken new boundaries developing competition for entry connection works above 7 barg, and created industry and UK firsts in trialling new technology to utilise plastic pipe at 19 barg - reducing time and cost of connection for our commercial customers.

Customer Service

We continue to implement new ways of working to improve the quality of the services we deliver to our customers and as a result overall customer satisfaction survey results were slightly better this year than in 2013/14.

Customers continued to rate our emergency and repair service highly, and in networks where our connections improvement plan rolled out earlier in the year, survey results improved. What's more, we anticipate our connections survey results will improve further in 2015/16 as the benefits of these changes are seen by more and more customers.

We are also working to improve our service delivery to customers for planned work where customer satisfaction scores have remained broadly static. We are working with our contract partners to address the key issues around communication, site tidiness and the time taken to reinstate customers' premises. We have carried out focus groups and research to create and roll-out improved customer communications for planned works which we anticipate will improve our performance in 2015/16.

We continue to deliver strong performance on our social outputs with carbon monoxide awareness, up 29% this year. We have also worked with Ofgem and the Government to shape future policy on tackling fuel poverty - trying to move England on a par with Scotland and Wales whose governments provide additional support for in-home measures which have underpinned greater one-off connection activities in their network areas.

We are also leading the Customer Safeguarding Working Group, which is looking at how we can improve services to vulnerable customers and, in particular, how we can work with other stakeholders to improve the priority services register.

Providing Value for Money

Ofgem has challenged us to continuously improve our cost efficiency over the eight year RIIO period. In 2014/15 we continued with our programme of step change initiatives to improve operating efficiency and we believe we can continue to drive further improvements and deliver our outputs that directly benefit customers.

Our total operating costs (TOTEX) were at a similar level to 2013/14 at £929m, with outperformance to the allowance of £101m (10%). We have kept our forecast for the RIIO period substantially unchanged. Our anticipated performance over the eight years is targeting an outperformance of 8%. To achieve this, we will be increasing expenditure to deliver the output commitments and delivering further cost efficiencies. These savings will directly benefit customers through lower charges.

Our forecasts include benefits for the introduction of innovations in areas including pipe replacement, and expenditure on potential uncertainty mechanism areas. These include; continuing to upgrade our physical site security to safeguard critical network infrastructure; maintaining compliance with new Highways Streetworks legislation; and continued work with the industry to support the rollout of smart metering and minimising the impact on our customers.

Given our strong performance in the first two years, and our anticipated future expenditure, we expect to deliver a RoRE of around 10% and to see the cost to the average domestic gas customer, currently at around £139 per annum, reduce over the current price control period in real terms.

1. Outputs delivery

The overall summary of our performance against our Primary RIIO outputs in 2014/15 and our forecast performance across the RIIO period is contained in section 1.7. The section below provides a summary of that performance with further details on our performance against secondary outputs are covered in the appropriate tables of the appendix.

1.1 Operating a safe network

Emergency response

We provide a high quality gas emergency service which keeps the public safe in their homes and businesses. We respond to internal and external gas escapes and also to potential emissions of carbon monoxide from appliances.

In 2014/15 we dealt with 433,306 reported gas emergencies, equivalent to fifty per hour day and night, and in doing this we delivered the required 97% standards of service for emergency response in all of our networks; the table below refers:

Network	Attend uncontrolled gas escape within 1 hour	Attend controlled gas escape within 2 hours	Target
East of England	97.60%	98.47%	97%
North London	97.39%	97.73%	97%
North West	98.20%	98.93%	97%
West Midlands	97.52%	98.29%	97%

We also operate the gas emergency contact centre, which takes calls and provides safety advice on behalf of all gas transporters. We answered 92.96% of calls within 30 seconds; exceeding the required standard of 90%.

Repair management

During 2014/15 we experienced 87,677 reported network escapes. This workload was essentially unchanged from the 87,793 reported in 2013/14.

We focused on improving network escapes that are resolved in 12 hours; the table refers:

Network	2013/14	2014/15	Target
East of England	50%	54%	42%
North London	44%	48%	43%
North West	45%	48%	34%
West Midlands	43%	50%	36%

We have sought to improve efficiencies and optimise resources across a range of work types and we have deployed more personnel onto activities including gas safety regulations cut offs and figure 555 valve remediation. Additionally, Network repair risk performance was impacted by:

- A focus on attending escapes quickly and resolving network escapes within 12 hours detracted from focus on network repair risk;
- The use of technology such as 'key hole' excavation, which reduces disruption to the traveling public, meant that some jobs were deferred pending the availability of the required plant; and
- An increase in the number of Local Authority permit schemes resulting in jobs being scheduled around highway access.

Network	Network Repair Risk 2014/15 (millions)	Target Network Repair Risk (millions)
East of England	4.99	5.17
North London	8.95	4.62
North West	7.77	4.91
West Midlands	3.33	2.50

We have responded to this increase by launching a 'Repair risk initiative'. The focus of this initiative is to ensure that resources are allocated more effectively, delivering this output while not adversely affecting time to attend escapes or the number of escapes resolved within 12 hours.

We are aiming to deliver RIIO target performance for repair risk in all of our networks in 2015/16. Our overall performance in the first three months is 37% better than the equivalent period in 2014/15, with 3 of our networks currently on track to meet the target in 2015/16. However, performance in our North West Network has not improved as much as we would have liked and as a result we are taking additional steps to improve the situation.

Major accident prevention

Our Gas Safety (Management) Regulations Safety Case was accepted by the HSE together with our Control of Major Accident Hazards safety report meeting our output commitment.

Iron mains risk reduction

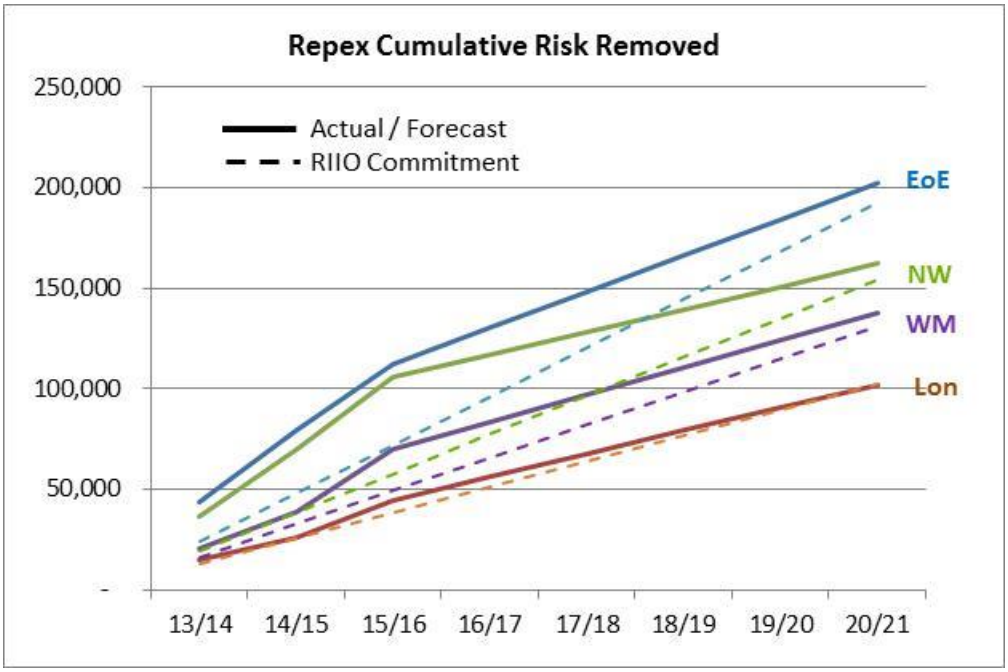
Iron pipes may fail by fracture as a result of ground movement giving rise to significant escapes of gas. As a result of this National Grid Gas Distribution is carrying out an HSE agreed programme of replacement work to mitigate the risk posed by these pipes.

