

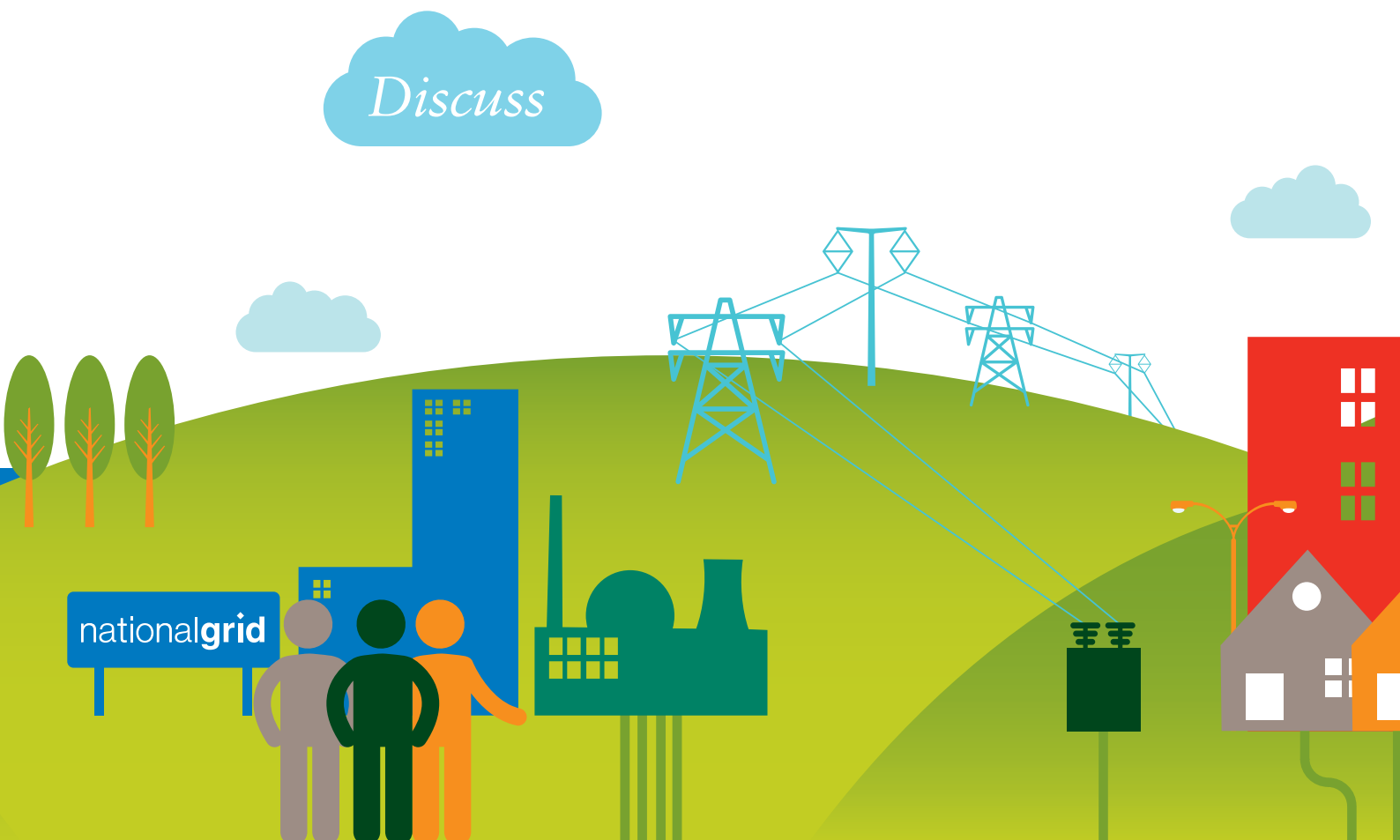
*UK National Grid  
Transmission*

nationalgrid

## Electricity Transmission Our performance

2014/15

*Discuss*



*National Grid – connecting you to your energy today,  
trusted to help you meet your energy needs tomorrow.*

# Welcome



Welcome to Electricity Transmission’s second performance summary under RIIO-T1<sup>1</sup>. In our RIIO contract we committed to delivering a series of outputs for our customers and stakeholders. During the first two years of RIIO, we’ve continued to make good progress against this commitment by delivering our five main outputs: safety, reliability, environmental benefits, customer and stakeholder satisfaction, and customer connections.

2014/15 has been a solid year for Electricity Transmission: we’ve continued to keep the public safe, provided customers with almost 100% network reliability and improved our stakeholder satisfaction levels. And that’s not all. We’ve made good progress with our plans to continue running a safe and reliable system across the remainder of the RIIO period while also delivering the greatest value to customers, stakeholders and end consumers.

Since we started delivering the RIIO contract, the plans of our customers and stakeholders have changed. So we now need to connect less generation to meet their needs. This will deliver value to end consumers because National Grid requires less cost and revenue than originally expected. We’re also finding better ways to deliver value to end consumers through the way we manage the reliability of our equipment on the electricity system.

This booklet includes examples of how we’ve performed in our five output areas and describes how we expect to perform in the remainder of the RIIO-T1 period. You can also see our current and forecast expenditure by visiting [www.talkingnetworkstx.com/our-performance.aspx](http://www.talkingnetworkstx.com/our-performance.aspx). The information in this booklet sets out our progress on delivering a safe, reliable and value-for-money electricity transmission system along with our focus areas for the future. I hope you find it useful.

