

## 4 Outputs

### Introduction

The O in RIIO stands for Outputs. Very simply, Outputs are the products and services we will deliver for customers and stakeholders.

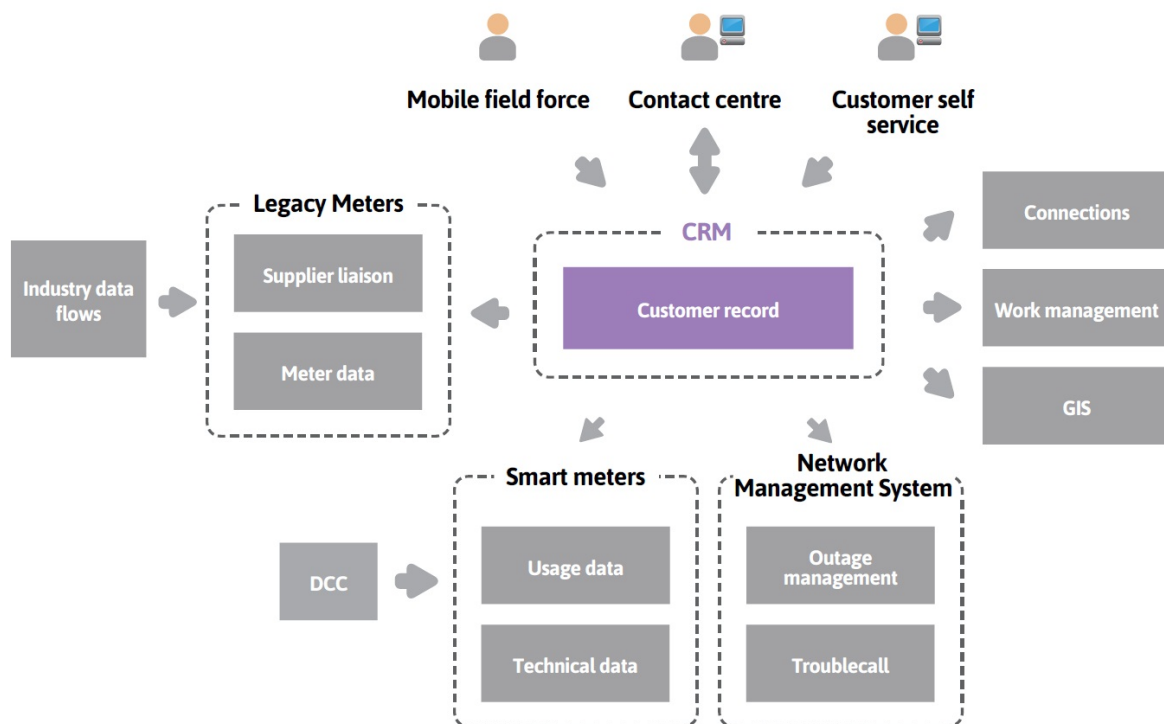
- 4.1 Outputs cover the whole range of impacts that we have as a network operator and are specified in the following areas:
- Safety
  - Social obligations
  - Reliability and availability
  - Customer satisfaction
  - Connections
  - Environmental impact
- 4.2 In this section, we set out our range of measures and targets which we are committing to deliver in RIIO-ED1. These have been informed and shaped by stakeholder feedback and our need to meet all the obligations on us as a business.
- 4.3 Some of these are related to clear service measures (eg power cuts or customer satisfaction), whereas others are designed to ensure overall network risk management, the prevention of unwanted events or some form of secondary effect. In these areas (eg flood protection, undergrounding), the measure is based on the activity we plan to undertake to achieve the ultimate (but difficult to measure) benefit (eg improvement in visual amenity).
- 4.4 Our Outputs are the leading measures we will use in managing our business and demonstrating successful delivery. We believe transparency of our performance targets is fundamental to our on-going, productive engagement with customers and stakeholders. In particular it will help us ensure we have appropriate support for areas where the future is not yet certain, such as balancing our response to the pace of transition to the low carbon economy and the impact this could have on future customer prices.
- 4.5 The following sections detail our proposals and describe why we believe they offer the right balance between the needs of the network, our customers and our stakeholders. In developing our Outputs, we have taken account of the benefits offered by data and technology advances and the opportunities they provide to improve our understanding of network performance and customer interaction. We believe an integrated approach to network and customer data will allow us to offer enhanced, and in some cases tailored, services. We have therefore included a brief summary of our data strategy to provide some context of the enabling investment in technology, people and processes which underpins our Outputs programme.

### Data strategy

RIIO-ED1 brings a number of social, technical and economic challenges to our industry.

- 4.6 To meet them, we need to understand what information is going to be available to us, how to integrate it and how to use it to deliver outstanding performance and value for all our customers and stakeholders.
- 4.7 Our network data and the systems which process it are comprehensive. We have industry-leading asset performance and condition data which allows us to develop and deliver efficient investment and repair programmes. We have extensive automated monitoring and control technology applied across our high voltage network which allows us to identify and fix, or minimise the impact of, faults very quickly. This condition and performance data is supported by control and location systems which allow us to deliver network reliability performance in excess of 99.99%.

- 4.8 We have a number of sources of customer data which, although helpful, do not yet offer us the functionality to understand and engage with our customers as fully as we would like. We want to understand and perform for our customers as well as we do our network. This means making the most of the information currently available to us and looking forward to how that will be enhanced by future developments, both in our company and across our industry as a whole.
- 4.9 The introduction of smart meters, which will be rolled out from the beginning of 2015, will help us bridge a major gap in our customer information. In the longer term (towards the end of RIIO-ED1 and throughout RIIO-ED2) we see significant potential to improve customer service through enhancing:
- Customer communication and interaction
  - Connections
  - Network performance monitoring
  - Demand side response
  - Management of power outages
  - Losses
- 4.10 Smart meter data on its own is only part of the answer. It will certainly help us better understand our customers' relationships with our network but we need to do more to understand our customers' wider relationships with our business.
- 4.11 In November 2012, we launched our flagship Customer Contact Centre, the result of a £1 million investment by us. As part of our continued commitment to put customers at the heart of our business, we will invest a further £2 million of our funds in a comprehensive Customer Relationship Management (CRM) system. This will be the hub through which we manage all interaction and communication with our customers.
- 4.12 Our vision is to bring together customer consumption, connection, location and circumstance information to deliver the most comprehensive service and support in our industry. We will integrate information flows from our field operations to the CRM to allow us to provide fast, accurate details on power outages and restoration times. This will address one of our customers' biggest concerns and allow them to understand why their power has gone off and when it will be restored, using either traditional voice contact or self-service via our website, mobile app or social media feeds.
- 4.13 The diagram below shows our conceptual data and systems integration plan to achieve this.



- 4.14 In the early stages, we will develop functionality which allows us to enhance our Priority Services Register (PSR) information, extending this to cover the wider range of vulnerable customers who may not meet the PSR criteria but who nevertheless require extra support and assistance from us.
- 4.15 We will be able to offer streamlined and more cost-efficient connections services through a better understanding of network capacity at both high and low voltage levels. We see this as being vital to supporting low carbon technology uptake and our strategy to support distributed generation connections, particularly towards the end of RIIO-ED1 and beyond.
- 4.16 Integration with other companies' and agencies' systems, to the extent practicable and allowed under the Data Protection Act, will provide a platform to develop multi-agency support and assistance programmes. Our conceptual data and systems integration plan is shown below.
- 4.17 We think this is an exciting time for our industry. There are many challenges to overcome however we are fully committed to setting a new service benchmark and investing in the people, processes and technology to deliver it.

## Safety

- 4.18 We do not compromise on safety. It is embedded in our company's culture and values and is our number one priority for our people, contractors, customers and all who may come into contact with our network.
- 4.19 This value means much more than meeting our legal obligations; we are dedicated to achieving the highest standards of health and safety for all our customers, employees and contractors. Our objective is not only to protect people and the environment but also to contribute positively to improving overall health and wellbeing.
- 4.20 Our aim is to minimise the risk of unwanted events occurring through a mix of education, awareness, training and investment in the network where appropriate.
- 4.21 We work to a zero harm health and safety strategy. We will continue this strategy during the remainder of DPCR5 and throughout RIIO-ED1. Our strategy supports and aligns with the national strategies set out by the Health and Safety Executive and the Energy Networks Association and is underpinned by our health and safety management system, which is certified to the OHSAS 18001 standard. We demonstrate health and safety leadership at every level of within the business. Our overall strategy and performance against it is set and monitored at board level by a Health and Safety Committee.
- 4.22 Our commitment to safety has yielded demonstrable improvements in performance. This is measured through the rate at which accidents occur, which has continued to show a steady decline over the last five years.
- 4.23 Our prime safety output measure is compliance with all applicable legislation. There is no financial incentive attached to this in RIIO-ED1 and we think that is right. We take our responsibilities very seriously and believe we should go beyond simple compliance.
- 4.24 There are a number of investment programmes which are aimed at reducing specific safety risks on our network in RIIO-ED1.

### Our output proposals for RIIO-ED1

	Category	Objective	Measurement	Target	Date
1	Safety	Site security	Number of sites with additional measures installed	800	2023
2	Safety	Safe climbing	Number of pylons with latchway installed	1,600	2023
3	Safety	Asbestos management	Number of substations remediated	9,073	2023

## Stakeholder feedback

### Stakeholders think safety should be one of our top priorities.

- 4.25 As well as operating a safe network, they would like us to address issues such as metal theft and asbestos. They also told us that we should do more to promote safety awareness to the young people in our community.

## Output proposals

**We will continue to comply with all regulatory and legislative requirements. We will maintain and enhance our safety programmes and deliver a number of specific health and safety investments through our programme of risk control measures as detailed below.**

### Site security

- 4.26 Like most network operators, we have seen increases in break-ins and theft from our sites over the last few years. Metal theft and vandalism pose specific risks to our customers and our workforce and we have taken major steps to improve security during the current price control. It would be prohibitively expensive and impractical to protect our entire network, given that it is spread over an area of 12,500 square kilometres. We will therefore build upon our current programme which allows us to protect as many circuits and customers as possible whilst maintaining a balance with cost and our ability to deliver.
- 4.27 We believe this is best achieved by protecting our major substations and overhead lines through a mix of measures including;
- Improved fencing
  - CCTV installation
  - Watermarking
  - Asset tagging
- 4.28 We will also replace all locking systems at our sites with modern electro mechanical systems. We have developed innovative ways of marking our assets, cables and earth tapes and we are conducting trials with Lancashire Constabulary. These have led to a number of successful prosecutions because of the conclusive evidence our marking systems provide. We will continue this programme during RIIO-ED1.

### Safe climbing

- 4.29 Our tallest structures are the pylons (steel towers) which support our 132kV lines. They stand around 27 metres tall – the equivalent of six double-decker buses stacked one on top of the other.
- 4.30 Our people work on these towers all year round in all weather conditions. We are installing specialist fixings called latchway systems which allow our people to secure themselves to the tower structure during climbing and when working at height. We have already commenced this work and by the start of RIIO-ED1 1,600 towers will remain to be addressed. We will complete work on these remaining 1,600 by 2023.
- 4.31 Where appropriate, we will install these systems as the first phase of any planned tower work. This means we get the most efficient installation cost and our people benefit from the reduction in safety risks whilst carrying out the additional tower work.

### Asbestos management

- 4.32 The majority of our network assets were installed in the 20-year period between 1949 and 1969. At that time the dangers of asbestos were not understood and this material was used widely in substation construction and insulation. We are progressively removing asbestos from substations, or making it safe, and will continue this programme through RIIO-ED1. We will remove or make safe the asbestos at 6,080 indoor and 2,652 outdoor distribution substations and 341 of our major substation sites.

### Training and education

- 4.33 We will continue to invest in training our people to ensure compliance, competence and awareness in all areas of health and safety, including leadership and behavioural safety programmes.

- 4.34 We are committed to promoting customer awareness of the potential safety risks associated with contact with the electricity distribution system and how customers can avoid danger.
- 4.35 We will continue to identify potential risks and any incident trends that indicate increased risk due to changes in customer activities. Where necessary we will develop and implement appropriate communications to increase customer awareness of risk and precautions (see Annex 10).
- 4.36 The types of communication methods we will use will include:
- Information available on our website
  - Attendance and presentation at relevant events
  - Running specific public safety events
  - One-day events at schools through our Bright Sparks programme

## Investment

- 4.37 We plan to spend £40 million in RIIO-ED1 to ensure our network is safe and continues to comply with all applicable legislation. This is an increase of around 79% on our current levels, which is driven primarily by the rise in site security investment in response to metal theft and malicious damage incidents.

## Social obligations

**This Output is designed to help us play our full part in assisting those customers who are in vulnerable situations or circumstances.**

- 4.38 We will use the British Standard definition of a vulnerable customer to provide clear and consistent guidelines for our people to work to. This definition was originally applied to financial services, however, we think its broad intention 'to protect consumers who are put at a disadvantage in terms of accessing or using a service, or in seeking redress' provides a good overarching principle for our approach.
- 4.39 The Output is focussed on the role we can play in developing partnerships and working relationships with companies, charities, local and national government agencies and others in the North West to deliver enhanced advice, support and service to our vulnerable customers. Our social strategy also includes improved customer data management, enhanced network resilience to protect high concentrations of vulnerable customers and advising on energy efficiency.

**One of the main considerations for stakeholders in assessing the value of an investment decision is the extent to which it protects or assists vulnerable groups. Our stakeholders universally supported funding priority services for vulnerable groups.**

- 4.40 Engaged Consumer Panel participants were asked to consider their willingness to pay for various investment options without knowing the cost implications and subsequently with the cost implications disclosed. In most cases, willingness to pay decreased once the cost was known.
- 4.41 For a small number of decisions, however, willingness to pay increased once cost was considered and these included enhanced services to electricity-only customers and priority service for vulnerable people. Our stakeholders recognised that the relatively low cost of these measures delivered a significant benefit for vulnerable people. They considered these investments to be socially worthwhile and to offer good value-for-money. This view was ratified by the results of our national consumer survey run by Populus which indicated that customers in the North West were willing to pay more for these services.