The primary purpose of the programme is risk reduction however it also reduces gas leakage, which decreases future operating costs and environmental impact.

Our programme has focused on the highest risk work and this has ensured that we are on target or significantly ahead of target against our primary risk removed output in all of our networks; the table refers:

Network	Risk Removed 2014/5	2 yr Cumulative Risk Removed	2 yr Implied RIIO Commitment	Difference	% Difference
East of England	35,559	79,356	48,142	31,214	65%
North London	11,305	26,362	25,570	792	3%
North West	34,232	70,338	38,607	31,731	82%
West Midlands	17,904	38,633	32,849	5,785	18%

The graph below shows our forecast delivery of risk removed over the RIIO-GD1 period.



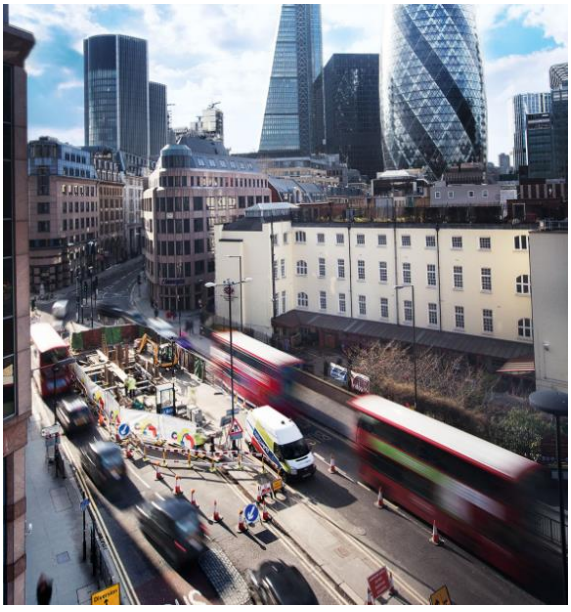
This prioritisation of high risk pipes has driven a greater complexity in our work mix due to a higher volume of short lengths of pipes and pipes in congested urban areas, increasing the unit cost of replacement. In addition operational management challenges within the West Strategic Partnership have significantly impacted production rates in our West Midlands and North West networks and these factors have culminated in a lower volume of replacement than 2013/14 and an overall position below the cumulative eight year linear FP target.

By addressing these specific challenges now and supported by the transformation programme that has been developed and implemented with our strategic partners in the West, we are confident that we are well positioned to deliver our HSE volume commitments as well as the primary RIIO output of risk removed. Our plans for 2015/16 and subsequent years include the replacement of a greater length of Tier 1 pipe and enable us to meet both Ofgem and HSE iron mains risk mitigation targets. In support of this our quarter one production rates in 2015/16 are 30% up on the same period in 2014/15.

We are committed to deliver the agreed workload of Tier 2 pipes that are above the Risk Action Threshold (RAT) over the RIIO period. Our plans for subsequent years anticipate a higher rate of Tier 2 RAT replacement.

The majority of condition driven work on larger diameter Tier 2 and Tier 3 pipes is planned for the latter years of the RIIO-GD1 period in order to maximise the volume of work that can be undertaken using innovative methods of remediation or replacement. This is in support of more efficient delivery and reduced disruption for our customers. 2014/15 delivery is in line with this strategy and increases in production are planned from 2015/16 onwards.

Within our London Network we operate a number of Tier 3 iron pipes that operate at medium pressure and that are situated within heavily built up areas. The work to mitigate the risk that they pose is complex. In addition to the engineering challenge, we have to address significant stakeholder requirements, in particular, agreeing access to road space with boroughs / Transport for London. In order to maintain secure gas supplies throughout our work we will deliver the work over two price control periods. Our plans have now been developed through detailed review and reflecting on the needs of our stakeholders and as a result 24 km will be delivered in the 2013/21 period with the remaining work planned in RIIO-GD2. 2014/15 delivery was in line with plan. The picture shows London medium pressure work underway.



A strategic review of all planned condition driven work including Tier 1 – 3 replacement, MOBs and bulk service renewal is ongoing. National Grid will seek to engage with Ofgem to review the outcome and discuss how any potential adjustments to outputs should be handled to ensure that they are in the customers' interest.

As noted above we are working on a number of significant innovations to deliver on our output commitments efficiently whilst minimising disruption because this is in the best interests of our customers. We have made progress on these projects during 2014/15 and further detail is provided in the Innovation section.

We remain ahead on a cumulative basis of our RIIO commitment on replacement of service pipes.

Sub-deduct networks

We built upon our performance in 2013/14 and once again exceeded our required delivery taking a total of 160 sub-deduct networks off risk in 2014/15. We aim to complete the work in East of England and North London by the end of 2015/16 and in North West and West Midlands by the end of 2016/17. The table below refers:

Network	Proportion completed in 2014/15	Proportion completed (in 1st two RIIO years)
East of England	28%	78%
North London	23%	75%
North West	10%	54%
West Midlands	12%	54%

1.2 Operating a reliable network

Achieving the one in 20 supply capacity obligation

We complied with our obligations to ensure that capacity was available to meet a level of demand that is not likely to recur more often than once in every twenty years.

In meeting these obligations we completed a significant re-appraisal of our requirements for NTS flat and flexibility capacity. As a result we were able to safely reduce our bookings and this will result in lower customer bills in the future.

Minimising interruptions

Our average reliability was 99.999%. This is a key performance measure given that our role is to provide secure access to gas.

We make efforts to minimise the impact however customers may be interrupted when we carry out essential work to repair, replace or maintain network equipment. Emergency work is driven by the number of reported network escapes and we are delivering more planned steel service replacements than Final Proposals, which improves safety.

With the exception of North London Network we expect to deliver 8 year interruption numbers below RIIO-GD1 target levels.

In respect of North London the increased number of reactive MOB jobs, and the selection of iron pipes required to deliver risk removed targets means that both planned and unplanned interruption job numbers are expected to be exceeded. The delivery of this work is in the interests of customers who benefit from a safer and more reliable gas supply.

The table below shows our performance for planned interruptions relative to RIIO targets.

Network	2014/15 Actual minutes (millions)	2014/15 Target minutes (millions)
East of England	27.86	38.40
North London	22.34	31.96
North West	19.25	35.87
West Midlands	14.42	24.98

The table below shows our performance for unplanned interruption relative to RIIO targets.