*J. Pettigrew*

**John Pettigrew**  
Executive Director

# Who we are and what we do

National Grid Electricity Transmission owns the electricity transmission network in England and Wales – that’s the high-voltage network connecting electricity generators to distribution networks and large-scale consumers. We also operate Great Britain’s entire electricity transmission system, including the Scottish and offshore networks. It’s our job to balance supply and demand on a minute-by-minute basis.

## Sustainable, reliable and affordable

The energy landscape is changing. We invest efficiently so that we can deliver world-class reliability for UK stakeholders and enable our customers to connect to our network. As well as adapting to new sources of energy, we promote the development and implementation of sustainable, innovative and affordable energy solutions that will help us achieve security of supply.

Use the feedback link on [www.talkingnetworkstx.com/our-performance.aspx](http://www.talkingnetworkstx.com/our-performance.aspx) to tell us how you’d improve this document. Thanks.

At the heart of our business plan is the delivery of an affordable electricity transmission network that meets our stakeholders’ needs in terms of energy security and the environment. Our role is to connect people to the energy they use – whether it’s heat and light for their homes or to keep factories and offices running. We have a central role to play in meeting one of Britain’s biggest challenges: providing secure and affordable energy while also meeting ambitious low-carbon energy targets and connecting new sources of energy to the people who use them.

## Capital investment

Over the next decade we expect to step up our work to modernise the country’s energy infrastructure. We know that building new assets or refurbishing existing ones will have an impact on our customers and stakeholders. So we believe the best way forward is to involve them as soon as possible in the decision-making process. Our customer and stakeholder seminars are good examples of this.

<sup>1</sup> RIIO stands for Revenue = Incentives + Innovation + Outputs

# Executive summary

We’ve made solid progress in all output areas.

However, we’re not complacent: we keep looking for ways to make sure we always deliver best value to our customers. We regularly review our plans for maintaining our assets (including replacements) and improving the electricity network to meet the needs of our customers and stakeholders. We are listening to our stakeholders and are being led by them in the decisions we are making about where new lines may be built or what the future energy mix might be.

Content/output area	Highlights	Detail
Customer bills	<ul style="list-style-type: none"><li>Forecast spend in RIIO has reduced compared to our original business plan – the basis on which our allowances are set</li><li>National Grid’s portion of network costs account for £20.50 of the average household electricity bill in 2014/15.</li></ul>	Page 3
Performance scorecard	<ul style="list-style-type: none"><li>On or above target in areas of reliability, customer satisfaction, environmental performance and system operator activities</li><li>Met the requirements to connect customers, although the number of customers seeking connections has reduced.</li></ul>	Page 4–5
Safety and Reliability	<ul style="list-style-type: none"><li>99.999996% network availability</li><li>5 occasions when energy supplies were lost (last year’s figure was 8) and only 1 of the 5 had an impact on end consumers.</li></ul>	Page 6–7
Environmental benefits	<ul style="list-style-type: none"><li>On target for reducing total greenhouse gas emissions</li><li>Improved rate of gas leakage from our equipment, 9% down.</li></ul>	Page 8–9
Customer and stakeholder	<ul style="list-style-type: none"><li>Improved stakeholder satisfaction scored from 7.5 to 7.7</li><li>Customer satisfaction score of 7.4 consistent with 2013/14 result</li><li>Increased stakeholder engagement score from 5.75 to 6</li><li>Plans in place to find better ways to work with stakeholders.</li></ul>	Page 10–11
Customer connections	<ul style="list-style-type: none"><li>100% of new and amended connection agreements sent within agreed service levels</li><li>Fewer new connections than planned at the start of RIIO</li><li>Customers’ future requirements continue to be uncertain.</li></ul>	Page 12–13

# RIIO principles

RIIO introduces a range of new principles that are relevant to our performance.

RIIO-T1 is the first period under the Transmission RIIO framework. It started in 2013/14 and lasts for eight years. Under this framework (see pages 4 and 5) we have a set of outputs that we have agreed with stakeholders. We deliver these outputs in return for a revenue allowance that we have agreed with our regulator, Ofgem. RIIO also introduced a range of new principles. Some of them are relevant to our performance, so we've outlined them below.

For more information on our innovation activities please visit <http://www2.nationalgrid.com/uk/our-company/innovation/>

## Revenue is affected by sharing mechanism

One of the new principles introduced under the new RIIO framework is the concept of the sharing factor. This works by sharing any over or underperformance against allowances between us and end consumers. Under this, for every £1, 53p of any efficiency we achieve is passed onto customers. Therefore, when we have achieved an efficiency, this flows through to ultimately reduce customer bills. The opposite is also true, so under performance, i.e. spending more than allowances to deliver the output will mean this efficiently incurred overspend is shared between us and end consumers.

## Incentivising different behaviours

Another way that our revenue is affected is through our performance in the different incentives agreed as part of the RIIO framework. For instance, stakeholders want us to improve how we work with them and our customers, detail of which is in the performance scorecard and in the table on the website; [www.talkingnetworkstx.com/our-performance.aspx](http://www.talkingnetworkstx.com/our-performance.aspx). Other incentives are to improve our environmental performance and how we keep electricity flowing to the distribution networks.

## Innovation drives continuous improvement

Innovation is at the heart of the RIIO regulatory framework and we work to find a better way in everything we do. The RIIO contract introduced three funds to support innovation projects: the Network Innovation Allowance (NIA); the Network Innovation Competition (NIC); and the Innovation Roll-out Mechanism (IRM). Further detail on this and the types of projects that we are working on can be found in the link on the left.