## Track record

**We are determined to play our full role as a responsible organisation.**

- 4.42 We have an active and comprehensive Corporate Social Responsibility (CSR) programme which allows us to apply our resources to deliver a positive impact on the communities we serve in the North West. Our programme is fully supported by our shareholders, who are committed to Environmental and Social Governance (ESG) as part of their overall investment strategies.

- 4.43 We are working with Business in the Community (BITC) and using their approach to develop an effective CSR strategy, tailored for the needs of customers and communities in the North West. As a national charity dedicated to transforming business and communities, BITC can objectively assess our approach based on best practice not just in our industry, but in all industries. They provide robust feedback and guidance on our CSR initiatives which allows us to maximise the positive impact they have.
- 4.44 We report annually on our progress and participate in the BITC Corporate Responsibility index. We entered the index for the first time in 2012, achieving a score of 54%. This gives us a useful benchmark from which to develop our CSR programme. We are fully committed to achieving gold status – where we have to score more than 90% – within the next five years.

## Our Output proposals for RIIO-ED1

Our social obligations commitments for RIIO-ED1 are, we believe, the most progressive in our industry.

	Category	Objective	Measurement	Target	Date
4	Social	Responsible organisation	BTIC Index	Gold	2018
5	Social	Enhanced PSR service	Up-to-date and accurate information	Contacting PSR customers every two years	Ongoing
6	Social	Improve services for vulnerable and Priority Service register customers	Better targeted services using data that will become available over the course of ED1	Ongoing enhancements identified through stakeholder engagement	Ongoing
7	Social		Enhanced training for all customer-facing front-line people	Improved identification of and advice to vulnerable customers	Ongoing
8	Social		Welfare package support and temporary power supplies	Deliver services during planned or unplanned power interruptions	Ongoing
9	Social	Resilient supplies to vulnerable locations	Upgrade network reliability for 56 Hospitals and 87 distribution substations	Complete network automation investment	2017
10	Social	Mitigate fuel poverty	Reduce average RIIO-ED1 prices compared to DPCR5	16%	2015-2023

## Priority services

- 4.45 We maintain a Priority Services Register (PSR), which allows us to identify those customers who are most dependent on our services and develop tailored support to assist them. We have more than 235,000 customers – about 10% of our total – on our PSR.
- 4.46 PSR customers receive enhanced support from our Customer Contact Centre during power cuts or planned interruptions. We keep them informed of progress and likely time before power restoration. Where necessary, we make arrangements for the British Red Cross to visit them to deliver personal support, which may include the provision of food, blankets or other help.
- 4.47 We publicise our PSR service and eligibility criteria on our website and we have trained our customer-facing people to recognise potential PSR customers and, where this is the case, provide a proactive registration service.
- 4.48 Our PSR service will be reviewed by a working group every six months to examine service delivery performance and identify opportunities to enhance it.

## Vulnerable and Priority Services Register customers

- 4.49 We are committed to supporting our customers in all situations where they may be vulnerable. We already offer enhanced support to our PSR customers; however, we will extend this to include our vulnerable customer base (see Annex 9).
- 4.50 Our vulnerable and PSR service customers enhancement plan for the remainder of DPCR5 and throughout RIIO-ED1 includes the provision of:
- Site visits, if required, for all connections applications
  - Contacting all customers on our PSR once every two years to ensure we have up-to-date and accurate information
  - 14 days notice of planned interruptions through face-to-face contact
  - Identification of high volume PSR areas on our network, i.e. those parts of the network where the number of PSR customers who would be impacted by an outage is disproportionately high
  - Custom support for high volume PSR areas, taking account of supply interruption duration, time of day and weather conditions
  - Proactive contact within 30 minutes of a supply interruption to determine if additional support is required
  - Emergency relief including food, blankets, lighting and personal support
  - Alternative power supplies for customers for planned interruptions or under fault scenarios over three hours where there is a defined medical dependency on electricity and we cannot provide a reasonable time for restoration of the supply.
- 4.51 We are committing to invest our own funds in a comprehensive data strategy, integrating network and customer data to provide us with a complete picture of who is connected to our network, how they use it and how we can best serve their needs. Our commitment is to invest these funds during the remainder of DPCR5 to make sure we are ready to implement and deliver additional customer benefit from the start of RIIO-ED1. We are not seeking any funding for this support.
- 4.52 Our preparatory investment in our data strategy will provide an excellent platform for the direct and targeted support services we will provide in RIIO-ED1. It will also help us manage the dynamic nature of customer vulnerability, as we recognise that it can be a temporary state.
- 4.53 We are not relying on technology alone though. Our first line of response is our people. Our people come into contact with our customers in a number of different ways and they are uniquely placed to help deliver vulnerable customer support. We will implement enhanced training for all our customer-facing front-line people including our contractors which will help them identify signs of vulnerability and advise customers how we can offer additional help and support.
- 4.54 Other agencies, whether statutory, social or charitable can help as well. We plan to engage these groups and other key stakeholders in quarterly vulnerable customer workshops, which will ensure our support provision remains current, targeted and comprehensive.
- 4.55 We will simplify our communications across all our channels. We want our customers to understand what help we can offer and how to access it in simple, jargon-free and accessible terms.
- 4.56 We will continue to deliver our enhanced PSR support but to a wider customer base. We will also continue to deliver direct welfare support and temporary power supplies to ease the inconvenience caused by planned or unplanned power interruptions.
- 4.57 We will continue to work with our colleagues at the British Red Cross, the National Energy Action (NEA) and develop new relationships with the Clinical Commissioning Groups (CCGs) of the National Health Service, local authorities, housing associations, charities, network operators, energy suppliers and others such as Consumer Futures to find further, more inclusive ways of delivering vulnerable customer support.
- 4.58 We will introduce a new role, vulnerable customer manager, to provide the appropriate management focus to enhance our customer culture and service initiatives.

## Resilient supplies to vulnerable locations

- 4.59 There are a number of locations on our network where high concentrations of vulnerable customers are found, including hospitals, nursing homes and sheltered housing. As these locations are likely to have significant populations of vulnerable customers over a long period of time, it is sensible to invest to make the network in these areas more reliable.
- 4.60 We have recently completed analysis which shows that 56 hospitals are connected to our high voltage network. We have an excellent track record of automating fault identification and restoration on our network and we think it is sensible to take steps to provide additional resilience to the parts where the hospitals are connected. This investment will reduce the risk of prolonged supply outages.
- 4.61 The total cost is £1.2 million. We will deliver half of this in DPCR5 and complete the remainder by 2017.
- 4.62 We have also identified 87 distribution substations in areas of high vulnerable customer concentration (more than 50 per substation) where customers have seen two or more interruptions over the last five years as a result of a higher voltage fault. We plan to fit remote control and network automation to all of them, again with the objective of improving reliability and restoring power quickly in the event of an outage. We will invest £1.6 million to do this, completing the work by the end of 2017.

## Fuel poverty

- 4.63 Fuel poverty affects an increasing percentage of our population. By 2016, it is estimated that around 17% of people in England will be classified as fuel poor.
- 4.64 We think the best response is to keep prices down and our business plan delivers that. If our plan is accepted, our average prices in RIIO-ED1 will be 16% lower than average prices in DPCR5. In addition, we will be able to accelerate the benefits of RIIO-ED1 into the last year of DPCR5 by avoiding the need to increase our prices in 2014-15.
- 4.65 There are other ways we can help including providing information and advice to customers about the services and options available to them and working with others to help co-ordinate and optimise the level of support delivered through various sources.
- 4.66 Our data strategy will help us understand customer circumstances and energy usage. This will help us engage more effectively with local authorities, agencies and electricity suppliers to develop and deliver targeted fuel poverty assistance. In particular, we will look at how we can work with gas distributors and others to consider solutions such as renewable heat technologies or connection to the gas grid as cost effective ways of relieving fuel poverty.

## Energy efficiency

### Customers can benefit from improved energy efficiency

- 4.67 We will work with other agencies to provide customers with information on the efficient use of energy. Our work with National Energy Action (NEA) is helping to refine and develop the energy efficiency content of our education programme Bright Sparks, to deliver practical lessons in energy use and consumption to the children of the North West.
- 4.68 We are committed to improving our own energy usage through improvements to our properties, vehicle fleet and electrical losses through the network assets.

## Electricity theft

- 4.69 Electricity theft increases the cost of electricity for all customers and creates safety issues through interference with our equipment. We are committed to tackling electricity theft and have retained a dedicated revenue protection service despite the licence obligation being removed in 2007. We work closely with other agencies including the police, environmental health and electricity suppliers to combat theft. We are leading the industry in this area and made the proposals for industry code changes which were subsequently approved by Ofgem and brought the governance arrangements for revenue protection onto a more formal basis.
- 4.70 We have expanded our revenue protection team, as we believe there is significantly more theft taking place than is currently being detected. We see this as a self-funding activity using the legal mechanisms available to us to recover our costs.
- 4.71 For further details of our activities in this area see Annex 19 – Losses Strategy.



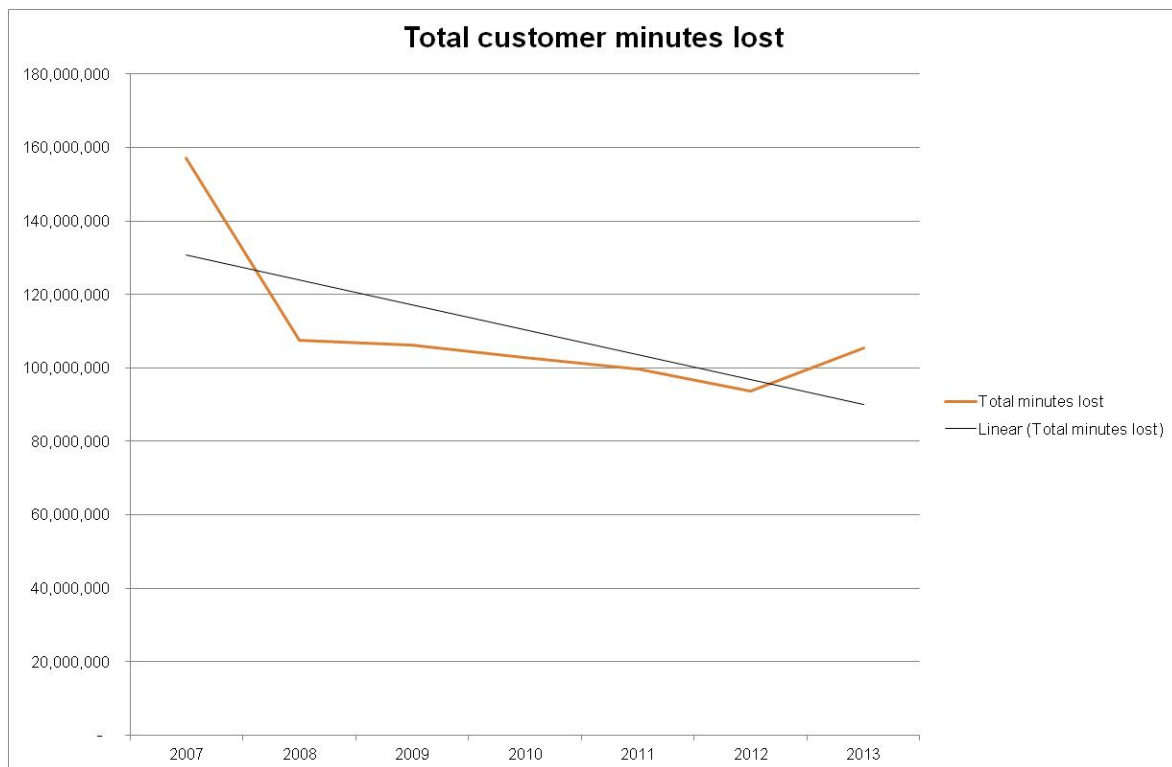
## Investment

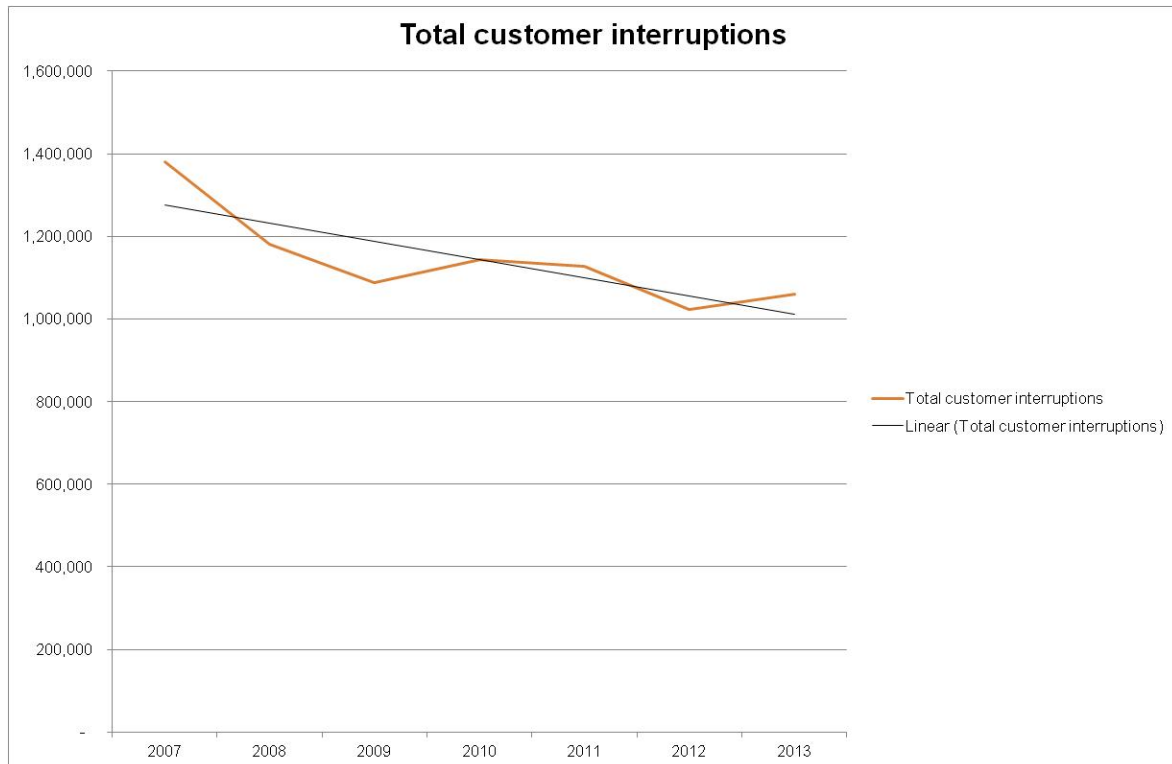
- 4.72 Most of our proposals for social obligations Outputs do not have a requirement for specific investment on the network. The only exception is where we propose to upgrade supply reliability in areas of high vulnerable customer concentration.
- 4.73 We will fund the additional support and welfare services we plan to offer, along with the investment in our Customer Relationship Management hub. Incentive funding is available if we demonstrate our stakeholder engagement is robust, comprehensive and embedded in our business. We will be delighted if our efforts are recognised through this, however our commitments are not dependent on it in any way.