Network	2014/15 Actual minutes (millions)	2014/15 Target minutes (millions)
East of England	14.45	6.20
North London	54.46	13.82
North West	6.89	9.73
West Midlands	8.44	5.98

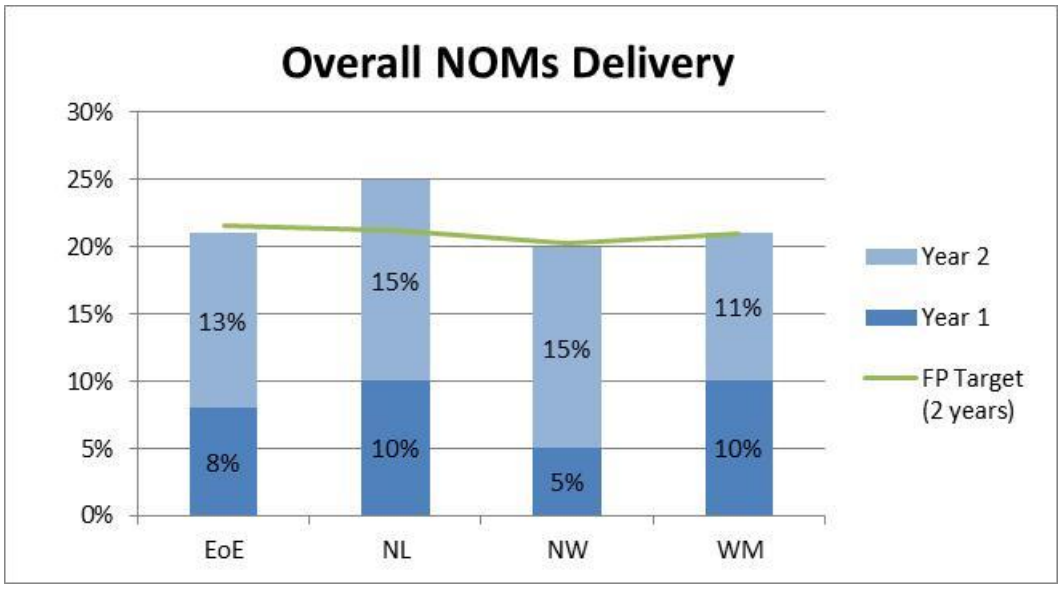
We did not achieve our target unplanned interruption minutes in three of our Networks. This was due to the effect of MOB jobs. There were over 2,000 MOB related interruptions in North London, eight times the level that was the basis of the target. The Final Proposals did not include additional MOB related minutes because our business plan had MOBs in an uncertainty mechanism that was not accepted by Ofgem. Ofgem allowed some extra funding for additional MOBs work however the interruption minutes baseline was not adjusted to compensate for the additional interruptions. We are delivering additional MOB work, and as a result we are over target on minutes. If MOBs were excluded we would have complied with our unplanned interruptions targets in all our networks. We are working to reduce interruption time and we have anticipated improved performance in our forecasts. However, given the expected increase in MOBs work we do not expect to be within the 8 year RIIO target in three of our Networks.

To reduce the duration of interruptions we are in the process of improving our processes and are also looking at making more effective use of existing technologies, such as greater use of hydraulic working platforms to work on MOBs, to reduce the number and duration of interruptions.

Maintaining operational performance

To ensure that customers continue to enjoy the benefits of a safe and reliable network it is necessary to balance maintenance and investment and to ensure that resources are allocated optimally between asset classes. Performance in this area is measured by Network Output Measures (NOMs).

During 2014/15 we increased our delivery of NOMs in all of our Networks delivering a total of over 5,300 NOMs and are on track for delivery of the NOM targets; the next chart refers:



* FP target phasing based on our submission profile, rather than 1/8th phasing

We will be delivering on our overall RIIO commitment however we keep the performance of all of our assets under review. For example improvements to our high pressure pipeline survey arrangements have identified a number of reduced depth pipes that require remediation work to ensure that they can continue to be operated safely. Over the coming year we will be reviewing our asset plans to ensure overall delivery of risk using the future risk trading mechanism, ensuring that our assets are safeguarded and at the same time avoiding if possible, any additional costs for customers.

1.3 Customer service

There are three RIIO measures of customer service, which Ofgem have described as the 'Broad measure of customer satisfaction'; our performance against each of these areas is described below.

Customer satisfaction survey

Overall our customer survey scores increased from 2013/14 to 2014/15 although there are areas where our performance is not as good as it should be. To that end we are developing and implementing a number of initiatives to improve service to customers.

Emergency & repair work

We are pleased that customers continue to be satisfied with our emergency work performance which has improved again in 2014/15 and as a result our scores are significantly ahead of target.

Network	2013/14 performance	2014/15 performance	Target performance
East of England	9.18	9.29	8.81
North London	8.84	8.87	8.81
North West	9.21	9.20	8.81
West Midlands	9.06	9.15	8.81

To build on this performance we have undertaken a number of initiatives during 2014/15 including training our people to provide better feedback to customers in relation to carbon monoxide issues, identify smart meters and take appropriate action as required and to improve the service that we offer to Priority Domestic Customers.

Planned work

The customer satisfaction scores for planned work have remained broadly static. We have been working with our contract partners to address the key issues that customers are expressing dissatisfaction about namely our overall communication during the job, site tidiness and the time to reinstate their premises. In conjunction with running focus groups with customers, we have identified an ideal model for the planned work customer journey and we are rolling out process and behavioural change initiatives across our partner organisations which are intended to improve our performance in 2015/16.

Network	2013/14 performance	2014/15 performance	Target performance
East of England	8.17	8.03	8.09
North London	7.90	7.91	8.09
North West	7.68	7.89	8.09
West Midlands	7.95	7.86	8.09

Connections

During 2014/15 we continued our connections transformation programme. North West Network was first to roll out and we are now starting to see the results. The process transformation cuts the number of touch points with the customer from over 20 to just 7 making the process more customer focused and efficient. West Midlands rolled out towards the end of the year and North London and East of England are in the midst of deployment. Scores reflect the roll out of improved methods of working.

Network	2013/14 performance	2014/15 performance	Target performance
East of England	7.59	7.73	8.04
North London	6.61	6.55	8.04
North West	8.03	8.30	8.04
West Midlands	7.52	7.95	8.04

Customer complaints

Our complaint metric score improved in respect of all our Networks and was better than the RIIO target; the table below refers:

Network	Unresolved D1	Unresolved by D31	Repeats	Ombudsman finds against DN	Complaint metric score	RIIO target
East of England	78.69%	6.11%	0.38%	0.06%	9.90	11.57%
North London	82.83%	9.81%	0.43%	0.06%	11.45	11.57%
North West	78.14%	6.60%	0.55%	0.09%	10.08	11.57%
West Midlands	79.68%	5.74%	0.35%	0.18%	9.88	11.57%

Stakeholder engagement

We received a score of 5.9 in respect of the 2014/15 Stakeholder Engagement Incentive. The Stakeholder judging panel noted that they are raising the bar on their expectations each year and that companies need to demonstrate a step change in performance just to stand still. We believed we had made some significant step changes in our approach and the outcomes we have delivered for stakeholders in 2014/15 most notably in areas such as renewable gas and gas for transport, regional relationships, working with vulnerable customers, fuel poverty and smart metering. We are due to receive detailed feedback from the Panel on our submission and we will build on this to continue to develop our strategy and approach to deliver great outcomes for our stakeholders, customers and the business.

Smart meters

In 2014/15 a total of 109,539 smart meters were installed across our networks. Around 4,100 of these installations required a subsequent intervention by NGGD.

With the installation programme expected to ramp up to deliver 11 million smart meters we have included additional costs in our business plan because we are taking on additional personnel to respond to anticipated faults which are reported to us. We have trained our operations and contact centre staff to be able to provide an appropriate response to these jobs and we are making business process and IT changes. We are also working with gas suppliers and collaborating with other GDNs to minimise the impacts. We are concerned about the possible impact on the skilled gas installer jobs market, which we also depend upon for resources. DECC have indicated that around 7,500 additional trained personnel are likely to be required to deliver the smart meter installation programme.