## Outputs delivered change allowances

In some areas (like connecting customers to the electricity system) the costs to be incurred and outputs to be delivered over the RIIO period were uncertain at the start because the extent of the work involved wasn't clear at that time. So our allowances flex according to customer requirements. There's also a fixed allowance to meet a target at the end of T1 for Network Replacement Outputs – the maintenance and asset replacement work that's needed in order to deliver a safe and reliable electricity network that keeps the lights on.

# Customer bills

Our regulatory contract and our performance against it define our allowances and the revenues that we're allowed to recover from our customers.

Here's what the consumer got for the money we spent on the national electricity transmission system in 2014/15:

- a reliable network that delivered electricity to the local distribution networks, meeting consumers' energy needs
- more than £520m invested to improve the network by connecting all customer-driven, new-generation capacity and to get this energy transferred to the local distribution networks
- nearly £190m invested to refurbish and replace the right equipment at the right time.

## We have a range of scenarios for our forecast spend that reflect ongoing uncertainty

- A low scenario which reflects the reduction in nuclear and wind connections and a small amount of undergrounding
- A high scenario which reflects increased wind generation, more cable investment and undergrounding
- A central case reflecting mid-range assumptions about likely customer requirements.

All of the scenarios include our continued asset refurbishment and replacement programme. The central case would increase the electricity transmission element of customer bills by £4.70 on average over the RIIO period to £23.50 compared to £20.50 today and £18.80 at the start of RIIO. The higher scenario would add an extra £1 and the low scenario would be just under £1 less.

# £12.2bn

(in 2013/14 our forecast range was £9.6bn–12.5bn)

Total forecast\* to be spent on improving the network 2013-21\*\*

# £23.50

(in 2013/14 we forecast a range of £20–24)

Forecast amount\* of each bill that will pay on average for our activities each year during RIIO-T1

# 3.4%

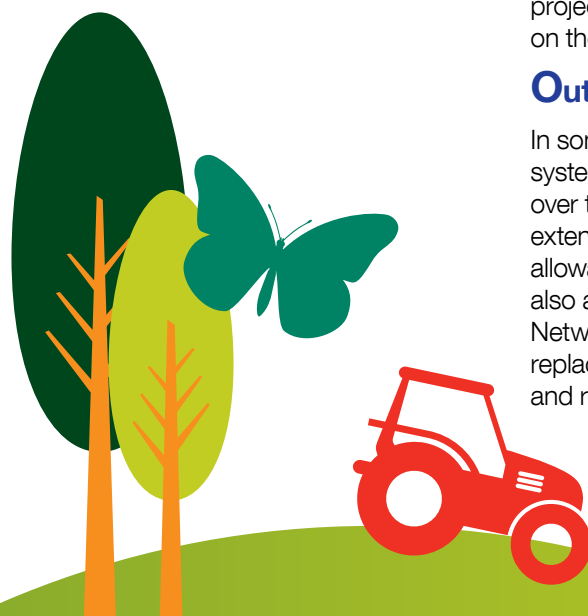
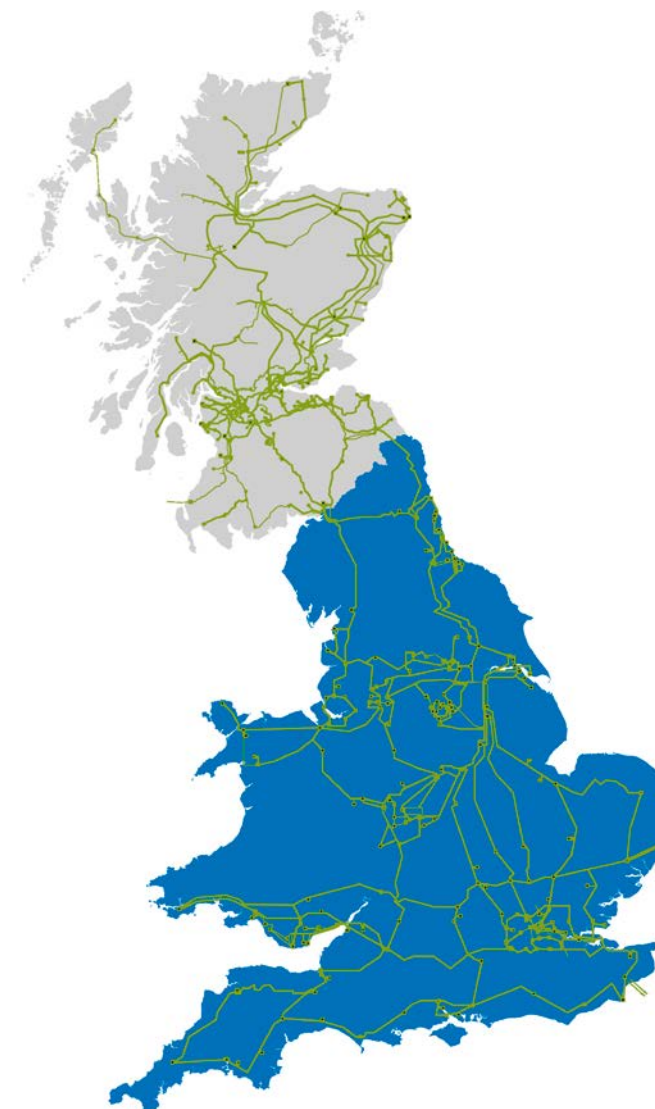
(in 2013/14 the amount was 3.2%)

Percentage of average household electricity bill\*\*\* that make up our network costs

\* In today's prices

\*\* Based on the central view of our capital plan

\*\*\* Average household electricity bill £603 in 2013/14 and £609 in 2014/15





# Our performance scorecard

**Red** – Missed an annual output and forecast to miss the remainder of our eight year output

**Amber** – Missed annual output but on target to progress towards the remainder of our eight year output/successful achievement of annual output and risk of failure of the remainder of our eight year output

**Green** – successful achievement of an annual output and on-target our eight year output. For uncertainty mechanisms like connecting customers the measure is whether we have met our customers’ requirements.