## Reliability and availability

Reliability (power cuts) and availability (time without power) are the two key measures of network performance.

- 4.74 On average our customers experience a supply interruption less than once every 27 months and are without power for less than 45 minutes every year. This means our network availability is better than 99.99%.
- 4.75 The main reliability and availability Output is measured in terms of Customer Interruptions (the number of times a customer experiences a power cut) and Customer Minutes Lost (the period of time for which the power cut lasts). Ofgem sets target levels for these measures based on historic performance and comparisons with other organisations. We consistently beat these targets and when we do, Ofgem makes the next set of targets even tougher. This drives us to continually improve the level of service we provide





- 4.76 Reliability and availability is generally improved through a combination of network automation and improved operational fault response. These improvements depend on us maintaining the network's underlying performance through a programme of efficient replacement, repair, maintenance, refurbishment and reinforcement.
- 4.77 This programme needs to be carefully balanced to ensure we make the right short- and long-term decisions. For example, diverting effort to improving quality of supply through short-term fixes would produce an immediate performance improvement but could undermine the future capability of the network and build up a backlog of future renewal work. In many cases this will result in a higher whole-life cost. We have compared refurbishment versus replacement options for our assets, informed by careful evaluation of the difference in costs and benefits, to deliver a balanced programme which offers the optimum mix of performance and value for our customers.

## Stakeholder feedback

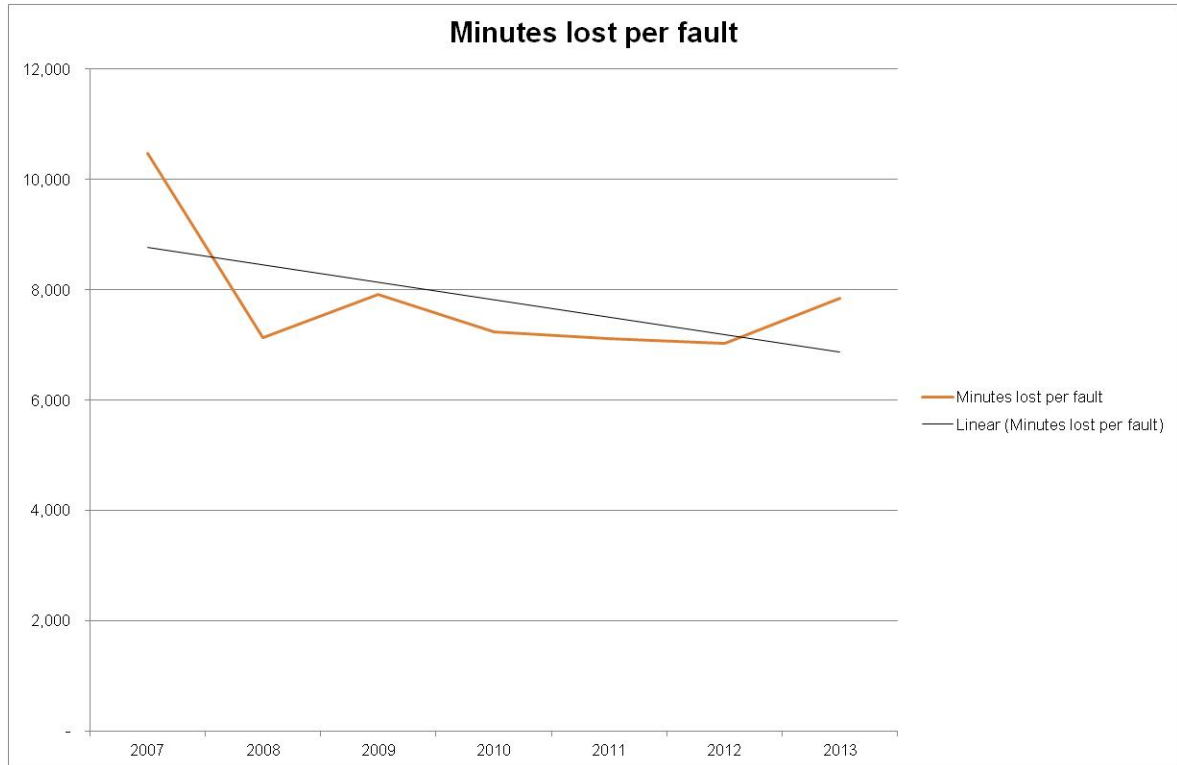
### Unsurprisingly, our stakeholders think keeping the lights on should be our number one priority.

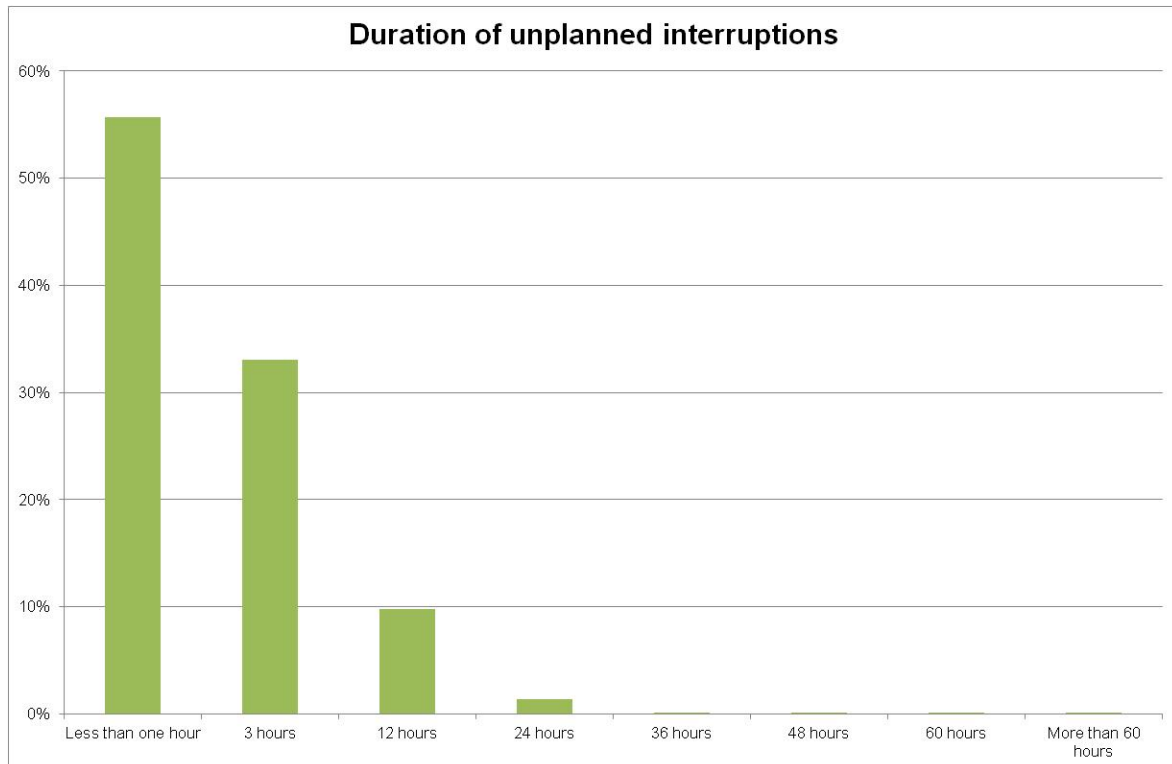
- 4.78 Support for 100% reliability, whilst cost-prohibitive, was high with many stakeholders believing that we should improve our 99.99% reliability score.
- 4.79 Domestic customers were more interested in short-term improvements, however our political, commercial and business stakeholders supported our view that we need to ensure we have a sustainable network, now and in the future.
- 4.80 Most customers expressed a willingness to pay slightly more to invest for future reliability. Our regional development stakeholders want to see continued investment in infrastructure to support future social and economic growth.

## Track record

Since 2007 we have delivered a 16% reduction in total Customer Interruptions and an 18% reduction in total Customer Minutes Lost. In 2011/12, each unplanned fault affected 77 people compared to 92 five years previously.

4.81 For those who did experience a fault, power was restored in an average of 92 minutes compared to 114 minutes five years ago. When a customer's supply is interrupted, the duration of the interruption is less than two hours in 80% of cases. We have also delivered a consistent reduction in our overall network fault rate.





## Output proposals

- 4.82 We will improve reliability and availability through a combination of investing to maintain our network's underlying performance, investing in additional control and automation and improving our operational response times.

## Quality of Supply

### We will deliver a further 20% reduction in Customer Interruptions and Customer Minutes Lost by 2019.

- 4.83 We have deliberately chosen 2019 as the target date as smart meter rollout will be almost complete by then. The presence of near-universal smart metering on the network will radically change our awareness and recording of performance issues, particularly on the lower voltage networks, providing an opportunity to redefine performance targets and incentive schemes.
- 4.84 Performance enhancement will be delivered through targeted improvements to make the network smarter and equip our fault teams with the latest fault finding equipment. Some of these initiatives take advantage of developments from our innovation programmes.
- 4.85 We will install:
- Smart fuses which can autonomously restore supply in the event of a fuse failure without a site visit being required
  - Remote control facilities with 3G communications to enable switching operations to be carried out remotely
  - Automation which reconfigures the network to switch to alternative supplies without requiring the intervention of a control engineer

4.86 Quality of Supply is subject to an incentive mechanism which generates penalties and rewards depending on our performance against Ofgem’s targets. Consequently we expect to fund our automation plans from the incentive revenues and have not included any allowance request in our plan.

	Category	Objective	Measurement	Target	Date
11	Reliability	Improve overall reliability	Customer interruptions	20% improvement on 2012 position	2019
12	Reliability	Improve overall reliability	Customer Minutes Lost	20% improvement on 2012 position	2019