1.4 Connections

New gas connections

It has been our policy to encourage competition in connection services because it promotes customer choice reducing costs and enhancing customer service. As a result the majority of new connections within our networks are delivered by Utility Infrastructure Providers (UIPs) or independent Gas Transporters (iGTs).

Overall and guaranteed standards of performance

We delivered all of our emergency response and call centre standards of service.

We improved the service we provide to priority domestic customers by improving our systems that ensure that our Field Force has the information that they need.

GSOP 1 payments increased from £1.193m in 2013/14 to £1.495m in 2014/15 due to a greater number of longer duration interruptions influenced by an increase in the number of MOB jobs.

We recognise that GSOP2 and GSOP 13 (reinstatement of private land and notification in advance of planned work) performance has worsened. We are working with our strategic partners to understand the root causes of this and are currently assisting them to implement the required performance improvements.

In addition to our initiatives that aim to increase customer satisfaction and so reduce the number of complaints we operate an effective complaints handling system ensuring that customers receive a timely and courteous service and compensation payments are made to those who are entitled to it.

1.5 Social obligations

Fuel poor network extension scheme

During 2014/15 we delivered a total of 4,194 fuel poor connections. We carry out community schemes and connect individual consumers who live in fuel poor areas.

Fuel poor customers receive a discounted gas connection however the majority of the cost of converting to gas is the cost of installing a new heating system.

In respect of our community schemes we seek to deliver a whole house solution bringing together funding from multiple sources to cover investment within the property as well as the connection.

One-off connections are affected by the level of Government support for in home solutions. As a result there are differences in the volume of one off connections between Scotland and Wales where in home measures are subsidised and England where there is no formal mechanism.

We have been working with Ofgem and DECC to shape the fuel poor regime to address this issue. In addition, we are looking at other ways in which we can stimulate additional fuel poor connections particularly in those areas where our run rate over the first two RIIO years has been lower (i.e. North London and West Midlands).

We are forecasting that we will deliver our RIIO commitments however such delivery depends on the policy environment we experience.

Carbon monoxide (CO) awareness

We measure customer CO awareness through a set of questions that develop an awareness score out of 10 where 8 out of 10 shows a good level of understanding of not just the symptoms, but the action that can be taken to reduce the risk of exposure to carbon monoxide.

Between 2013 and 2015, the average awareness rose from 6.6 to 8.5 following our engagement with customers, showing a 29% improvement in awareness.

We have started to increase our focus on the more at risk customers based on the intelligence we gained in the last two years. We are also working with the other GDNs to further collaborate and optimise awareness in our communities.

Discretionary Reward Schemes (DRS)

We received discretionary awards for our work in all three categories of social outputs, environmental outputs and CO safety and a joint award with the GDNs for the collaborative submission.

We will get more detailed feedback from the DRS Panel shortly but their overall summary was that whilst they were encouraged by the collaboration they saw, they felt we could have gone further as a group of companies to achieve even more. For this reason the Panel did not award the full potential awards.

We will build on the feedback from the panel and work with the other GDNs and wider stakeholders to continue to deliver great outcomes for customers in these important areas.

1.6 Protection of the environment

Shrinkage

During 2014/15 we purchased 1,374 GWh of shrinkage gas compared with our 2014/15 RIIO target of 1,533 GWh (based on Shrinkage model version 1.4). The lower volumes were achieved result from improvements in:

- Pressure management, which remains important in reducing the amount of gas lost from the system. However it is getting to its limit in terms of how much further leakage reduction can be achieved using this technology;

- Improved business processes enabled us to increase the concentration of mono-ethyleneglycol within gas improving joint treatment and reducing leakage; and
- Our ongoing programme of mains replacement continues to be a significant factor to the reduction of leakage.

Connecting renewable sources of gas

We have been leading work with the other gas transporters to examine how a gas network can facilitate a low carbon energy future. In addition and in conjunction with this Future of Gas work we have been working hard to connect bio-gas plants to our network.

During 2014/15 we connected 9 bio-gas plants, with a combined capacity of around 70 MW and an anticipated annual production of around 590 GWh, enough to supply the needs of a town of around 15,000 people. Bio-gas plants convert waste into a renewable gas that has a negligible carbon footprint and which can be used within existing appliances. We are confident that we will exceed our RIIO commitment to connect these plants.

Utilising renewable gas from both anaerobic digestion or through waste could produce enough renewable gas to supply a third of all domestic demand currently and, once we take into account energy efficiency measures that could be utilised by customers, this could meet almost half their future demand requirements. This continues to show that our gas networks can play a vital role in providing low cost sustainable energy to heat homes into the future.

We are working with the Government and renewable gas producers to help shape the future policy landscape on the renewable heat incentive.

To facilitate these connections we assisted in the development of the directed / non-directed sites regime for gas composition measurement and also worked with developers to deliver lower cost connections for example by facilitating independent third party construction of gas entry facilities.

To date bio-gas plants have used anaerobic digestion. In 2014/15 we initiated a project to create a synthetic natural gas from municipal black bag waste. This work is part funded through the Network Innovation Competition.

Other environmental objectives

In addition we met our virgin aggregate and spoil to landfill targets using around 16% virgin aggregate (target less than 30%) and sending about 3% of our spoil to landfill (target less than 10%). The table refers:

Network	Virgin aggregate	Spoil to landfill
East of England	29.2%	7.3%
North London	2.4%	0.7%
North West	18.9%	2.2%
West Midlands	12.6%	0.3%

We retained our ISO14001 accreditation.

1.7 Summary of primary outputs delivery

The table below shows 2014/15 within year outputs:

Primary output		Deliverable	EofE	Lon	NW	WM
Safety	Emergency response	Attend P1 escape in 1 hr				
		Attend P2 escape in 2 hrs				
	Repair	GS(M)R 12 hr repair				
		Repair risk metric				
	Major accident hazard	GS(M)R safety case accepted				
		COMAH safety report review				
Customer satisfaction		Planned work survey				
		Emergency response survey				
		Connections survey				
		Complaints metric				
Connections		GSOP delivery				
Environmental		Leakage				

The table below shows our forecast of total RIIO period outputs delivery:

Primary output	Deliverable	EofE	Lon	NW	WM
Safety	Iron mains risk				
	Sub-deduct networks				
Reliability	Duration planned interruptions				
	Duration unplanned interruptions				
	Number planned interruptions				
	Number unplanned interruptions				
	Achieve 1 in 20 obligation				
	NOMs delivery				
Social obligation	Fuel poor connections				
	Carbon monoxide awareness				
	Stakeholder engagement				
Connections	Introduce gas entry standards				
Environmental	Leakage				
	Provide bio-methane connections				

Commentary on the delivery of secondary outputs is included in the appendix, which also discusses detailed changes in outputs and costs.

2. Innovation

Our innovation portfolio contributes towards the delivery of our Stakeholder Commitments: to keep people safe, be reliable, safeguard future generations, provide value for money and delivering a quality service for all.

We have moved quickly to facilitate the use of 19 barg. rated plastic pipe. This enabled the cost efficient connection of a bio-gas plant, which provided benefit to the customer straight away. 1.4km of plastic pipeline was laid in just one week. This technology is now available for use across Britain. The picture overleaf below shows the pipe being delivered to site.

One of our top initiatives this year, No Dig, is focussed on reducing the number and duration of excavations and supply disruption to the customer.