Safety		
Output requirement	Target	Performance
Comply with HSE legislation	100%	100%

Reliability and availability		
Output requirement	Target	Performance
<b>Minimise how much electricity is lost to our customers because of failures to the assets on our network</b> The Energy Not Supplied (ENS) reliability incentive encourages us to minimise how much energy is lost to our customers when our equipment fails.	<316MWh p.a.	9MWh (down from 135MWh in 2013/14) delivering incentive revenue of £3.5m*
<b>Keep the network reliable by carrying out effective maintenance and asset replacement programmes</b> Deliver network replacement output for our lead assets (transformers, reactors, circuit breakers, overhead line (OHL) conductors and fittings and underground cables) by carrying out our asset replacement and refurbishment programmes to achieve the agreed level of network risk.	Compliant with network risk level at end of RIIO-T1 period (2021)	On target at the end of 2014/15 – a plan in place to deliver by the end of RIIO-T1
<b>Protect our critical assets to minimise disruption</b> Deliver requirements for Integrated Security Solutions (ISS, formerly known as Critical National Infrastructure schemes) at an agreed number of sites. The specific details of site locations and the level of strengthening is confidential because of the nature of the works.	Number of sites and overall costs, as agreed by Ofgem	On target – funding for the programme is being agreed with Ofgem
<b>Strengthen the network for new generation and demand connections</b> Deliver the wider works output of increased transmission boundary capability, as required by our customers, to transmit power generated to areas of greater demand. Our target is the baseline position stated in our licence. Allowances will be amended for over/under delivery compared to the agreed baseline.	2,800MW	4,300MW Works were efficiently completed ahead of baseline year
<b>Forecast the amount of wind generation produced</b> By forecasting accurately how much wind will be generated we can have increased confidence in how we will balance the network. Target is how accurate we are with a cap at £3m p.a. when forecasts are 100% accurate. Parameters change annually and will be tighter from 2015/16.	+/- 4.75% accuracy in summer +/- 6% in winter	0.71% summer 2.05% winter £822k* incentive revenue
<b>Balance the supply and demand on the transmission system</b> The balancing services incentive scheme encourages us to minimise costs to the consumer while also maintaining a network that’s balanced for generation and demand. The difference between target spend and actual spend then flows through the sharing factor (25% for National Grid, 75% for customers) with a cap and collar set at £25m a year for National Grid. Any extra savings go to customers.	Target spend £957m	Actual spend was £839m therefore delivering £93m of savings to customers and £25m incentive payment to National Grid

Environmental benefits		
Output requirement	Target	Performance
<b>Minimise greenhouse gas emissions, especially SF6</b> Minimise leaks and related SF6 top-ups on our assets. SF6 is a potent greenhouse gas that we use to insulate some of our assets. By minimising leakage we are reducing our overall impact on the environment so replacing and refurbishing circuit breakers is a great way to do this.	12,414kg of SF6 top-ups 1.75% leakage rate	9,544kg topped up equates to 1.24% leakage rate delivering £2.5m*
<b>Going above and beyond to deliver low carbon solutions</b> Environmental Discretionary Reward – panel decision on submitted paper that describes additional low carbon and environmental activities carried out. Incentive reward based on panel’s decision on how successful we are in meeting criteria.	Up to £4m a year shared with transmission owners	Score in 70-80% range equates to £2m*
<b>Reduce the visual impact of assets in Areas of Outstanding Natural Beauty (AONBs) and National Parks</b> Deliver the recommendations from our independent stakeholder panel to reduce the visual impact of our assets in AONBs. These recommendations influence our decisions about which routes we will ask Ofgem to fund.	£500m (in 09/10 prices) over RIIO-T1 to share with all TOs	On target to develop minor and major visual enhancement schemes
<b>Mitigate the visual impact of new OHL connections</b> We aim to reduce the visual impact when we build new OHL routes to connect new generation. The requirement to locate parts of new routes underground may be a condition of a Development Consent Order (DCO).	Around 10% of new routes	On target to meet DCO requirements

Customer satisfaction		
Output requirement	Target	Performance
<b>Measure the way that we have satisfied our customers and stakeholders</b> We use an external research company to carry out annual satisfaction surveys with our customer and stakeholder base.	Customer 6.9/10 Stakeholder 5/10	7.40 = £4.9m* 7.74 = £1.6m*
<b>Go above and beyond in the way we engage with our stakeholders</b> The stakeholder engagement incentive scheme is a submitted report and panel assessment about how we engaged with our stakeholders in 2014/15 and the changes we made as a result.	5.0/10	6.0/10 (up from 5.75 last year). Equates to £3.7m* revenue