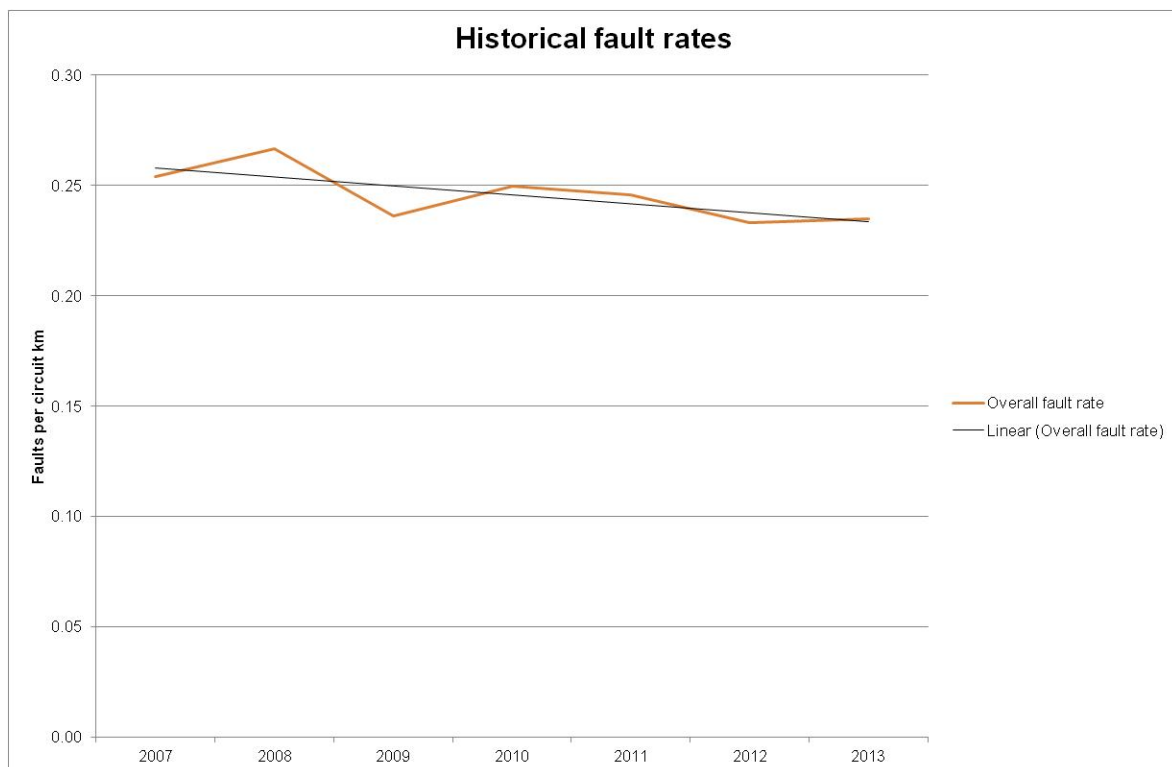
## Asset health

**We manage the overall health of our assets to ensure the long-term sustainability of our network.**

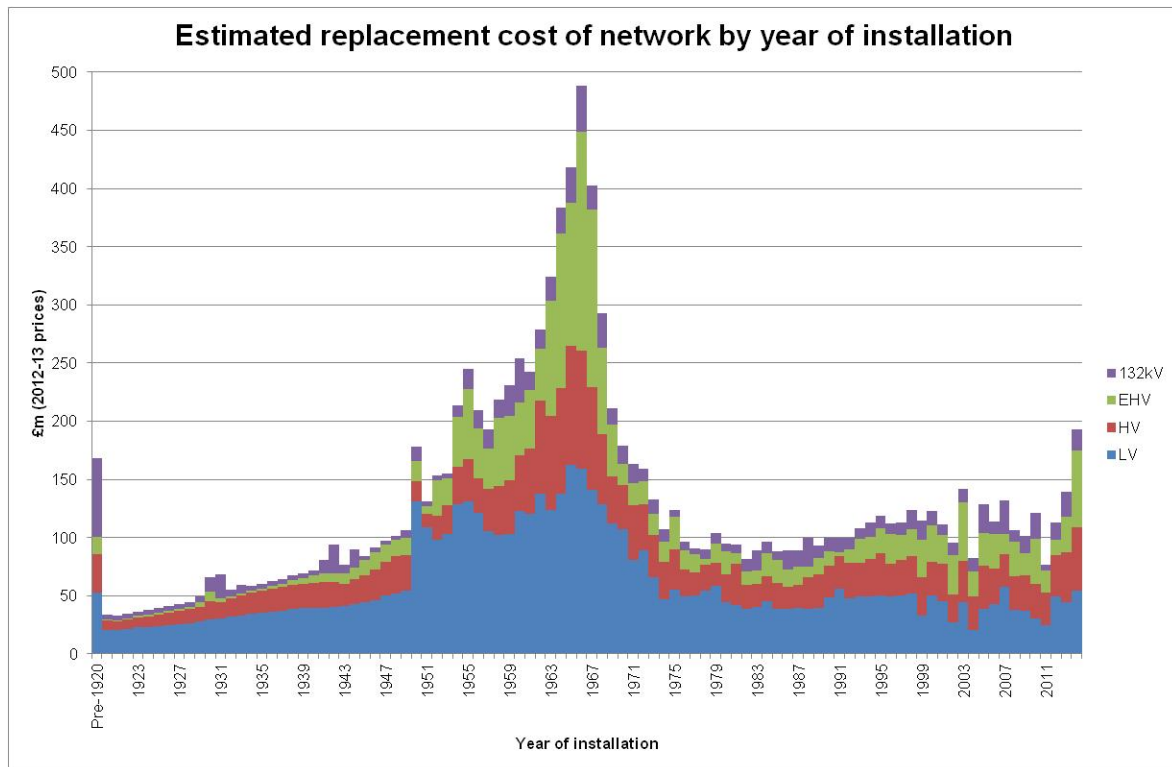
4.87 Failure to do this would result in increasing failure rates over time and deterioration in reliability and safety. We consider how to balance our interventions over the longer term (DPCR5, RIIO-ED1 and beyond) to ensure the work that needs to be done can be carried out sustainably and without storing up problems for the future.

4.88 Much of our asset base was installed in the 1950s and 1960s and has given good service through its lifetime. Some of it is even older, dating back to the original transmission network in the 1930s and local area supplies before that. Our asset management techniques are BSI PAS-55 certified. We pioneered the use of Condition Based Risk Management (CBRM) and are particularly proud of the fact that this has been widely adopted across the electricity distribution sector.

4.89 CBRM helps us monitor and predict our assets’ performance and behaviour, which in turn allows us to design cost-effective intervention strategies. We estimate the risk profile of the network using Risk Indices. These are measures which calculate probability of failure and its likely consequences. This allows us to model how our total risk changes over time and the impact of our intervention programmes on total risk. By understanding the risk profile across our entire network we develop targeted interventions rather than blanket approaches (see Annex 2).



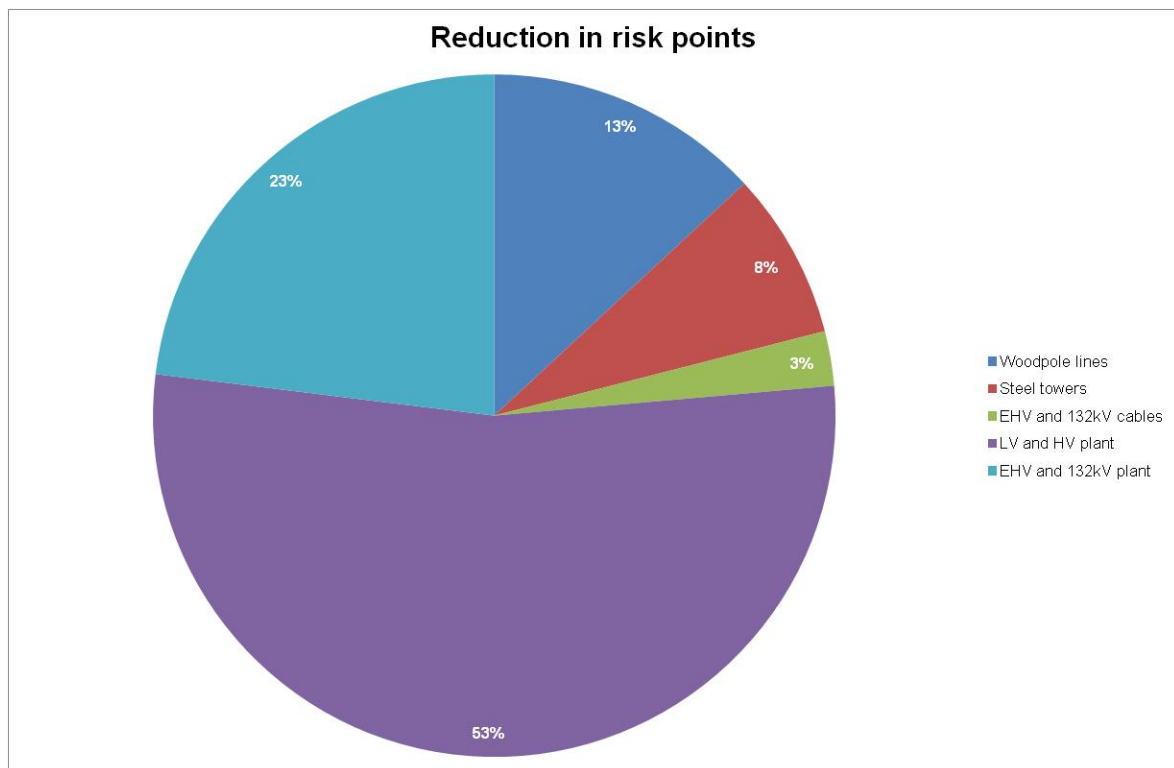
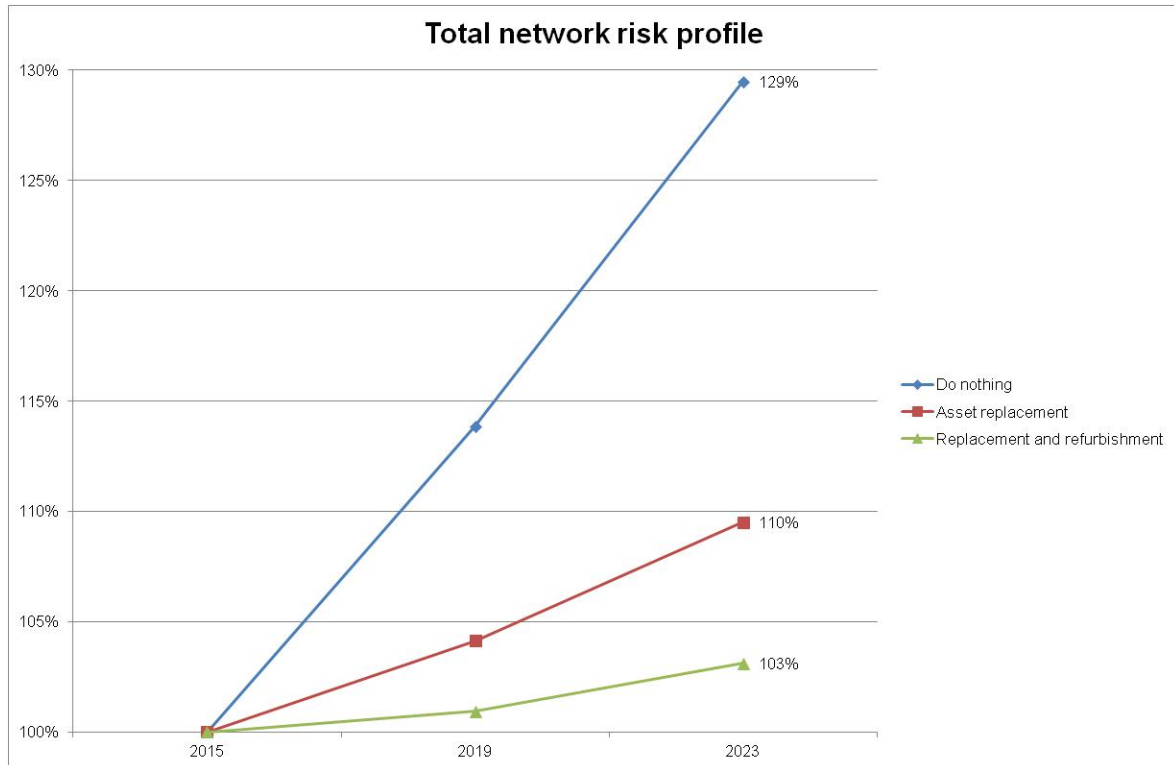
- 4.90 Our asset replacement and refurbishment programme represents the optimum balance of cost and risk. We developed the programme using our established Asset Management policy (see Annex 11), CBRM, deploying innovative solutions and Cost Benefit Analysis of alternative interventions (eg replacement, refurbishment, life extension, extended maintenance, fix-on-fail etc).
- 4.91 The use of refurbishment options, many developed under previous innovation projects (such as the re-generation of transformer oil) enables us in some cases to deliver the majority of the benefits of replacement for a fraction of the cost. Our RIIO-ED1 plan includes £50 million of savings through the use of targeted refurbishment in lieu of replacement.



- 4.92 Our planned interventions by asset group include:
- Woodpole overhead lines – we will replace a substantial proportion of woodpoles during DPCR5 as part of our Electricity Safety Quality and Continuity Regulation (ESQCR) compliance programme. In RIIO-ED1 we are planning to maintain our woodpole asset population with a defect management regime
  - Steel towers – are made up of a number of components and as such are much easier to refurbish than woodpoles. Our management regime for these assets is one of ongoing refurbishment and painting
  - Underground cables – as deterioration rates are not clear and the asset base performs well we are continuing a programme of replacing poor performing sections and lengths of pressurised cable. We are also investing in research to better understand the condition of the lower voltage networks
  - Above ground plant – is easier to assess and predict. Many of the existing assets, mainly transformers and switchgear, will have to be replaced by assets with enhanced capabilities to support the move to a low carbon future
  - Civil works – these are often the parts of our network that customers see most frequently. We have developed a CBRM approach to these assets which is helping us to target priority areas
- 4.93 Our plans for RIIO-ED1 will help us control risk and manage our assets' natural degradation, helping us meet our reliability improvement targets with affordable solutions.
- 4.94 In terms of assessing alternative programmes of investment for the replacement and refurbishment of our network assets, we have examined a 'do nothing' position, which includes no investment in asset replacement or refurbishment. This would result in a 28% increase in total network risk by the end of RIIO-ED1 compared to the end of DPCR5. We have evaluated options for each asset group using our CBRM tools and their forecast effect on managing total network risk through RIIO-ED1 (see Annex 2).

4.95 Our proposed investment programme is a mix of asset replacement and refurbishment informed by the application of Cost Benefit Analysis. If we undertake asset replacement only, the risk of asset failure will increase by 9% over its DPCR5 levels.

4.96 If we implement replacement and refurbishment this risk will only increase by 3%.



4.97 The graph shows the total network risk position for these three profiles. We believe our selected investment programme is the best value option, as the cost to hold the network risk at the same level throughout R10-ED1 would require an additional investment of £53 million in asset replacement which we do not believe would be economically justified for the marginal benefits gained.

- 4.98 For some of our equipment, particularly buried assets such as cables, it is difficult to measure condition accurately. For these assets, we propose to measure our performance using fault rates, ie the number of faults we experience each year divided by the amount of equipment we have. These fault rates can vary significantly year-on-year depending on the weather and other factors, but can show the poorly-performing parts of our network over a period of time.
- 4.99 We propose to report against these measures annually and commit to the following output targets for RIIO-ED1:

	Category	Objective	Measurement	Target	Date
13	Reliability	Maintain overall network health	Overall risk index	Maintain within 3% of 2015 position	2023
14	Reliability	Maintain overall network health	Fault rate	Maintain within 10% of current average	Ongoing

## Network resilience

### As well as maintaining performance under normal operating conditions, we also have to plan for more extreme circumstances.