In addition to some simple small solutions, like excavation templates that are being rolled out into the business, we are continuing to develop larger innovations such as Tier One Replacement System (TORS), Pipe Replacement In-Situ Manufacturing (PRISM) and Cured in place pipe (CIPP). Highlighted below are some of the developments in these projects since last year's report:

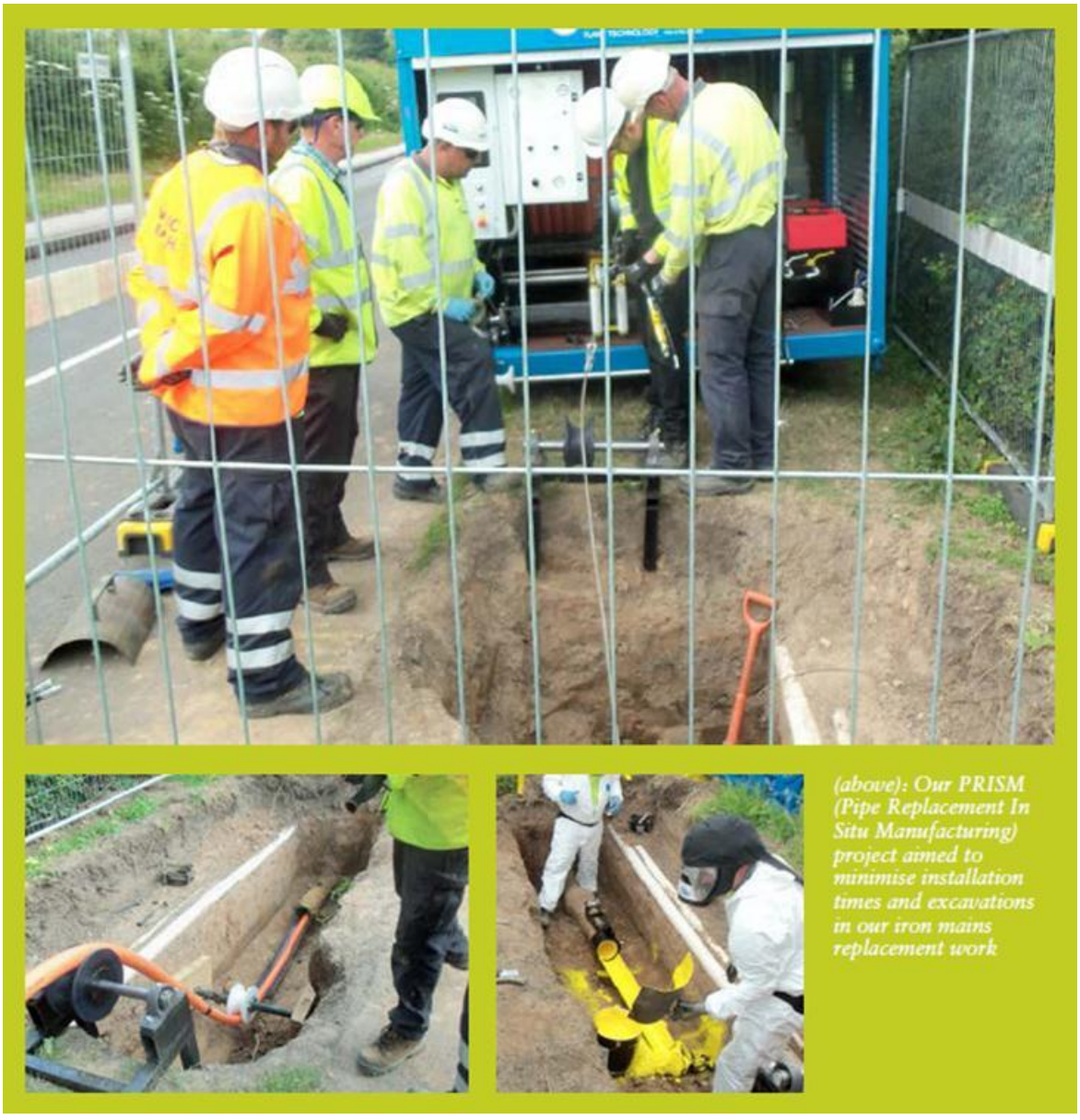
- *TORS* - is an in-pipe polymorphic robotic platform for automating the domestic services to mains connection process. The robot is designed to be able to locate where the service joins the main, drill a hole from inside the PE, insert a connection and then assist in the insertion of the replacement service, before finally pressure testing the individual service.

  We have now completed bench-testing of the Beta robotic prototype. The prototype successfully demonstrated functionality in radial alignment, self-drive, service insertion, drilling, welding and pressure testing. We are positive about the progress of development to date and have embarked on the next stage of the project, which will involve longevity testing and delivery of a number of field trials.

- *PRISM* – is a minimum dig, minimum disruption lining technique. It allows us to replace pipes without a significant loss in the capacity of the pipeline that would occur when using traditional insertion techniques. PRISM is a resin, spray-lining technique that has been proven in the water industry and is currently being trialled as a Tier 1 mains replacement solution.

  We have recently completed a successful proof of concept trial in which we were able to demonstrate the application of the spray-lining technique to a 6" cast-iron main. The initial results of the trial have been encouraging and we are continuing to move forward with a programme of works that will deliver a full-system solution, including service lining, connections and fitting and associated specifications and maintenance requirements.

The picture shows PRISM being tested:



(above): Our PRISM (Pipe Replacement In Situ Manufacturing) project aimed to minimise installation times and excavations in our iron mains replacement work

- *CIPP* – is an alternative to open cut main-laying. It provides remediation and replacement for large diameter mains. It is another technique that is being transferred from the water industry. CIPP is a joint project with the other GDNs to explore potential use of cured in place liners and polyurethane sprays to permanently rehabilitate Tier 2 & 3 iron mains.

  We have identified four lining solutions which were technologically mature enough to enter extended laboratory testing and field trials. In addition, a number of document outputs were issued including an Installation Best Practice Guide and Performance Specification. We are now proceeding with the next stage of the project, which will include the development of fittings for a fully structural product and should result in a full-system solution for Tier 2 and 3 replacement.

We have also worked collaboratively, expanding our breadth of innovation through new partnerships; through our self-funded Technology Search and through support from forums such as the Energy Innovation Centre and Energy Networks association.

Looking at the future use of our networks we are looking at ways that we can help maximise the use of renewable gas and how the network can help customers reduce their demand for energy. 2014/15 saw the launch of our first NIC (National Innovation Competition) project, a BioSNG Demonstration plant. The aim is to design and construct a pilot conversion and clean up plant that will upgrade waste derived syngas to a pipeline quality gas, enabling the decarbonisation of our gas supply through future injection of syngas into our networks. Looking forwards to 2015/16, there will be a continued strategic focus on our 6 Strategic Value areas with a drive towards implementing project outputs into the business and delivering long term value for our customers.

Projects such as the BioSNG site are demonstrating how gas networks can play an important role in providing low cost energy supplies to customers whilst maximising the use of renewable sources of energy.

3 Cost efficiency

The RIIO Final Proposals set expenditure allowances based on the upper quartile performance of the eight Gas Distribution Networks, i.e. at an efficient level taking into account network benchmarking and factors such as anticipated UK wage rises. Our initiatives led to us delivering a step change in our operating efficiency in 2013/4 and despite some operational difficulties experienced, we still believe we can continue to drive further efficiencies in future years that will maintain cost efficiency targets and deliver our outputs.

3.1 2014/5 Performance

In 2014/15 our TOTEX expenditure to deliver our services and necessary investment was down £5m at £929m.