Customer connections		
Output requirement	Target	Performance
<b>Send customer offers within 90 days</b> We aim to offer our customer a connection date within 90 days. Sometimes these offers are modifications to the customer’s original offer.	100%	100% (235 new or modified offers)
<b>Connect new generation customers to our network</b> The baseline for our target is stated in our licence. Our latest forecast, based on customer needs, is 11GW of new generation (baseline: 33GW) over the RIIO-T1 period. We’re on target to deliver all the new connections that our customers need.	1,597MW	914MW
<b>Connect new demand customers onto the network</b> The baseline for our target is stated in our licence, but we are responding to reduced customer needs. Over the RIIO-T1 period we forecast that we would connect 72 new super grid transformers (SGTs) and 27km of OHLs for these demand customers. Our latest forecasts are that 48 SGTs will be needed for demand customers over the RIIO period.	6 SGTs No new OHL	4 SGTs No new OHL

\*Incentive revenue is shown in 2014/15 prices

## Safety and Reliability output: today

In 2014/15 the overall reliability of supply for our system was 99.999996%. This is world-class performance.

We aim to minimise any instances where we're unable to supply electricity to customers directly connected to our network. These are referred to as energy not supplied (ENS) events. In 2014/15 there were five ENS events and a loss of 8MWh, but only one of these events affected end consumers. We performed better than last year, when 135MWh was lost in eight ENS events.

### Maintaining and replacing

The RIIO price control arrangements introduced measures that assess the health and criticality of different assets on our network and determine how we invest to keep our network reliable. We plan to meet the relevant targets over the eight year period by delivering a programme based on the risk and criticality of our assets. Long-term value to customers lies at the heart of our asset management approach, so we have to make difficult choices about how and when to maintain or replace equipment. We continue to develop our Strategic Asset Management (SAM) programme, which is increasing our knowledge about the condition of our assets, driving innovation projects and introducing new technology to help us monitor the condition of our assets. The programme informs our decision-making approach, to make sure the right work is done on the right assets at the right time.

### Balancing and forecasting

As system operator we operate the electricity network in a safe and economic way. We deliver savings to customers through the innovative ways that we balance electricity supply and demand every day. Increasing amounts of intermittent generation like that from wind means that our ability to forecast accurately is important in reducing the costs required to balance the network. We have improved in this area in 2014/15 and have an NIA project to continue this accuracy.

### Planning to deliver value

In 2014/15 we implemented several asset management strategies, including:

- a lower-cost option to replace only the most degraded parts of our OHLs
- a new approach to switchgear replacement – this will reduce costs by identifying ways to refurbish different switchgear types, to extend their life
- a new technique to deal with highly corroded tower steelwork using an innovative coating approach that makes steel last longer – so we'll have to replace less steelwork than we thought.

### Case study

#### Shunt reactor refurbishment

We need to monitor voltage levels on our network to maintain a secure and stable supply of energy and shunt reactors are one way of actively managing this. Funded by the NIA, we're researching the viability of refurbishing old shunt reactors rather than replacing them with new ones. Replacing reactors is very expensive, not just because of the capital cost of the new equipment but also because large civil-engineering costs can also be incurred if the new reactor has a different footprint from the one it's replacing.

Our research project will allow us to understand the economic feasibility of refurbishing a 40-year-old reactor, using the existing tank and redesigning the core and windings to optimise losses. This may lead to a more sustainable approach to the future asset management of 13kV shunt reactors. This project will provide a cost-benefit analysis of lifetime costs to work out whether refurbishing a reactor is a better option than installing a brand new one of a modern design.

## Safety and Reliability output: future

We need to keep the lights on and we're finding better value ways to do this without affecting reliability.

Having reviewed our plans to refine our asset management options, we're now putting more emphasis on delivery. We're communicating this plan to the business and providing clear non-load-related targets (to be achieved by March 2021) making sure delivery of the work required in the most efficient way. We have converted the RIIO-T1 regulatory targets of levels of system risk into a plan which delivers volumes of work to meet the target.

### Tracking our outputs

By tracking our outputs we can gauge whether we are on course to deliver our targets for each year. And as risks to the programme emerge, we can address them in a timely and cost-effective way. At the same time, we're continuing to push for further process efficiencies (such as seeking new ways of working to halve lead times) to make us more flexible and responsive to change. So we'll always be looking for better ways of doing things, changing how we work and shifting mind-sets.

In autumn 2015 we'll be consulting with stakeholders on a new trade-off methodology for asset replacement. So we'll look at the risk and criticality (two of the ways that we judge when equipment needs to be refurbished or replaced) of individual asset families, like specific circuit breaker types. We'll also be exploring how the risk of failure of different equipment can be traded off against other asset families.

### Case study

#### Switchgear refurbishment

Switchgear describes the equipment at our substations that is used to ensure the safe running of our network as circuit breakers can be used to turn circuits on and off to deal with faults, current overload and to safely maintain our network.

We are trialling innovative methods of switchgear refurbishment, with a view to managing the asset life of circuit breakers and maximising the useful life of the other equipment that is part of the overall switchgear asset. This includes providing the option of carrying out targeted (instead of full) refurbishment, which extends the asset life initially by 10 years. This could be supplemented by an option to refurbish the asset again in a further 10 years (in other words, we'd be deferring asset replacement for 20 years). Our cost-benefit analysis of this strategy found that the 10 year refurbishment option provides better value for consumers in the long run.