- 4.100 Recent events such as the flooding incidents in 2005 and 2007, storms of Christmas 2013, and other companies' experience due to extreme 'one-off' situations have led to an increased focus on network resilience, that is the network's ability to withstand these extreme events.
- 4.101 These events can range from the local but significant (eg an attack on a specific strategic site), through regionally significant (eg a major storm or flooding incident) to the regional impacts of a national event (eg the whole system going down as it has in Auckland, New Zealand, India and the east coast of America in recent times).
- 4.102 This winter has seen sustained storm force winds coupled with flooding across our region. Our previous investments in remote control and network automation technologies have delivered huge benefits for our customers during these events. They have enabled us to consistently restore 90% of affected customers within 12 hours and coupled with our customer contact centre improvements have allowed us to deliver consistent excellent service to our customers. Throughout the storms our priority has been to restore our customers and alleviate some of their concerns through proactive compensation payments.
- 4.103 Our resilience plans have not been drawn up in isolation. DNOs have worked together to consider the appropriate response to these threats and collaborated with government departments with responsibility for emergency planning. We have also liaised closely with our regional partners who have an interest in co-ordinated responses to such events.
- 4.104 As a result of these discussions, we plan to do the following during RIIO-ED1:
- External attack risk – we will protect our most significant substation assets against external attack in line with national guidance from the Centre for the Protection of National Infrastructure (CPNI)
  - Black Start risk – we will ensure the network has enough back up capacity to be re-started should the whole system ever go down (known as Black Start). This largely involves ensuring substations have sufficient battery backup and that communications systems still work in the event of a complete mains power failure
  - Flooding risk – we will continue our programme of protecting substations against the risk of flooding. All our major substations identified as being at risk will be protected against a once in 100-year flooding risk (in line with the national specification ETR138) by the end of RIIO-ED1
  - Single dependency risk – we will change the network where it is overly dependent on a single physical structure (eg cable bridge)



4.105 Our network resilience programme is summarised below.

	Category	Objective	Measurement	Target	Date
15	Reliability	Strategic site security	No. sites with protection to approved CPNI standard	2	2018
16	Reliability	Ensure all major substations have appropriate backup capacity	No. substations with 72 hour backup capability	517	2023
17	Reliability	Complete flood protection programme at all major sites	No. higher voltage substations protected against 1/100 year flooding	56	2020
18	Reliability	Re-configure the network where appropriate to ensure redundancy in event of major incident	No. sites completed	5	2018

## Worst Served Customers

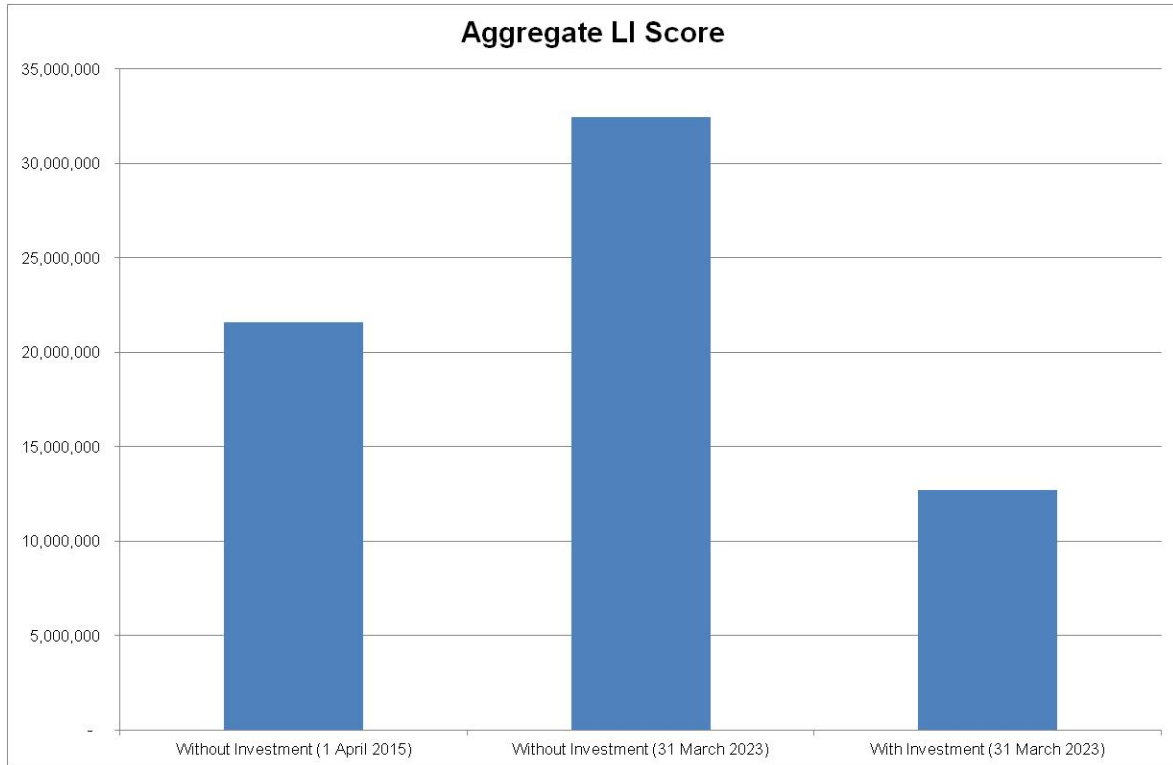
- 4.106 Although our average performance is very good, and continues to improve, we are aware that a number of customers experience relatively poor service.
- 4.107 This is generally due to the customers' locations and the characteristics of the network that serves them. In DPCR5 any customer who has experienced 15 higher voltage (ie HV and above) interruptions in a three-year period with a minimum of three faults per year is defined as a Worst Served Customer and we have a specific allowance to improve their service.
- 4.108 Stakeholder feedback supports greater service equalisation. Our RIIO-ED1 programme will therefore target all customers who have experienced 12 or more higher voltage interruptions in a three year period and ensure that no customers meet this criterion by 2023.
- 4.109 Our proposed Outputs for RIIO-ED1 are:

	Category	Objective	Measurement	Target	Date
19	Reliability	Improve performance for Worst Served Customers	Reduce the number of customers qualifying as worst-served	No WSC over 12 events	2023

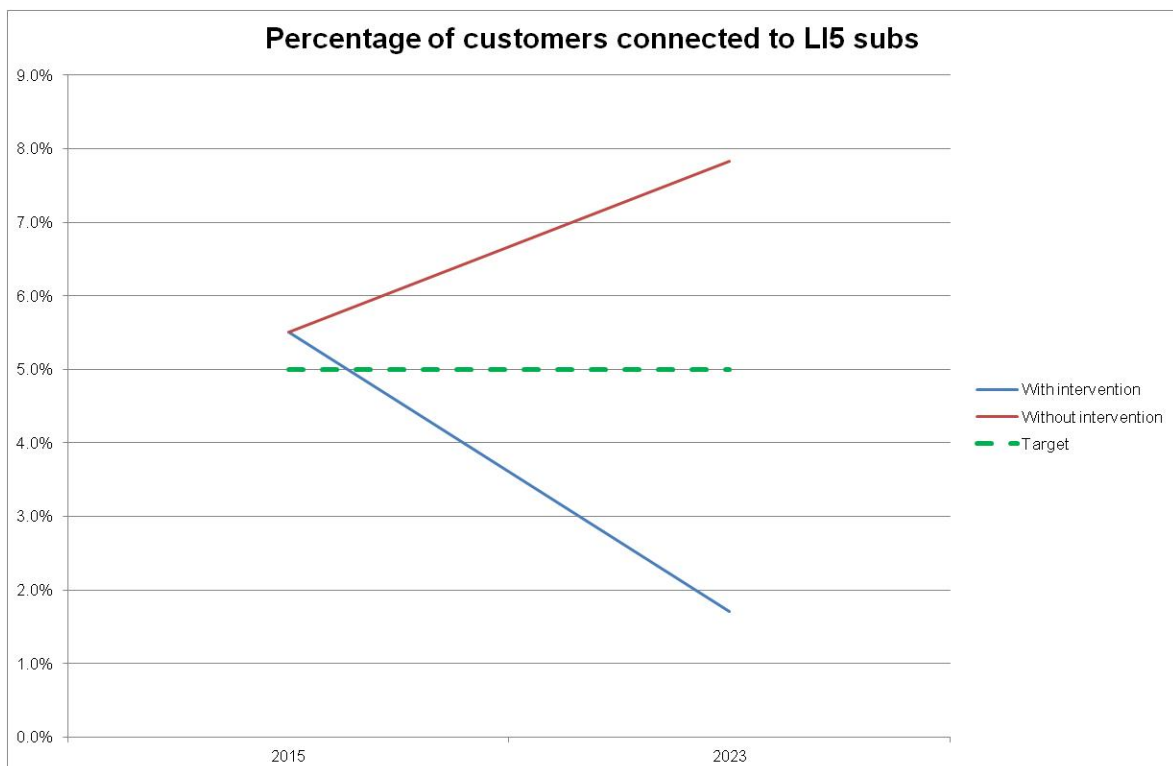
## Asset loading

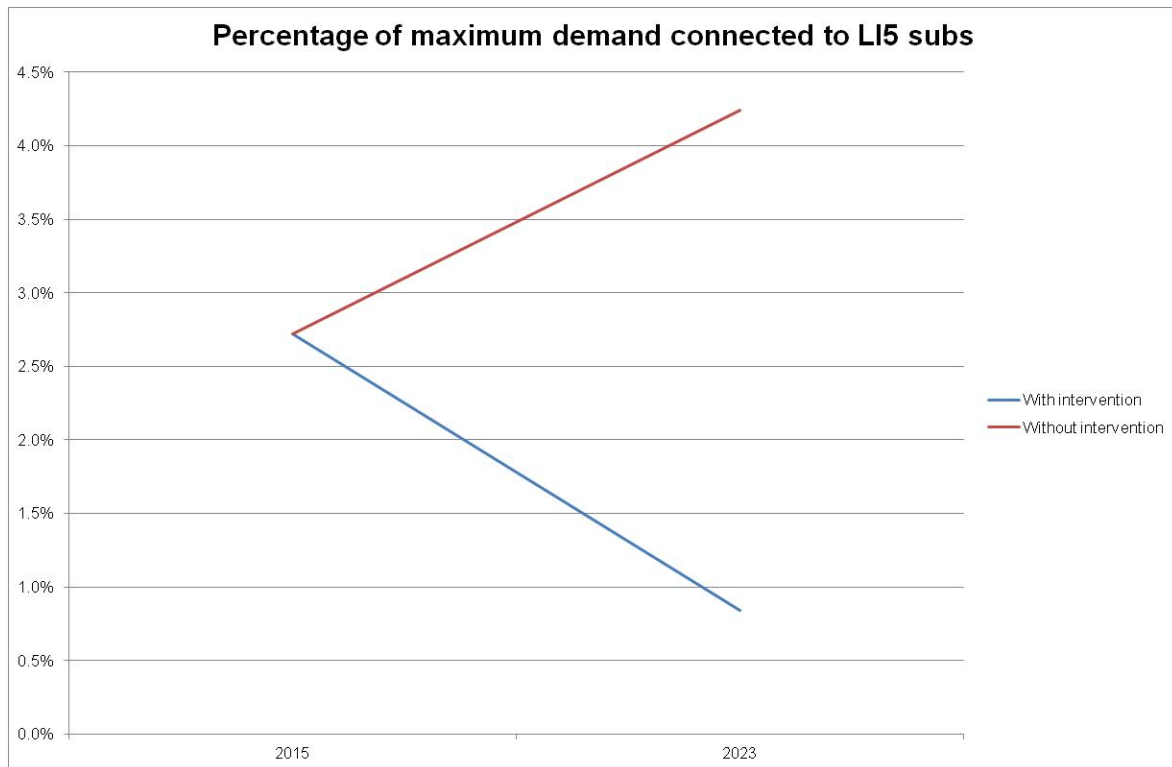
**In addition to managing asset health, we also monitor and predict the impact that future changes in electricity demand will have on the loading of our infrastructure.**

- 4.110 If demand exceeds capacity then:
- In the event of a fault, we will be unable to restore all customers from alternative sources meaning that some customers could be off for an extended period of time
  - Running overloaded assets for extended periods of time presents a safety risk, wears them out more quickly and requires them to be replaced much earlier than would normally be the case
- 4.111 We measure asset loading using a Load Index (LI) on our higher voltage substations. The LI compares the maximum demand on an asset to its capacity. We look to balance utilisation with an appropriate amount of spare capacity to accommodate short-term increases in demand.
- 4.112 Our investment programme is based on reviewing where substations and demand groups have breached or are forecast to breach their capacity limits. The 1 – 5 LI scale gives us a way of articulating this. Each actual or forecast substation at LI = 5 is investigated to determine the most appropriate intervention option and an associated investment planned.
- 4.113 For RIIO-ED1, the total impact of the planned programme can be measured through weighting the substations in terms of customers connected to them.



- 4.114 We can also articulate this in terms of the numbers of customers connected to overloaded substations. We forecast that this will be around 3% at the end of DPCR5. If we make no further investment, this will increase to 9% by 2023, however, we will reduce this to 1% by delivering our planned programme.
- 4.115 The actual needs and requirements of the network depend on future load growth, which is uncertain and difficult to predict. Therefore we do not propose to commit to specific LI targets for this programme as it could incentivise unnecessary investment. In RIIO-ED1, a re-opener mechanism will operate to share the financial risk if the pattern of demand growth and consequent investment requirements are substantially different from forecast.
- 4.116 We will also invest in switchgear on our 6.6kV network to ensure there are no constraints to the adoption of Low Carbon Technologies (LCTs).





4.117 The Outputs we will deliver are:

	Category	Objective	Measurement	Target	Date
20	Reliability	Ensure that the loading risk of the network is appropriately managed	Proportion of customers connected via overloaded substations	<5%	Ongoing
21	Reliability	Ensure that the loading risk of the network is appropriately managed	Install larger capacity transformers and/or additional interconnection at our major substations	20	2023
22	Reliability	Ensure that network constraints to the connection of LCTs are removed	Replace switchgear at locations where its current rating is likely to prevent the extensive connection of LCTs	295	2023

## Investment

4.118 In total, we plan to spend £641.6 million in RIIO-ED1 on replacing and refurbishing our network, which is at about the same level as our DPCR5 expenditure.

In addition, we will spend £3.4 million on improving performance for our Worst Served Customers. We plan to invest £27.0 million to improve network resilience and £108.3 million to increase capacity.

## Customer satisfaction

**Our customers contact us for many different reasons, but most of the time it is because their power has gone off.**

4.119 When this happens, and indeed whenever a customer contacts us, we need to respond quickly and with the level of professionalism and expertise they expect and deserve. The customer satisfaction Output measures how well we do this.