2014/5 Totex

£m, 14/5 prices	EofE	Lon	NW	WM
2013/4	**305**	**241**	**225**	**164**
Movement in repex	7	-1	4	-9
Movement in capex	6	-1	-1	2
Movement in opex	-19	-18	26	-4
2014/5	**300**	**222**	**255**	**153**
Variance to FP	-18	-62	16	-38
Variance to L.Y.'s fcst	0	-26	2	-14

Movement on 2013/14

Our replacement expenditure increased in 2014/5. The focus on delivery on risk removed has driven a greater complexity in our work mix, which compounded by significant operational management challenges, especially in West Midlands, has resulted in a lower volume of replacement and some loss of cost efficiency from 2013/14. Our London network managed to increase cost efficiency, delivering more length decommissioned at constant cost.

East of England's higher capital spend is largely due to higher LTS diversions and higher physical site security costs.

On operating costs lower expenditure was as a result of lower expenditure on transformation initiatives. In 2013/14 we spent more money on initiatives designed to improve both our effectiveness and cost efficiency of operations. The reason for the network variation in cost movement is as a result of the different phasing of our advancement of holder demolition into the first two years, with associated advancement of associated land disposal proceeds than in our RIIO submissions. This advancement leads to an earlier sharing, 67%, of the benefits of land disposal to customers.

Variance to Last Year's forecast

Our 2014/15 TOTEX performance was £38m (4%) lower than we forecasted last year. This was predominantly in our operating costs which included lower expenditure on transformation initiatives in work management and business support costs. The difference between networks is as a result of our REPEX, discussed above.

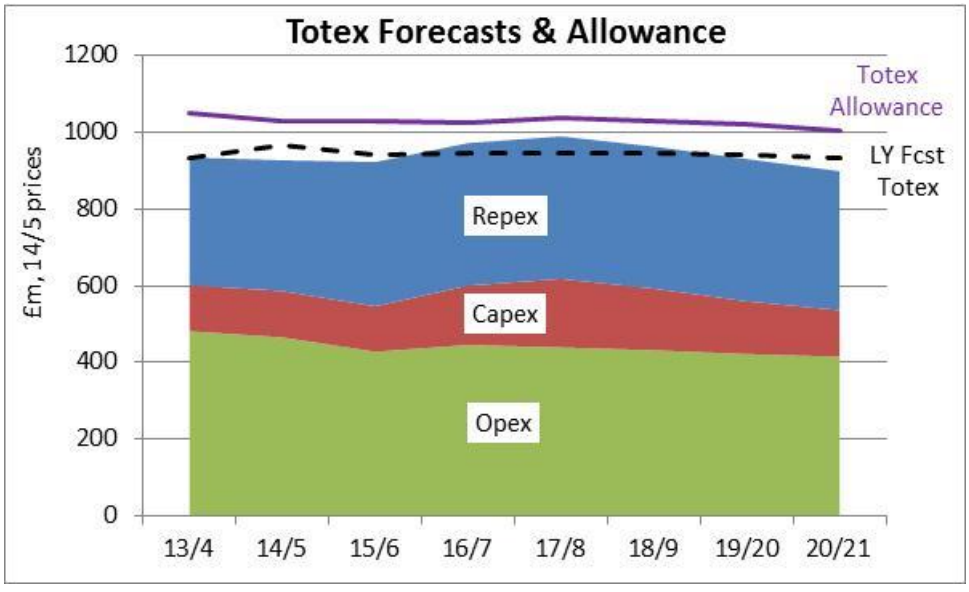
Variance to Allowance

Against the FP allowances, 2014/15 saw continued outperformance by £101m (10%). The major outperformance area continues to be replacement expenditure through our strategic contracting partners in all networks. Our OPEX expenditure remains above the FP allowance, although this is primarily from the advancement of holder demolition. Through the sharing mechanism 37% of the TOTEX outperformance will be delivered to customers in future years[1].

3.2 RIIO-GD1 Forecasts

Overall our TOTEX forecast for the RIIO-GD1 remains relatively unchanged at £7,543m over the eight years; an outperformance of £685m (8%) on the TOTEX allowance and just £9m lower than last year's forecast. There is a phasing change driven by the lower level of replacement activity than we had planned to complete in 2014/15.

The forecasts that follow are based on a series of assumptions on the level of cost efficiencies that our process excellence and innovation work are targeted to deliver the outputs. There are also external factors that may influence our forecasts.



We recognise that we will need to improve further if we are to maintain our TOTEX outperformance levels as we tackle more challenging replacement projects and other increased activity levels to deliver our eight-year output targets.

[1] Given repex is an investment, the majority of outperformance will be seen by customers in future years

It is possible that we will outperform these forecasts if our efficiency programmes deliver at the maximum end of expectations however there are also risks associated with our plans that may require higher expenditure. These include certain asset safety/reliability areas, such as multiple occupancy buildings and pipeline depth of cover. We will seek to minimise any impacts on customers by continuing to work with Ofgem and the other gas distribution companies to develop the risk trading methodology.

As well as slight phasing change, there are also some material differences in some of our underlying assumptions, the material changes being outlined below:

Movement in Totex

£m, 14/5 prices	EoE	Lon	NW	WM
13/4 RRP Forecast	**2,367**	**2,099**	**1,755**	**1,331**
Changes				
Smart	-16	-12	-9	-12
Repex	3	-71	18	9
Physical Security	30	12	6	-7
Data Centre	14	8	10	7
Repair	4	8	9	3
Maintenance	19	-18	15	-12
Apprentices	7	5	6	4
Work Mgt & Support	-5	-14	-9	-12
Other	-8	9	-1	-10
13/4 RRP Forecast	**2,415**	**2,027**	**1,800**	**1,301**
Overall Change	48	-72	45	-30
% Change	2%	-4%	2%	-2%

These changes in our forecasts are discussed in the following sections.

Replacement Expenditure

Our approach to replacement has enabled significant outperformance of the efficiency challenge set by the allowances that we faced against our historic level of replacement efficiency. Despite, the operational problems experienced in 2014/15 we are becoming increasingly confident that we can implement and deliver customer benefits from new innovation techniques such as TORS and PRISM. As such our overall REPEX forecast, excluding the uncertainties around the introduction of smart metering, remain largely unchanged; although we are forecasting an improvement in North London and some increase in the other networks given last year's experiences.

The outperformance by network forecast are:

Repex 8 Year Performance

£m, 14/5 prices	EoE	Lon	NW	WM
8 yr Repex Forecast	**792**	**962**	**647**	**494**
Outperformance	24%	27%	22%	27%
Underlying*	25%	28%	23%	27%

* excludes costs associated with uncertainty mechanisms - streetworks, smart

Our forecasts still maintain last year's assumptions that REPEX outperformance marginally declines over the period due to a combination of factors:

- Our mix has focused towards higher risk low diameter work and, as a consequence, although we are ahead of the annualised risk target in length we are slightly below the length targets and we will increase the length we do over coming years;

- The freedom that the RIIO control has given us to select pipe has enabled us in the early years of the control to select the optimum 'high risk' and consequently 'low cost' mains first. Over the period, mains will inherently have to be more expensive (e.g. diameter size, less favourable locations) while still delivering the risk outputs. This effect is expected to be biggest in London; and

- In London, the level of riser work is expected to increase over the period in line with the level in the allowances. In North West and West Midlands, we are identifying a level of workload that will require higher spend than that assumed in the allowances.

Capital Expenditure

We have increased our capital forecasts to ensure reliability of our networks on physical site security (discussed further in later section on uncertainty costs) and our information systems data centres.