Under this refurbishment approach, the asset health of circuit breakers remains a priority, but the scope of refurbishment is tailored to the asset life of associated bay assets.

The first targeted refurbishment trials have achieved positive outcomes so we're planning to do more of them.

### Case study

#### Underground cable replacement

We're always reviewing the performance and condition of our underground cables in order to consider the most appropriate and efficient asset management approach. As part of this, we conduct and apply the results of research. For example, we're carrying out research into tape corrosion, funded by our NIA. Oil impregnated paper is made into a tape and is used to insulate certain cable types and this tape can degrade over time causing system faults. It's an issue that affects some of our underground cables in south London. On the London Power Tunnels Phase 2 project, if we have a better understanding of tape corrosion, we may be able to intervene at a later stage, in which case we would delay the investment.





## Environmental benefits output: today

Reducing our impact on the environment is important to us.

As a group we've set a voluntary target to reduce greenhouse gas (GHG) emissions across our UK and US businesses by 45% by 2020 (baseline: 1990). We can break down emissions into areas like energy generation in the US, methane losses across the group, sulphur hexafluoride (SF6) leakage losses, our own gas usage, and buildings and transport.

Our UK business baseline emissions level (excluding line losses) was set at 19.6m tonnes of carbon dioxide equivalent after tracing previously published and verifiable data going back to 1990. We expect to exceed the 2020 target<sup>2</sup>.

### Continuous improvement

SF6 has excellent insulation properties, so it's used extensively in transmission assets. However, it's also an extremely potent greenhouse gas, so we have an incentive to reduce the amount of SF6 that leaks from our assets. In 2014/15 we saw a 9% reduction in SF6 leakage from the previous year.

As part of our continuous improvement activity we've changed our environment incident categories in order to challenge accepted behaviours and help National Grid achieve its objectives. For example, our threshold for environmental incident reporting of absolute releases of SF6 reduced from 150kg to 75kg for a single incident or over 100% of an asset's SF6 contents annually. To help us prioritise our investment decisions, we also added a new leakage rate classification that allows us to capture additional data on leaking assets. We have a programme to reduce leakage rates by refurbishing or replacing the highest leakers on the network and by identifying and planning repairs to leaking equipment in a timely and efficient manner.

Our two oil management units have been used extensively in 2014/15 to reduce the amount of new oil that is required to make sure our assets run efficiently. This also helps to reduce our overall environmental impact.

We have recently been invited to an independent panel assessment of our Environmental Discretionary Reward submission where we received a financial reward for our focus on low carbon and other environmental activities.

### Case study Protecting and enhancing biodiversity at our sites

We know that protecting the natural environment is very important to local communities and environmentalists – it's also very important to us, so we work closely with wildlife organisations to minimise our impact. To support this work we use innovative tools that evaluate our 'natural capital' (the land around our substations, for example) and the benefits these sites provide to the local community.

Using these tools we identified the former Thorpe Marsh power station in Doncaster as a site that's rich in biodiversity and home to a wide variety of notable species, including rare birds. It's also a significant site for the local community because it includes a memorial garden for four local workmen who lost their lives in an incident there in the 1970s.

Working with the Yorkshire Wildlife Trust we developed sustainable management plans that involve the local community. In order to manage, protect and enhance the natural environment of the site, we made a commitment to monitor species and manage their habitats and biodiversity; communicate effectively with the local community through volunteering opportunities, events and educational sessions; increase the natural capital value of our site; and work with nearby wildlife reserves.

# SF6

is 23,000 times more harmful to the environment than CO<sub>2</sub> so we're finding new ways to reduce the amount that leaks into the atmosphere

# 2.75m litres

of insulating oil was processed and recycled by our mobile Oil Management Unit during 2014/15. This is equates to 110 road tankers of oil saved

<sup>2</sup> Our emissions data is independently verified by external consultants

## Environmental benefits output: future

Reducing our impact on the environment, today and in the future, is important to us.

National Grid is strongly committed to managing its environmental impact and actively supporting initiatives to reduce SF6 leaks. As part of an NIA project, we're trialling a technical alternative to SF6 using a different electrical insulating gas, with the first equipment to be commissioned by mid-2016. We're researching improved repair techniques, to reduce ongoing leakage, and we're committed to rolling out a revised training programme for our field staff who deal with SF6.

### Stakeholder-led scheme

In 2014/15 we made progress on our visual impact provision (VIP), which aims to reduce the visual impact of existing transmission assets in National Parks and AONBs. The independent Stakeholder Advisory Group (made up of members from National Parks and other interest groups) has recommended that, as well as a small number of major capital projects, we create a funding stream for smaller, localised visual improvement schemes. The consultation for this policy change started in September 2015. This landscape enhancement initiative (LEI) programme will then look at qualifying schemes in late 2015, with a view to obtaining Ofgem approval in time for a summer 2016 start.

### Reduce, reuse, recycle

We're trialling a closed loop process as part of our ambition to reuse or recycle 100% of recovered assets. For example, when an old aluminium conductor has reached the end of its life and is being replaced, we'll send it to a partner company that will smelt it into a new conductor to be used on future schemes. We also want to continue our good work to date on recovering decommissioned cables using directional drilling, which reduces the amount of waste oil that's left in the ground.

We're developing a number of internal plans too. For example, we're looking at reducing electricity usage at our substations by replacing the lighting with efficient LED lights. We're also investigating the benefits of small-scale solar installations and using heat recovery techniques on onsite transformers to warm substation offices.