4.120 There are three main parts to the measure:

- Customer satisfaction survey
  - Complaints
  - Stakeholder engagement
- 4.121 The customer satisfaction survey examines how well we handle general and more specific enquiries from our customers. The complaints measure ensures we deal with customer complaints quickly and fairly.
- 4.122 Stakeholder engagement is designed to ensure our processes for engagement with stakeholders and service provision for vulnerable customers are robust, effective and embedded in our business decisions.
- 4.123 Our customer service performance has been good but we want it to be the best. We are committed to putting customers at the heart of our business. We are making substantial investments in technology, people and processes which we are delivering with the same level of urgency and professionalism which has underpinned our network performance improvements. We are confident this will deliver a level of performance which will rival the best, not just in our industry, but across all industries.

## Summary of Output proposals

**Our customer service targets for RIIO-ED1 will put us as the forefront of service in our industry.**

	Category	Objective	Measurement	Target	Date
23	Customer service	Broad measure of Customer Service	Composite score	85%	2015 onwards
24	Customer service	Complaints	Resolved within one day	90%	2015 onwards
25			Resolved within five days	100%	2015 onwards
26	Customer service	Stakeholder engagement	Ofgem's evaluation of annual stakeholder engagement submission	Pass part 1 submission	2015 onwards
27	Customer service	Guaranteed Standards	Due compensation	100%	2015 onwards
28	Customer service	Storm compensation	Payment at 18 hours		Now onwards

## Stakeholder feedback

**Our customers' first priority is to be provided with accurate and timely information about the status of a supply interruption, its cause and the expected restoration time.**

- 4.124 When asked which method of contact customers prefer, the clear favourite remains the telephone. We are, though, beginning to see increasing support for other channels including email, web chat, text message and social media. When customers do contact us, they want us to take ownership of their issues and be able to provide resolution without bouncing them between different parts of our business.

## Track record

**Historically, our industry has been asset-focussed. Our network of cables, poles, towers and transformers is the backbone of the service we provide to those who depend upon us.**

- 4.125 We understand though, that needs, attitudes and priorities change over time and we need to make sure our business keeps up with these changes. As a result, we are taking positive steps to switch our focus from assets to customers and put customers at the heart of our business.

- 4.126 During 2013, our customer satisfaction performance has gradually improved and been more consistent which shows that our improvement plans are working. Detailed analysis of the customer satisfaction data shows a key area of focus to be unplanned messaging and minor connections. Plans are in place to alter the layout of the messaging service, enhance the information providing including tips to help during a power outage and reporting to highlight customers who have made repeat contact. For connections, the main focus areas are to provide a consistent approach for communication through the whole process and to reduce the time to connect.



- 4.127 At the beginning of 2012 we created a dedicated customer directorate, which is responsible for all aspects of customer service and care. This has allowed us to consolidate all customer-facing parts of our business in one, cohesive organisation.
- 4.128 At the end of 2012 we launched our flagship Customer Contact Centre, the result of a £1 million investment of our funds. This is the primary hub for all customer contact activities and provides the foundation for our one stop shop objective, where any team member can resolve a customer issue on first contact, irrespective of the nature of the enquiry.
- 4.129 Technology is not the only answer, though. Our customers want to deal with people and we are taking steps to make sure we recruit and retain the right people. We do not recruit call handlers. We recruit and train customer service agents; people who have a career interest in customer service rather than simply working in a call centre; people who can connect with our customers, understand their needs and deliver the right level of support and resolution.
- 4.130 To support our customer service agents in delivering the highest standard of service, we will ensure they receive refresher training every year in all elements of their roles from their understanding of the electricity distribution network to the basics of customer service. This training is altered following outputs of learning from our call quality monitoring processes. Our current performance for call politeness of our staff from the Ofgem customer satisfaction survey is 94%.
- 4.131 We are committed to customer service excellence and are working with the Institute of Customer Service (ICS) to help us develop our plans. We employ their testing methodologies in our recruitment process; they facilitate benchmarking visits to allow us to see best practice in action and we meet with them quarterly to review and develop our customer service plan. Our ambition is to achieve both ICS TrainingMark and ServiceMark certification by March 2015.
- 4.132 Our biggest challenge is providing accurate and timely information about our works; what we are doing, why we are doing it and when it will be repaired. During the remainder of DPCR5 we will implement enhanced communications between our field teams, the Customer Contact Centre and our customers to allow us to do this.

- 4.133 Our training programmes for our contact centre agents will ensure our customers have a positive first contact and enable us to identify special individual requests that can be addressed appropriately. The new technology will ensure contact centre agents will have access to more real time information to be able to tailor the services to our customers and personalise their experience. We are also working hard to introduce other communication channels (online, app and mobile) to provide a wider range of ways for our customers to interact with us.
- 4.134 We intend to ensure all engagement with our customers is easy and in the style the customer prefers, we are working hard to enhance all channels of communication to introduce web chat, additional online functionality, increase in social media and face to face alternatives. As part of the customer relationship management system functionality all communication updates for social media, text messaging, telephony, web chat and on line will come from one central feed to ensure a consistent message and allow customers to move between communication channels.
- 4.135 We are committed to offering customers accessible information through a number of self-service channels. We have recently launched an online fault map and will supplement this with an online planned outages schedule in the near future.
- 4.136 We have implemented an enhanced planned outage notification process, where we supplement the normal notice card with a text message six days before the outage. We send a reminder text two days before the outage and on the day of the outage we send further texts with expected restoration time and confirmation of supply restoration.
- 4.137 There are times when our response does not meet our customers' expectations and this results in a complaint. Since the beginning of 2012 we have improved our one-day complaint resolution performance by over 100%. We will continue to make further positive progress for the remainder of DPCR5. As a result of the service improvement we have implemented, by the end of December 2013 our year to date performance for one day complaint resolution was 58% which is a 23% increase and sets us on course for meeting the challenging targets we have set ourselves in the RIIO-ED1 period.
- 4.138 Other initiatives we have implemented and will build upon include the automatic payment of Guaranteed Standards of Performance (GSoP) payments to all customers on our Priority Services Register, proactive advertising of GSoP entitlements to our entire customer base and voluntary payment of the GSoP equivalent of £25 to all customers when we do not provide them with seven days' notice of a Planned Supply Interruption.
- 4.139 As a result, we have set ourselves a target of 85% performance against the Broad Measure of Customer Service by the end of DPCR5. We are committed to maintaining this as a minimum level of performance in RIIO-ED1.

## Output proposals

### Broad Measure of Customer Service - customer satisfaction survey

**We understand that when customers need to contact us, they want us to deal with their enquiries quickly, efficiently and politely.**

- 4.140 We have a number of channels through which customers can contact us however, for the time being, telephone contact remains our biggest channel. In RIIO-ED1:
- We will answer all calls within two rings
  - Our abandoned call rate will not exceed 1%
  - Where customers want to talk to one of our customer service agents, we will ensure they can do this quickly and easily through various communication channels
  - We will provide accurate and up-to-date information and will resolve 90% of all enquiries on first contact
  - We will achieve a call quality score of at least 90%
  - We will provide a restoration time for all outages; updating our High Volume Call Answering (HVCA) systems, web sites and social media in real time and proactively provide call-backs, text or email updates
  - We will integrate our online fault map and planned outage map with our CRM to send proactive notification to customers via text and email

## Complaints

### In RIIO-ED1 we will resolve 100% of complaints first time.

- 4.141 We will resolve 90% of complaints within one day and the remaining 10% within five days.
- 4.142 We understand that sometimes customers will not be satisfied with our solution or explanation and they may seek independent advice to help resolve their complaint. We will actively encourage them to do this and make them aware of the Ombudsman process. We are confident that we will have done everything possible to avoid an Ombudsman referral however when these do happen, our target is to have 100% of all decisions found in our favour.

## Stakeholder engagement

### We were one of only three DNO groups to pass both stages of Ofgem's stakeholder engagement incentive trial in 2012. In the 2013 Stakeholder Engagement Incentive Scheme, we built on our 2012 success by significantly improving our score and ranking – we were awarded 7.9 out of 10 (second place out of the six DNO groups) and considerably closing the gap on the lead DNO.

- 4.143 This gives us confidence that our process is robust, comprehensive and delivering the results we need to shape our business and reflect our stakeholders' priorities. We are not complacent, though, and we continue to strengthen our stakeholder activities. We are working with AccountAbility to ensure we adopt and deploy best practice (see Annex 1).
- 4.144 Our description of our 2012-13 stakeholder engagement programme for the reporting year ended 31 March 2013 has been independently assured by Deloitte LLP in accordance with the International Standard on Assurance Engagement 3000 (ISAE 3000 – a standard that has been designed by the International Auditing And Standards Board (IAASB) to assure non-financial data).
- 4.145 Our approach is detailed in Sub-annex A1: Stakeholder engagement strategy (from entry to Ofgem's 2013 Stakeholder Engagement incentive scheme) of Annex 1: Stakeholder methodology and responses. In this we describe how we have developed our stakeholder engagement programme applying the three principles of the AccountAbility's AA1000 Principles Standard, inclusivity, materiality and responsiveness.

## Guaranteed Standards

### Guaranteed Standards payments are there to ensure that on those rare occasions where our performance is unsatisfactory, our customers are compensated for their inconvenience.

- 4.146 Overall, we deliver a success rate of more than 99% against Guaranteed Standards performance. When our performance falls below our expectations we will proactively contact customers who may be due compensation payments shortly after the event which has given rise to the entitlement. We recognise, though, that our information is not always perfect and we supplement our proactive efforts with comprehensive information on our website. We will continue to refine and develop our website and our other communications channels to ensure the most up to date information is available to our customers.
- 4.147 Of course not all customers have internet access so we will supplement our online activities with other forms of communication including working with energy suppliers to distribute Guaranteed Standards information to customers and proactively making them aware of Guaranteed Standards entitlements when they contact us by phone or mail.
- 4.148 Payments to customers on the Priority Services Register will be made automatically, as our processes will ensure we are aware of when, and for how long, they have been interrupted. As smart meters are rolled out during RIIO-ED1, we will integrate this data with our CRM technology to expand our capability to make automatic payments to all entitled customers.

## Storm compensation

- 4.149 Following the storms over Christmas 2013, we asked our Engaged Panel what they thought appropriate storm compensation payments would be. The majority of our engaged consumers told us that being paid £54 after 18 hours without power due to a storm is about right. We agree, and despite there being an exemption available for severe storms that allows DNOs to only compensate customers after 48 hours, we have not used this exemption during recent severe weather events in December 2013 and February 2014.
- 4.150 We were planning to continue with this approach, and consulted our External Stakeholder Panel to ask if we should set a policy of never using the exemption. It is our intent not to use the exemption, however our stakeholder panel were keen for us to maintain an element of discretion.
- 4.151 We considered the approach of some DNOs to simply double payments, however that still involves a trigger point at 48 hours. Our customers tell us that they want us to keep the trigger point for payments at 18 hours, meaning that we will pay more customers more compensation.
- 4.152 We know that Ofgem will reduce the threshold for paying compensation after loss of supply in normal weather conditions to 12 hours on 1 April 2015. We considered whether we could avoid using exemptions even after the standard had been tightened. By maintaining the discretion advised by our stakeholder panel we believe we will be able to do this in some circumstances. However, the costs associated with paying compensation to all customers without power for 12 or more hours during the recent exceptional run of bad weather and hurricane force winds would have been prohibitively expensive. In similar circumstances we are likely to pay compensation to all customers without power for 18 or more hours.

## Investment

- 4.153 We believe our customer service costs are among the most efficient in the industry and our plans for RII0-ED1 are based on continuous performance improvement combined with continued cost efficiency.
- 4.154 We have not included any allowances for our CRM technology, as the investment will be provided from our funds. The average annual cost of delivering our customer service promises is £3.4 million.

## Connections

**Connecting customers efficiently and economically is an important part of our business and a crucial service for our customers. It is a service that facilitates economic growth and allows us to support delivery of our stakeholder priorities.**

- 4.155 A requirement to connect to our network comes from three main sources:
- New demand connections – such as supply to a newly built house, housing site or commercial premise
  - Distributed generation connections – such as wind farms
  - Unmetered connections – such as local authority street lights
- 4.156 The connections Output is designed to ensure we offer a fair, efficient and competitive service to all connections customers. Our proposals will ensure that we:
- Provide an excellent level of service when responding to customer requests and enquiries, not just at the beginning of the process but all the way through to completion
  - Deliver our connections service quickly and efficiently against a set of targets predetermined by Ofgem
  - Develop comprehensive measures to engage with and understand the needs of major connections customers and continue our leading approach in supporting competition in connections



## Summary of Output proposals

Our connections targets for RIIO-ED1 are among the most ambitious in the industry.

	Category	Objective	Measurement	Target	Date
29	Connections	Engagement	Innovation on connections engagement		2015 onwards
30	Connections	Connection quotation	Single domestic quotations	Six working days	2015 onwards
31			Up to four domestic connections	Ten working days	
32			All other connections	25 working days	
33	Connections	Connection completion	Single domestic quotations	30 working days	2015 onwards
34			Up to four domestic connections	40 working days	
35			All other connections (excluding EHV)	50 working days (from when the customer is ready)	
36	Connections	Connection	Guaranteed Standards performance	100%	2015 onwards

## Stakeholder feedback

Our stakeholders, particularly domestic customers, have told us that they find the connections process complex and difficult to understand.

4.157 They want us to:

- Reduce connections costs, as these sometimes mean the difference between projects going ahead or not
- Speed up the process from the first call for a quote to the completion of the network connection
- Make it easier to connect new low carbon technology (including distributed generation) to our network

4.158 Our stakeholder workshops and Engaged Customer Panel informed us that local government and regional businesses were keen for us to ensure our long term plans could facilitate growth in connections demand where needed. We have included connections forecasts and economic growth as key determinants of future network capacity in our business plan.

4.159 We have held seminars with Independent Connections Providers (ICPs) and distributed generation customers to update them on improvements we have made or are planning and will continue this engagement with other major connections customers.