The additional cost of data centre requirement sees our overall TOTEX expenditure at £10m (1%) above the CAPEX allowance, excluding the costs associated with physical site upgrade programme. As expected there are some differences between networks given different mix of work types, with East of England performance being impacted by the required level of expenditure on LTS.

Capex 8 Year Performance

£m, 14/5 prices	EoE	Lon	NW	WM
8 yr Capex Forecast	**434**	**229**	**271**	**185**
Outperformance	-15%	-12%	-5%	7%
Underlying*	-5%	-2%	0%	7%

* excludes costs associated with uncertainty mechanisms - PSUP

We have continued to consult with stakeholders (including Ofgem and DECC) to develop a data centre strategy to address the immediate risk in delivering the required level of service for Critical National Infrastructure systems and which will deliver a strategic solution mitigating longer term risks. We will address immediate risks through tactical investment in our existing sites. Our long term strategy for data centres will require a broader consideration of the risks required to deliver the required availability of systems thereby safeguarding supplies in the UK. As such we have included £69m in our forecast for gas distribution costs.

Other movements within our CAPEX forecast includes additional expenditure on governors and lower expenditure on mains reinforcement due to due to our improvements in operating the system in regards to improved pressure management and the underlying reductions in capacity requirements. The forecast continues to include an increase in expenditure over the remaining period of the price control in order to deliver the asset maintenance related network output measure commitments.

Operating Expenditure

Although we improved our operating costs in 2014/15 compared to last year's forecast and our forecasts include largely unchanged cost efficiency assumptions, we have had to increase our forecast this year for a number of factors:

- The level of expenditure assumption on smart, although assumed lower is now identified as being largely OPEX, rather than the broad assumption in last year's report of it being repex. This forecast is explained further below;
- Repair, where as a result of our difficulties in achieving the repair risk output we have increased our resources and future cost forecasts to facilitate achievement of this output; and
- Apprentices, where we have increased our forecast on the number of recruits into the future to address the workforce age profile and meet output commitments.

These increases have however been offset by lower expenditure on work management and business support costs.

Over the period our underlying performance remains unchanged from last year's forecast at 4% above. Our forecasts see some differences in performance across our four networks, the main factor being the level of maintenance expenditure, including reduced depth of cover, which impacts on East of England more than our other networks.

Opex 8 Year Performance

£m, 14/5 prices	EoE	Lon	NW	WM
8 yr Opex Forecast	**1,189**	**837**	**881**	**622**
Outperformance	-8%	-5%	-9%	-2%
Underlying*	-2%	0%	-4%	0%

* excludes costs associated with uncertainty mechanisms - PSUP, streetworks, smart

In the early years of the control period our underlying OPEX costs are above the allowances, however we believe that our efficiency initiatives provide good opportunities to bring our costs down to the efficient allowance level[2] and potentially below.

In driving for efficiencies, we are also mindful of the need to deliver improvements in customer service and to deliver the network outputs associated with our ongoing maintenance programme to ensure long term network reliability.

Uncertainty Costs

Over the coming years we do expect to incur costs to deliver additional outputs for areas of uncertainty that are not covered by the Final Proposal allowances, but are instead covered by uncertainty mechanisms.

We are working to try and mitigate these costs as far as possible and deliver required outputs in these areas. These additional costs are expected to be covered by uncertainty mechanisms which are designed to remunerate efficient costs that were not sufficiently certain to include in allowances at the time the RIIO controls were set.

The key items being:

- *Streetworks* – The forecasts included in the RRP are consistent with the May 2015 submission to Ofgem for an appropriate adjustment in allowances for efficient expenditure for these additional costs. These costs (£34m over the period across East of England, London and North West networks) are driven by legislative / government driven external factors as new Highway Authorities take up this legislation.
- *Physical site security* - The forecasts included in the RRP are consistent with the May 2015 submission to Ofgem for an appropriate adjustment in allowances for efficient expenditure for these additional costs. Throughout 2014/5 we have continued working with the Department of Energy and Climate Change (DECC) to review Critical Network Infrastructure physical site security. This review has included National Grid proposing alternatives to full physical solutions via less expensive operational solutions. The forecasted expenditure across East of England, London and North West totals £76m.
- *Smart metering rollout* - We put dedicated resources into working with the industry to help ensure that the supplier lead programme that will replace all 11 million National Grid customer meters replaced. This has increased our understanding and knowledge of the potential implications on our processes and enabled us to reduce the estimated impact across our four networks by £49m to £92m over the period.

[2]Note: in later years the opex scenario shown is below the allowance, in part driven by front loading of the holder demolition expenditure, also adjusting for level of uncertainty costs, especially smart.

Non-controllable costs

Our non-controllable forecast costs for the RIIO 8 year period have increased following the pensions review that lead to an increase in the forecasting for the pensions deficit funding. This resulted in higher forecast costs over the RIIO period for the Licence/network/other and the NTS pension contribution categories. There is also a higher forecast for expenditure on innovation via the NIA which has also added to the Licence/network/other category.

Non Controllable Costs - 8 Year forecasts

£m, 14/5 prices	**Final Proposal**	**13/14 RRP**	**14/15 RRP**
Licence/network/other	1,205	1,232	1,409
NTS exit costs	857	843	858
Shrinkage	308	210	179
NTS pensions contributions	170	170	197
Total non-controllable costs	**2,541**	**2,455**	**2,643**
2014/15 Variance to	102	188	
% Variance	4%	8%	

The other main change in our forecast relates to shrinkage costs where the combined effect of lower gas prices and improvement in our shrinkage incentive has lead to further reduction in these costs.

4 Financial Performance

Learning from our operational/delivery experiences in 2014/15 is fully acknowledged and we are seeing improvements already. As such we aim to provide improved customer service and delivery of outputs whilst delivering a return on regulated equity (RORE)[3] of 10% over the RIIO-GD1 period.

	Baseline RoRE (Post-tax cost of equity)	Totex Incentive Mechanism	Broad Measure of Consumer Satisfaction	Gas Management Incentives*	**Total**
East on England	6.70%	0.80%	0.23%	0.74%	**8.46%**
London	6.70%	3.38%	0.22%	0.49%	**10.80%**
North West	6.70%	1.10%	0.32%	0.20%	**8.31%**
West Midlands	6.70%	2.80%	0.35%	0.32%	**10.17%**

*Includes environmental emissions, shrinkage, NTS exit capacity and IQI additional income

North London is our highest performing network given that that REPEX accounts for a higher proportion of TOTEX than our other networks.

The RORE forecast is in line with the expectation given in last year's RRP. They represent an improvement in returns over the period than that published by Ofgem [4] given a higher level of incentive performance, associated with customer and gas management incentives. This is because we aim to improve our customer, shrinkage and NTS exit capacity performance in future year's, resulting in higher RORE over the later years.

There are many factors that will influence the level of our capital, replacement and operating costs over the remainder of the RIIO period. The forecasts provided in this document and the associated tables represent our current expectations for the RIIO period, indicating our aspiration to deliver outputs and provide value for money to customers. As you would expect there are many sensitivities around the assumptions made in the forecasts.

We are confident that we can deliver the improvements required from our incentives and cost performance, but there are external factors that could influence costs in the business including the level of uncertainty costs. If performance reflects the assumptions behind the forecasts then networks would deliver a RORE (in real terms) in line with 13/14 at around 10%.

[3] Return on Regulatory Equity (RoRE) is a representation of the percentage of returns earned by shareholders as a measure of equity RAV. The price control set allowances for the running of a safe and efficient network at 6.7%. GDNs are incentivised to outperform.

