Customer Engagement Group

At Western Power Distribution

Onboarding Introduction Pack

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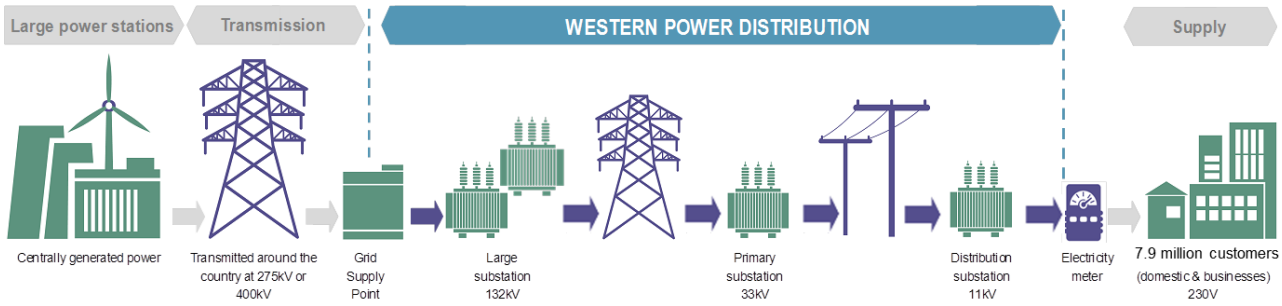
Who we are and what we do

Western Power Distribution (WPD) is an electricity Distribution Network Operator (DNO). We are responsible for the network of engineering assets that allows the distribution of electricity to customers' premises from the National Grid.

Our distribution network consists of transformers (which convert electricity from one voltage to another), underground cables and overhead lines (which carry electricity across long distances), switches (to turn on, off or to alter the routing of electricity) and service connections (which take the electricity into customers' premises).

This network sits between what was traditionally known as the National Grid transmission network and customers.



We do not buy or sell electricity, or send any bills to electricity customers. Traditionally, what we do is simple and comprises four key tasks:

- we operate our network assets effectively to 'keep the lights on' for our customers;
- we maintain our assets so that they are in a condition to remain reliable;
- we fix our assets if they get damaged or if they are faulty;
- we upgrade the existing networks or build new ones to provide additional electricity supplies or capacity to our customers.

History

1999	South Western Electricity divests supply business and renamed WPD
2000	WPD acquired South Wales distribution business
2011	WPD acquired Central Networks comprising two distribution businesses in the Midlands