**We believe that competition is in our customers' interests as it widens choice, drives improvements in service and reduces costs. We make sure our customers in the North West benefit from competition and have been at the forefront of developing a competitive market for connections in the electricity industry.**

4.160 The proportion of our market where there is demonstrable and active competition is a key indicator of our success in this area.

4.161 Our customers can choose who makes their connection for them. We are proud to have been the first DNO to pass competition tests in 2011, when we passed three relevant market segments. We have passed a further three segments in 2013, making more of our markets open to competition than any other DNO. These six segments represent about 80% of the connections market in the North West.

- 4.162 We have submitted further competition test notices in respect of the remaining three relevant market segments and we believe we have provided sufficient evidence for these to be passed also. We believe that this sector leadership is due to our continuous effort to create a truly competitive market for electricity connections customers in the North West.
- 4.163 We already offer an innovative Connect and Manage service, which allows generation customers to connect to our network where capacity may be marginal but the case for reinforcement has not been made (ie connect the customer, manage the generation and then decide whether reinforcement is required). This accelerates the connections process for our customers and reduces costs by mitigating the need for reinforcement. We have changed our default connection for solar panels and wind turbines to Connect and Manage in response to engagement with Stockport Council, among others.
- 4.164 We have also introduced an online facility for providing estimates and managing complaints and enquiries. Recognising that the information needs of customers vary considerably, we have developed a portfolio of approaches to help customers seeking connections.
- 4.165 We have:
- Developed 'heat maps' to quickly inform distributed generation customers which parts of our network have spare capacity and which have some constraints
  - Initiated flexible approaches to reviewing connections options for customers so they do not have to complete multiple applications, particularly for small scale jobs
  - Facilitated drop in sessions so that customers can have access to our planning and design people prior to making a formal application
  - Provided our records and network data free of charge and are working to make this accessible online for our customers
  - Implemented a revised process for delivering minor connections to reduce handover times and speed up the overall time to connect
  - Introduced 'three-day working' where possible which enables us to excavate on day one, joint on day two and reinstate on day three which reduces the amount of notice we need to give the local authority to undertake the works.
- 4.166 We have seen increasing levels of customer satisfaction from connections customers through 2013-14 and have achieved an average level of 78.3% in the year to the end of January 2014 compared to 75.7% for the equivalent period in the previous year.

## Output proposals

In preparing for RIIO-ED1 we have undertaken a thorough review of our processes and targeted specific initiatives to drive performance improvements (see Annex 12).

- 4.167 Specifically we are:
- Implementing lean working practices to eliminate non value adding activities
  - Identifying opportunities to reduce timescales from quote to connection
  - Implementing an on-line quotation system allowing our customers to track progress of their application
  - Providing web-based customer access to our connection services
  - Progressing a fully competitive market for connections

## Connections targets

- 4.168 Our connections Outputs are customer focussed and designed to ensure we offer a fair, competitive and affordable service. We have reviewed Ofgem's recent proposals on targets in this area and the proposals of other companies. As a consequence we have set ourselves a range of stretching targets which beat Ofgem's proposals and would represent industry-leading performance. These targets have been endorsed by our external stakeholder panel.

- 4.169 Our performance in meeting the Guaranteed Standards of Performance for connections during the current price control period has been a consistent 99.9%. Our target is to have no failures.
- 4.170 We will deliver a minimum of 85% customer satisfaction. This will be underpinned by our wider strategy for improving customer service and tailored as required to meet the specific needs of these customers.
- 4.171 We will provide a quotation after receipt of the customer's initial application on average within:
- Single domestic connections – six working days
  - Up to four domestic connections – ten working days
  - All other connections – 25 working days
- 4.172 We will complete the connection after agreeing terms with the customer on average within:
- Single domestic connections – 30 working days
  - Up to four domestic connections – 40 working days
  - All other connections (excluding EHV) – 50 working days (from when the customer is ready)
- 4.173 We recognise that customer requirements change and we will review our targets throughout the RIIO-ED1 period to reflect the results of our stakeholder engagement.

### **Incentive on connections engagement (major connections customers)**

- 4.174 We will develop and implement a comprehensive engagement strategy modelled on our approach to stakeholder engagement. This will ensure we understand the needs of our major connections customers across the different market segments and develop policies, processes and products which satisfy them. We will do this for market segments even where there is no regulatory requirement to do so.

### **Investment**

- 4.175 The cost and provision of our connections service is recovered from charges to connecting customers.

## **Environmental impact**

**We are aware of the impacts we can have and are determined to make a positive contribution to the environmental impact of our assets and our operations.**

- 4.176 We are dedicated to achieving the highest standards of environmental performance, not only by minimising the risk of adverse impacts such as pollution, but through investment in outputs that deliver a positive impact, such as undergrounding of overhead cables. We are determined to play our part in enabling the transition to a low carbon future. This influences both our asset investment plans and our investment in measures to reduce our own carbon footprint.
- 4.177 We work to an environment strategy that commenced in DPCR5 and will continue throughout RIIO-ED1. Our strategy is underpinned by our environmental management system, which is certified to the ISO 14001 standard.
- 4.178 We demonstrate environmental leadership at every level of our company. A Board committee sets our environment strategy, objectives and targets and reviews and monitors performance. Our strategy is based on;
- A clear understanding and visibility throughout the business of environmental issues and impacts
  - Targeted investment and expenditure in environmental control measures
  - Strong corporate governance and performance management
  - Continuous learning and improvement
  - A systematic approach to environmental management

## Our Output proposals for RIIO-ED1

	Category	Objective	Measurement	Target	Date
37	Environment	Reduce losses	Annual GWh saved	11	2021
38	Environment	Reduce carbon footprint	tCO <sub>2</sub> e	10% reduction on 2015	2020
39	Environment	Reduce oil lost from cables	Litres lost	<30,000 litres/annum	2023
40	Environment	Undergrounding overhead lines	km removed	80km	2023

### Stakeholder feedback

#### Our national stakeholders expect us to play a full role in supporting the transition to a low carbon future.

- 4.179 This includes investing to support distributed generation connections, electric vehicles, heat pumps and micro generation (domestic wind turbines and photovoltaic panels). Locally, our customers have expressed a general unwillingness to pay for environmental issues, demonstrating particular reluctance to fund reinforcement for electric vehicles and micro generation unless there is a clear and demonstrable need.
- 4.180 We forecast the connection of 1,161MW of DG capacity in RIIO-ED1, equivalent to over a quarter of our peak demand. As these developments are undertaken by third parties we have not committed to this as a specific Output, however we will undertake a range of activities to support this development.
- 4.181 Environmental non-governmental organisations (NGOs), particularly those involved in undergrounding for visual amenity schemes, are happy with our environmental commitment and are keen to see such schemes continue.
- 4.182 We developed our plan using the stakeholder prioritisation and decision-making process described in Section 3.

### Climate Change Adaptation

#### We have worked with other electricity network companies to identify changes we may need to make to prepare for the effects of a changing climate and implement the work programmes to introduce them.

- 4.183 A changing climate is likely to have a range of impacts on our equipment. In June 2011 we submitted our first report to the Department of Environment, Food and Rural Affairs (DEFRA) under the Climate Change Adaptation Reporting Power. This summarised the work undertaken to date and in particular how our network may be affected.
- 4.184 The biggest potential impact is expected to be the increased risk of flooding to our substations. We are already taking steps to install new, and improve existing, flood protection to major substations located on floodplains. Initial studies suggest that other climate change impacts will be of a smaller scale and any necessary modifications to our network will be built into our long-term maintenance, asset replacement and reinforcement programmes.

### Output proposals

#### Loss reduction

#### We will reduce losses by 11GWh annually through replacing high-loss transformers

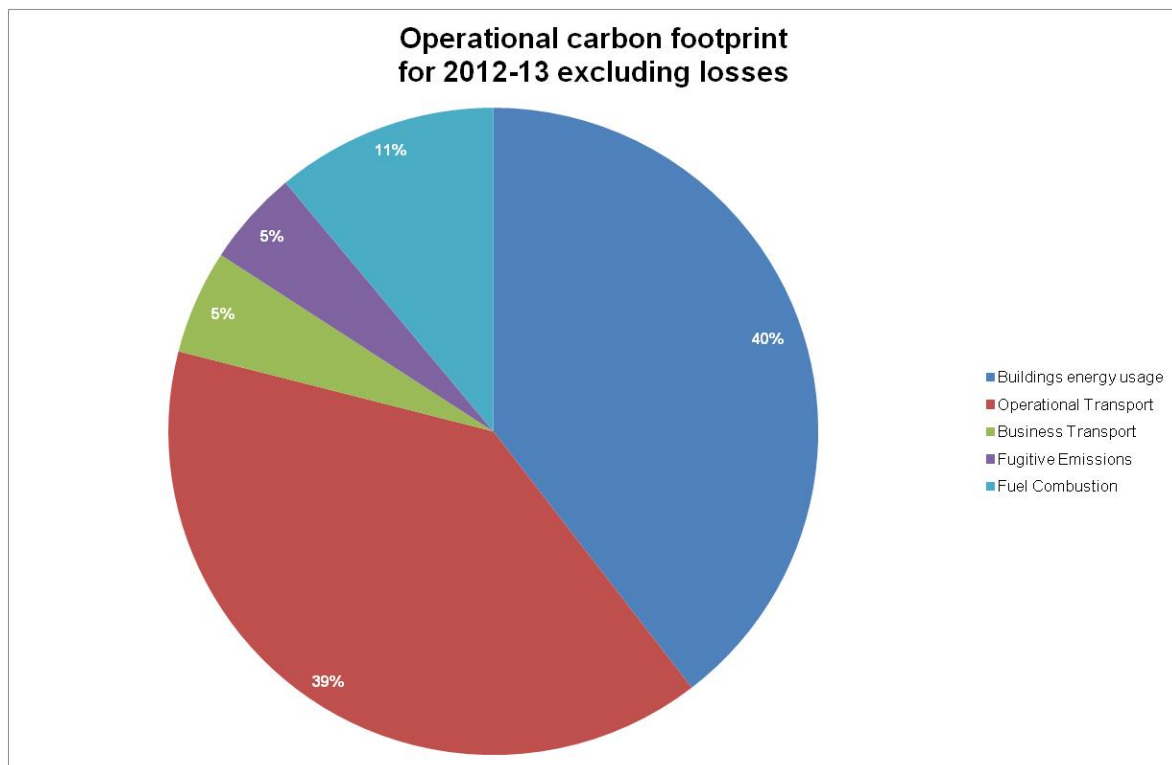
- 4.185 We lose some of the electricity we distribute as it flows through our network. Whilst we can't eliminate these losses, we can take steps to minimise them.

- 4.186 This generally means installing more efficient assets on our network, particularly low loss transformers and cables. In RIIO-ED1 we will invest around £10 million in fitting low loss transformers, in addition to those replaced in other programmes. This is supported by a robust cost benefit analysis and is detailed in our Expenditure section. When complete, this will reduce losses by 11 GWh annually, saving the equivalent of 5,709 tonnes of carbon dioxide each year<sup>1</sup>.
- 4.187 We will take additional technical steps including using the largest size cable we can justify, fitting capacitor banks to our high and low voltage circuits and fitting harmonic suppression equipment. Further details of our approach and the rationale behind it can be found in Annex 19 – Losses strategy.

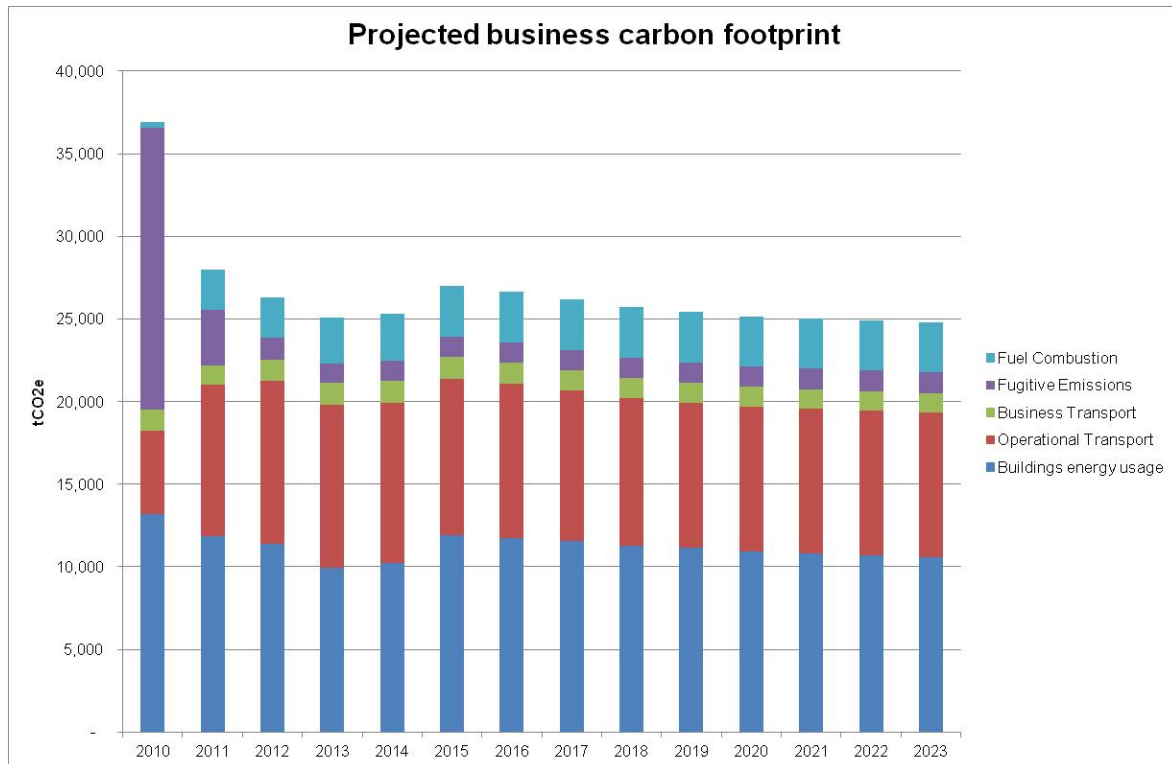
## Business carbon footprint

### We will reduce our 2015 Business Carbon Footprint by 10% by 2020.

- 4.188 This will be delivered on the back of a 35% reduction from 2010 to 2015, due in large part to the one-off retirement of early prototype SF<sub>6</sub> switchgear units at one of our major sites in 2011.
- 4.189 Our carbon footprint is made up of a number of contributing factors as illustrated below;



<sup>1</sup> Losses are not included in our reported Business Carbon Footprint as they are driven by consumption patterns of electricity which we can't control. We can however reduce the contribution of our equipment to overall losses and these planned reductions are equivalent to a quarter of our Business Carbon Footprint.