[4] RIIO-GD1 Annual Report 2013-14, March 2015

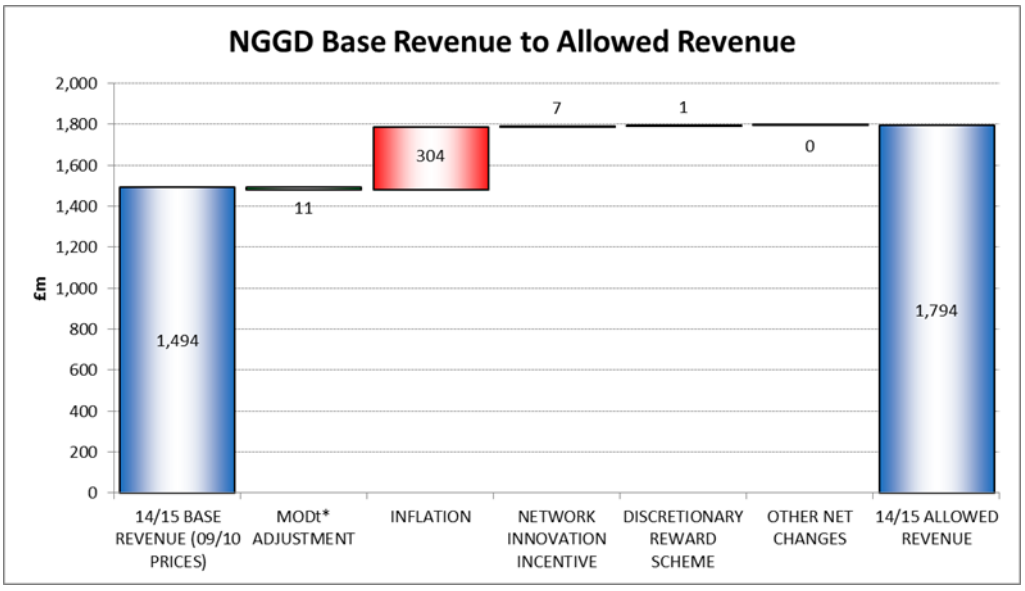
5 Revenue & Customer bill impact

5.1 Allowed Revenue

For the 2014/15 Revenue RRP the variance of over/under recovery by network to be carried forward is much smaller than in the 2013-14 RRP. This is due to a smaller variance between SOQ forecast and outturn in 2014-15 than the prior year.

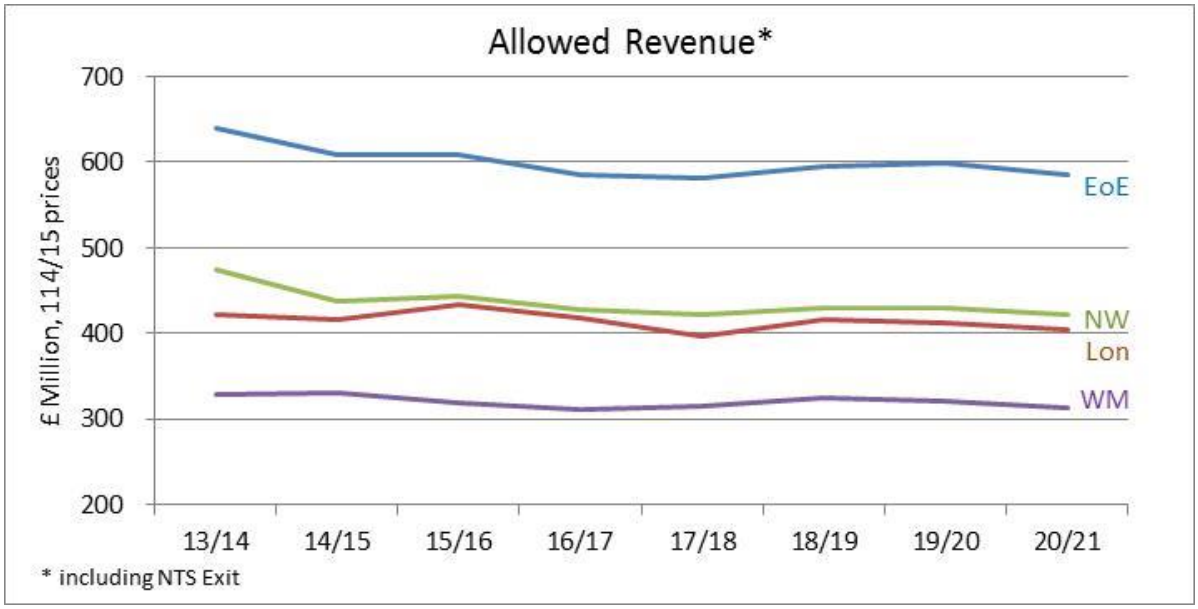
	Actual Revenue	Allowed Revenue	Over / (Under) Recovery	
	£m	£m	£m	%
East of England	610	609	0	0%
London	417	416	1	0%
North West	332	332	1	0%
West Midlands	435	438	-3	-1%

In 2014-15 Allowed Revenue has been primarily determined by base allowances, as most adjustments arising from cost and incentive performance will only be seen from the third year of the RIIO price control onwards.



* MODt is the factor that adjusts revenue for performance difference to cost allowances

As a result of the RIIO lagged arrangements further inputs relating to incentive performance will be reflected in the formula year 2016-17. Based on our actuals and forecast performance contained in this annual report, together with the lower cost of debt our allowed revenues are expected to decline over the period in real terms. The forecast does not assume any revenue adjustment for uncertainty mechanisms.



5.2 Customer Bill

During 2014/15 the impact on the average annual domestic customer gas bill of National Grid Gas Distribution was £139. This represents 20% of the average household gas bill[5].

The table below illustrates that National Grid's Distribution Network element for its customers' average annual domestic bill is expected decline by around 7% over the next six years in real terms.

Forecast average gas distribution element of an average domestic customer bill

£ 14/15 prices		13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21
	East of England	£138	£134	£134	£128	£128	£130	£130	£128
	London	£155	£151	£157	£151	£142	£148	£146	£144
	North West	£139	£134	£137	£130	£128	£130	£130	£128
	West Midlands	£139	£140	£134	£131	£132	£136	£134	£131
	National Grid average	**£142**	**£139**	**£139**	**£134**	**£131**	**£135**	**£134**	**£132**
Cumulative change from 2013/14			-2.2%	-1.8%	-5.7%	-7.4%	-5.1%	-5.7%	-7.2%

This report has demonstrated both our progress against the outputs, service improvements to our customers and the changes we have made to our business to deliver these at an efficient cost. Our cost forecast is based on the assumptions that include some allowance for known risk, which we will endeavour to mitigate against and minimise over the RIIO-GD1 period.

[5] Based on £706 average domestic gas bill, Ofgem April 2015

Our planned performance built into the cost forecasts include:

- Delivery of the outputs our customers have requested covering improvement in the health of our assets and a continuation of our network reliability;
- Expectation of improvement in our customer satisfaction across all our processes;
- Outperformance of our gas emissions targets to reduce the impact on the environment from our operations and gas leakage;
- Outperformance of the TOTEX expenditure targets, driven by cost efficiencies and the implementation of innovative approaches to deliver our output commitments;
- Increased costs associated with enhancing the security of the UK's Critical National Infrastructure that we operate on behalf of our customers; and
- Cost incurred in facilitating the introduction of smart meters, which will help customer in driving down their own gas usage or identifying alternative ways that they can reduce their bills.