### Case study VIP Stakeholder Advisory Group

We wrote a policy detailing how we would mitigate visual impact. It included the creation of the Stakeholder Advisory Group. This independently chaired, stakeholder-led group has identified the first projects that could benefit from VIP funding, also taking into consideration the views of stakeholders not directly represented on the panel.

This is much more collaborative, inclusive and transparent than our previous approach. It's a good example of how we're improving the way we engage with our stakeholders. We're actively involving them at the start of the decision-making process, listening to their views and discussing challenges openly, as well as explaining some of the technical challenges associated with certain options.

We'll continue to work with our stakeholders once the first potential projects have been identified, including communicating with AONBs, National Parks, MPs and communities in shortlisted areas. We've also created a dedicated project team to answer questions from organisations and the public, and a news update service that interested parties can subscribe to.

### Case study T-pylon test line

We are hoping to use our innovative new design of pylon to improve the visual amenity of overhead lines. This might be on existing lines as part of the VIP or it may be because local stakeholders have requested this new design as part of the engagement process for new routes.

In 2014/15 we completed the construction of a test line at our Eaking training centre. This means that our engineers and those from interested construction companies can use this facility in a safe and controlled environment. This is considering construction, installation and maintenance aspects of the T-ylon design.

Use the feedback link on [www.talkingnetworkstx.com/our-performance.aspx](http://www.talkingnetworkstx.com/our-performance.aspx) to share your thoughts on our environmental approach and ideas

## Customer satisfaction output: today

We'll keep working hard to improve our customer service and satisfaction levels.

We remain committed to improving customer and stakeholder engagement throughout our business. We've trained 300 staff in advanced customer and stakeholder management skills and have made good progress across the electricity transmission business in developing our customer and stakeholder satisfaction and engagement strategies. We've also made sure we engage with a broad and inclusive range of stakeholders in ways that meet their needs – examples include collaborating with our suppliers to reduce carbon emissions, holding biannual seminars for our customers and supporting the Guardian Big Energy debate.

### Satisfaction and engagement

We recognise that we need to continue to improve if we are to provide the best service possible for our customers. Action that we have already taken includes ensuring our customers have a single point of contact throughout their experience and amending processes to make them more customer focused. Feedback from stakeholders is that we are being more focused on their needs and making changes to our approach to different areas of our business because we have listened to them and are acting on their ideas.

In 2014/15, our success in the Stakeholder Engagement Incentive Scheme reflects improvements in how we are gathering and listening to stakeholder feedback and taking action on their priorities as well as improving our own capabilities and processes through lessons learnt and seeking to share best practice. Improving our customer satisfaction and stakeholder engagement will help us make better informed decisions and feedback will help identify areas where we can improve.

### Embedding strategy

In 2014/15, we developed a refreshed strategy with focus on key themes to enable us to improve the way we work with customers and stakeholders. We shall do this by increasing capability of our staff, gaining a deeper understanding of customer needs and finding ways to exceed them. Senior managers across the business have customer related performance objectives to keep the focus in their area on improving customer and stakeholder relationships.

### Case study Customer seminar

Our Electricity Customer Services team hosts the Demand Customer Seminar twice a year to update customers on important network issues and relevant industry developments.

In October 2014, 32 external customers and stakeholders attended the day, with representatives from all Distribution Network Operators in England and Wales, the Department of Energy & Climate Change and Network Rail. The day included presentations on Future Energy Scenarios, a visit to a Transmission Network Control Centre (TNCC) and round-table discussions on topics like the future of embedded generation.

We received very positive feedback. For example, Network Rail's Dave Hewings said it was 'very engaging and necessary to maintain this type of dialogue'. And Zivanayi Musanhi, from UK Power Networks, described the TNCC visit as 'a real insight into the structure of National Grid'.

## Customer satisfaction output: future

Listen. Discuss. Act. Our approach to customer and stakeholder management is embedded into our business.

We continue to roll out our customer and stakeholder strategy, informed by a growing understanding of what our stakeholders need and how they want us to work with them.

### Continuous improvement

We're always on the lookout for ways to improve, so that we can provide the best possible service to our customers. As a result of our 2014/15 surveys, we developed and implemented many improvement ideas. Examples include producing plain English guidance and supporting documents to help customers understand our technical material; mapping our processes; improving communication and accessibility; and holding more seminars and forums to discuss issues with our customers.

Having reviewed the survey process itself, we're making improvements to that too: we're going to be surveying a wider range of customers and stakeholders than ever before; we'll do this in a more timely way and we'll make sure we're asking each group the right questions. We'll also improve the way we use the survey outputs to develop specific, measurable actions that can be embedded and monitored across the business.

### Increasing capability

Increasing the capability of our staff remains an important area of focus for us. That's why we review and continuously improve the content of our internal training academy courses, to make them as relevant and effective as possible.

### Changing focus

Other improvements will see us review the way we currently collate and share intelligence on our customer and stakeholder interactions across our business. Not only will this reduce waste and facilitate more productive interactions for us, it will ultimately lead to better experiences for our customers and stakeholders when they deal with us, reducing the points of contact within our business and reducing potential duplication of work, therefore making better use of their time.

### Energising seminars

We hold a variety of forums and seminars across the business and we are going to utilise these much more effectively in the coming year. We will seek feedback on our activities, make sure that we are telling our customers what they want to hear and give them the opportunity to raise any issues and challenge us.