4.190 Our strategy to achieve further reductions is based on actions for each area as outlined below:

### Buildings energy usage

4.191 To reduce the energy usage across the Electricity North West estate we will continue to realise the benefits of the energy efficiency measures implemented in DPCR5. In addition, we will also install smart meters across the estate of non-operational properties with regular reviews of energy usage. Where beneficial, we will integrate energy efficiency initiatives within construction work across the estate and will continue to encourage energy reduction behaviours among staff based in all of our occupied premises.

### Operational transport

4.192 To reduce the fuel usage associated with our operations we will:

- Monitor fuel use on a monthly basis against a target of an ongoing volume reduction of 2% per year to 2019
- Utilise our logistics contractor's vehicles for the efficient delivery of plant and materials
- Remove unproductive grab wagons and other larger vehicles from the fleet
- Closely scrutinise fuel consumption to identify and remedy inefficiencies in the fleet
- Incorporate electric and hybrid vehicles into our fleet

### Business transport

4.193 To reduce business transport carbon emissions usage we will continue to encourage reductions in travel among the workforce through the promotion of technologies such as teleconferencing and webinars.

### Fugitive emissions

4.194 To minimise the effect on greenhouse gas emissions we will:

- Refurbish property to eliminate the need for air conditioning units and replace older units with newer units with lower emissions
- Continue to install modern SF<sub>6</sub> equipment with lower leakage rates

- Improve leakage detection systems and repair procedures

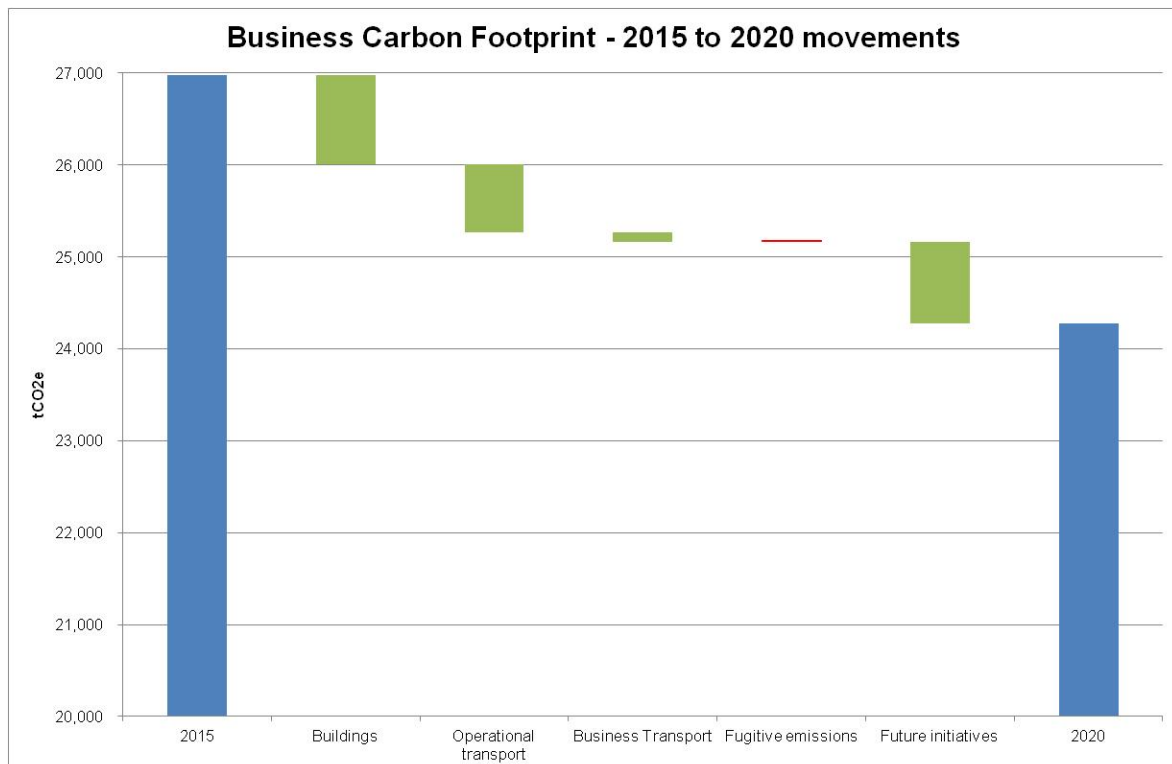
4.195 On SF<sub>6</sub> we will reduce our leakage rate by over 20% from a rate of 0.38% (as a proportion of the mass in service) in 2013 to 0.3% by 2023.

## Fuel combustion

4.196 Fuel use by generators is anticipated to remain static in RIIO-ED1 due to the increased deployment of generators to minimise planned interruptions although this will be off-set to some degree by the use of more efficient generators. We will continue in the period to closely monitor usage and promote the use of energy efficient units with minimal use times.

4.197 The combined effect of the above initiatives to reduce our carbon footprint is currently estimated to give a 7% reduction from 2015 to 2020. In order to achieve our 10% reduction target, we will seek to identify further initiatives in these areas.

4.198 The chart below shows our reductions in business carbon footprint from 2015 to 2020.



## Oil and gas leakage

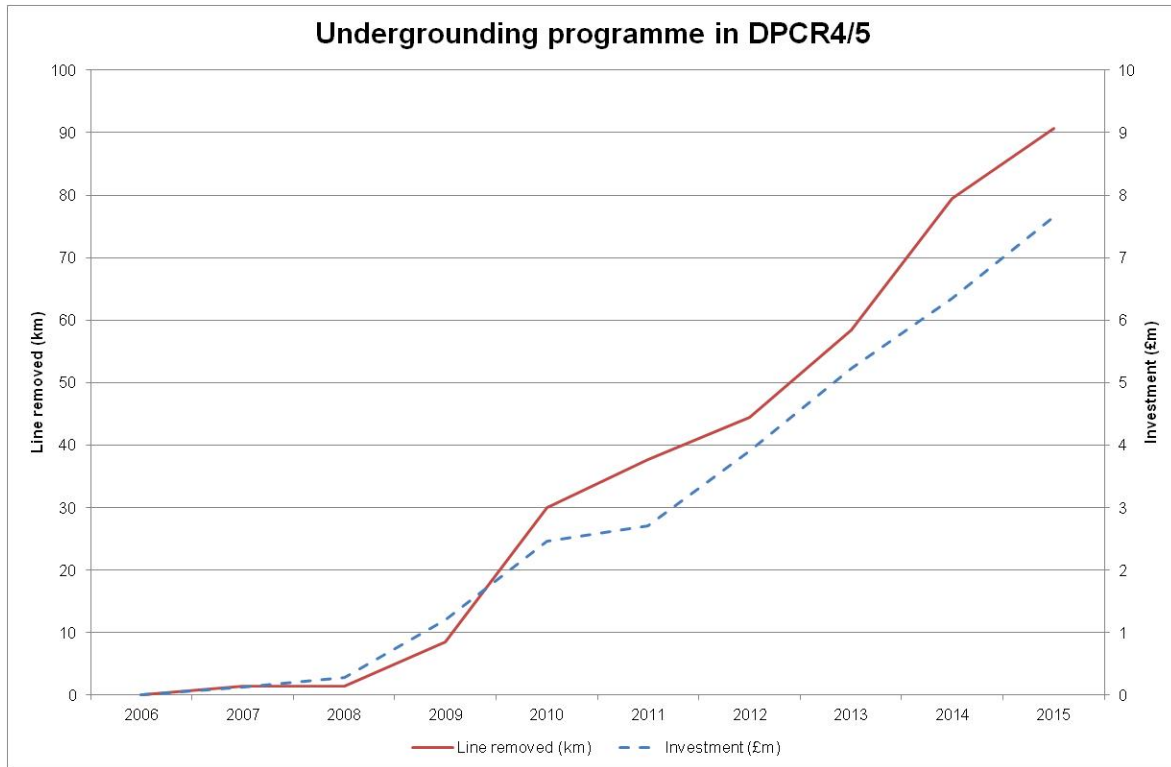
### We will take additional steps to reduce leakage from oil and gas insulated transformers and cables.

- 4.199 We will continue to replace early prototype SF<sub>6</sub> switchgear units and replace oil-filled cables with alternative cabling. We will also continue our programmes of substation bunding, which is a further measure against oil contamination, and land remediation.
- 4.200 We will not be able to eliminate the need for oil insulation completely but we can minimise the amount we use. We have developed an innovative recycling solution using our Central Oil Reprocessing Depot (CORD). This allows us to clean and reuse the insulating oil used in our transformers. Oil reprocessing not only saves around £1 million each year it also reduces the amount of oil that would have previously gone for disposal in landfill by around one million litres per annum.
- 4.201 Our RIIO-ED1 cable replacement programme will replace 57km of oil filled cable, delivering reductions of 131,650 litres of oil in service and 3,900 litres of oil lost per year by 2023, a reduction of 13% compared to 2015.

## Undergrounding of overhead lines

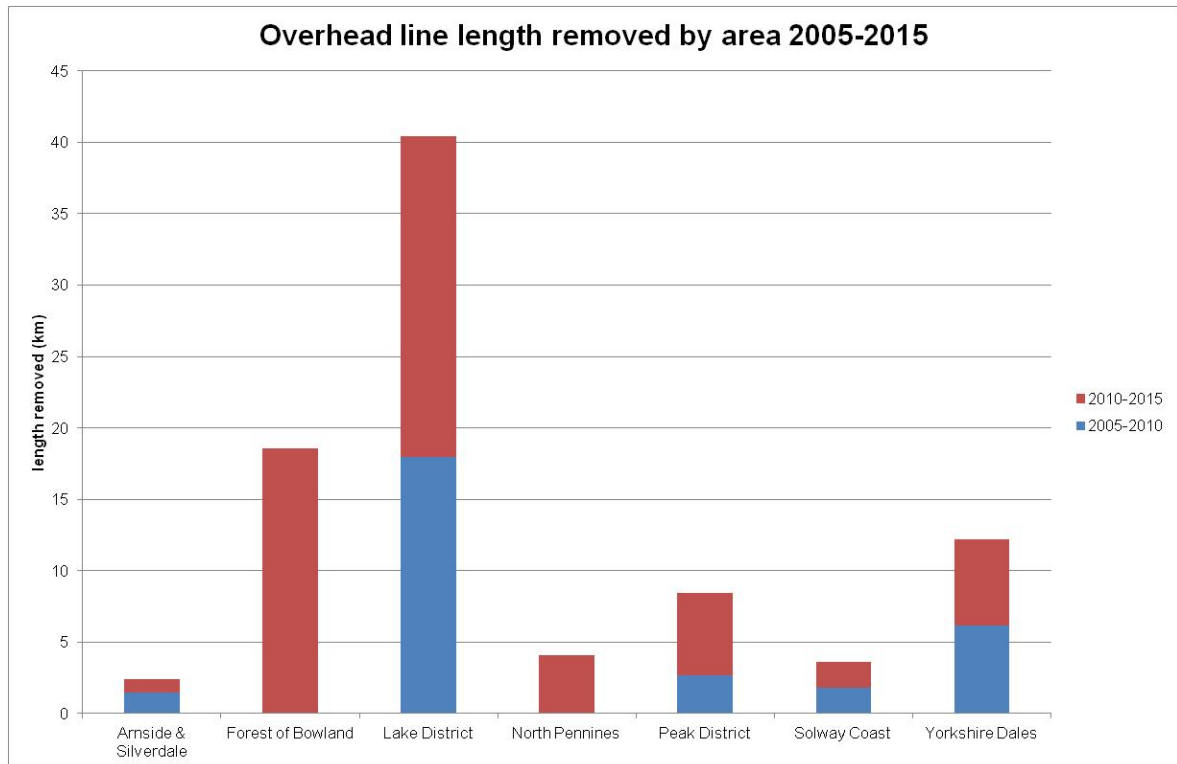
Stakeholders see this as a valuable programme and we plan to continue it, investing £1 million per annum throughout RIIO-ED1 to underground approximately 80km of overhead line.

- 4.202 We worked with our stakeholders to establish a programme of undergrounding for visual amenity in National Parks and Areas of Outstanding Natural Beauty in 2005. This programme has successfully removed lines from a number of prominent sites and become a model of public-private partnership working.
- 4.203 Since 2005, we have removed over 58km of overhead line and plan to achieve 90km by 2015, at a total estimated cost of just under £9 million.



- 4.204 We plan the programme in full consultation with the relevant authorities and other stakeholders to ensure that we underground where they see the highest amenity benefit. The detailed selection of areas for undergrounding will continue to be guided by our policy and regional partner priorities. Our planned investment will allow us to underground approximately 80km of existing overhead lines by 2023, although the exact amount will depend on the nature of the sites proposed by our regional partners.
- 4.205 The extent of overhead line undergrounded or planned to be removed in the 2005-2015 period in each of the seven eligible Designated Areas within our region is illustrated below. These levels reflect the extent of overhead line in each area and we expect these proportions to remain broadly unchanged in RIIO-ED1.





## Investment

- 4.206 Overall, we plan to spend £10million on installing low loss transformers, £9 million on undergrounding overhead lines and £6 million on mitigating other environmental effects in the RIIO-ED1 period.
- 4.207 Our programme to progressively replace oil-filled cables to reduce oil leakage will cost a further £23 million in RIIO-ED1.