We will also continue to drive forward with the recently established "open governance" approach to raising modification proposals to the Grid Code. This means increased transparency and efficiency in the modification process which brings the Grid Code in line with other industry codes.

*To read more about our stakeholder commitments and our future focus areas please visit [www.nationalgridconnecting.com/](http://www.nationalgridconnecting.com/)*





## Customer connections output: today

Delivering new generation connections to the electricity transmission system is essential to the future energy mix and to keep the lights on as other power stations close.

### Connecting customers

In 2014/15 we connected 914MW of new generation plant across the network. We also met our customers' requirements by adding four new SGTs to move the energy increases onto the local distribution network. The amount of new generation capacity and the requirement for transferring electricity onto the distribution network were both lower than the baseline agreed at the start of RIIO, so our allowances will be adjusted accordingly.

### Less generation and demand

Our customers and stakeholders have been telling us that their plans are changing. As a result, we expect to connect around 11GW of new generation and 48 new SGTs over the RIIO period (the baseline figures agreed at the start of RIIO were 33GW of new generation connections and 72 SGTs).

### Customer applications

In 2014/15, across the UK we made 235 new offers or modifications to existing offers – an increase of nearly 70% on the previous year's figures. All these offers were made within the timescales committed to in our standards of service. Around 46% (up from 42% in 2013/14) of these connections met the customer's requested date. Most offers are for renewable projects that want to connect in Scotland's two transmission owner areas. This is pushing the connection dates beyond those requested by customers, because so many projects are already contracted (applications are dealt with on a first come, first served basis). Many of these connections are in the scoping phase and this uncertainty means that we don't yet know when or if they will all connect.

### Case study

#### Stakeholders and the connection process

RenewableUK (RUK) is an industry body with almost 500 members. Our discussions with RUK representatives revealed some negative feedback about the way we work. By delving deeper we discovered that these views were caused partly by a misunderstanding about our role and accountabilities, and partly because we used to be seen as inaccessible.

We didn't let the grass grow under our feet: having joined many of RUK's governance groups, we can now provide information on particular topics or issues at each meeting and contribute to the wider industry debate. This approach has produced some great results. For example, RUK contacted its membership on our behalf regarding the queue management of new connections – this is proof of a partnership approach where both parties can use the other's strengths and relationships to achieve the best combined result.

Recent feedback from RUK confirms that we now have a trusted adviser relationship. RUK benefits from our support but also promotes National Grid and helps us get useful feedback and ideas from its members. It's a win:win situation.

## Customer connections output: future

Managing ongoing uncertainty in an economic and efficient way is essential to delivering value under RIIO.

Customers remain central to how we operate – their needs determine the outputs we have to achieve. Changes in the political and regulatory environment have fuelled a customer-driven change from the Gone Green generation scenario of 33GW that we agreed at the start of the RIIO contract to our current expectation of 11GW. This has had an impact on the timing and amount of new generation connections. We expect that there will be continual change in terms of both what we need to deliver for our customers and how we deliver it. We'll then have to change our plans accordingly.

### Right investment, right time

The uncertainty regarding customer requirements is a big challenge for us because we have to change our delivery plans to meet new needs. We've forecast an adjustment to our funding as a result of our customers' reduced output requirements. But we still need to be mindful about when to start developing these connections schemes. And we need to find the most efficient approach in terms of timing our investment.

We're seeing a rapid increase in the impact that embedded renewables are having on the operation of the network. This is causing problems in managing voltage on the network. So we're working with customers and stakeholders to identify a solution – one that will allow as much renewable connection as feasible, while also making sure that we maintain security of supply. We've included planned additional investment in shunt reactors to help us manage this problem.

### Listening and responding

In response to stakeholder feedback and our customers' changing requirements, we have significantly changed our business plans in terms of planned capital investment and the approach through which this investment will be delivered.

The figures below illustrate the volatility we've been experiencing: the differences between what was agreed at the start of RIIO, what our scenarios are telling us now and what our customers are actually contracted to connect. Part of our role involves managing this uncertainty in the best way, liaising with customers, gathering intelligence and modelling the network accordingly.

# 11GW

The latest central view of the likely amount of new generation that will connect by 2021

# 92GW

The current contracted position of new connections in T1

# 33GW

The amount of new generation that (at the start of RIIO) was expected to connect by 2021





# How to contact us and other useful links

**nationalgrid**

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 feedback link on our Talking Networks website  
**[www.talkingnetworkstx.com](http://www.talkingnetworkstx.com)**

For further details on our total spend, forecasts and incentive performance and how this affects allowances, go to **[www.talkingnetworkstx.com/our-performance.aspx](http://www.talkingnetworkstx.com/our-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/information-consumers/domestic-consumers/understanding-energy-bills](http://www.ofgem.gov.uk/information-consumers/domestic-consumers/understanding-energy-bills)**

For information on our innovation activities, visit **<http://www2.nationalgrid.com/uk/our-company/innovation>**

To see how this fits in with how the energy network powers your home, visit **[www.ofgem.gov.uk/network-regulation-riio-model/energy-network-how-it-works-you](http://www.ofgem.gov.uk/network-regulation-riio-model/energy-network-how-it-works-you)**

To find out more about our electricity business and the market we operate in, visit **<http://media.nationalgrid.com/factsheets/>**

For further information on our financial performance, visit our dedicated website at **<http://investors.nationalgrid.com/>**

This document contains certain statements that are neither reported financial results nor other historical information. These statements are forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended.

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.