WESTERN POWER DISTRIBUTION

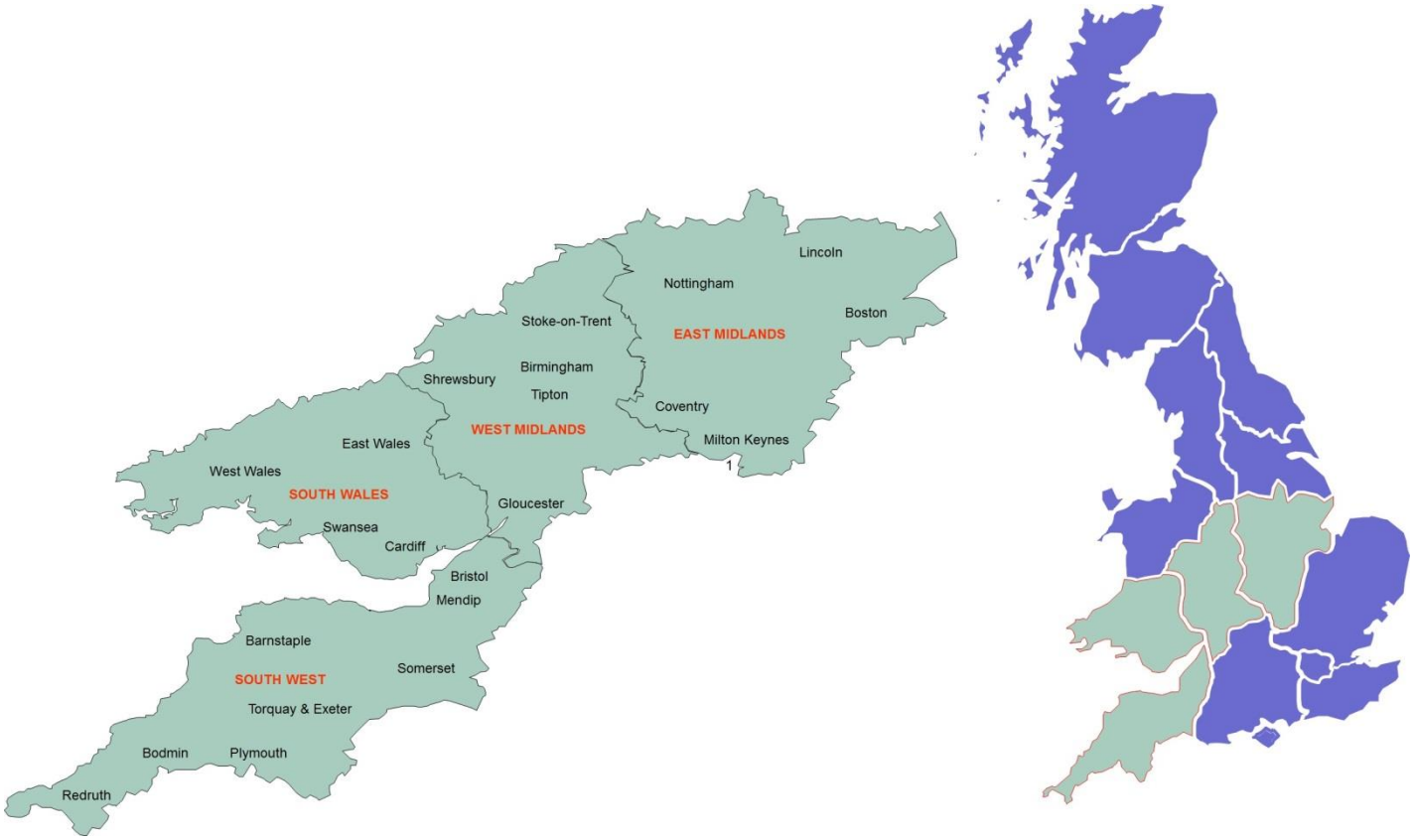
Serving the Midlands, South West and Wales

WPD	South West	South Wales	East Midlands	West Midlands	Combined
Employees	-	-	-	-	6500
Service Area	14,400 km²	11,800 km²	16,000 km²	13,300 km²	55,500 km²
Customers (m)	1.6	1.1	2.6	2.5	7.9
Network (km)	51,000	36,000	74,000	65,000	225,000
Overhead network (%)	55%	50%	29%	36%	40%
Transformers	53,000	40,000	44,000	50,000	186,000

Our geography

The network we operate covers a geographic area of some 55,500 km^2 serving 7.9 million customers.

Our network is the largest in the UK, covering every kind of geography and demography from densely populated residential areas to widely dispersed rural communities. We operate from the Lincolnshire coast in the East Midlands, through to Gloucestershire in the West Midlands, to Monmouthshire and Pembrokeshire in South Wales, and down into the South West to the counties of Somerset, Devon and Cornwall.



Our teams are based in local offices where they take responsibility for local issues, deliver local work programmes and respond quickly to local power cuts.

Our company structure

We employ over 6,500 staff and operate a flat organisational structure with locally based, insourced teams. This flat structure only has three layers between our field staff and the Board and gives responsibility to front line staff to deliver work programmes and the absence of multiple layers of management minimises costs.

One of the big advantages of the geographical team structure is scalability. More staff can be added to an individual team where increases in future work may cluster together, or additional teams can be created where there are more widespread increases in workload. These changes can be achieved quickly.

The structure also enables WPD to refocus effort and resources very quickly to those areas that require it either on a short term or permanent basis.

WPD's resourcing strategy to use in-sourced labour also ensures that knowledge is retained, it allows greater flexibility to redeploy staff where needed and builds a strong culture of staff motivated to deliver business objectives.

WPD has the ability to train staff for all key operational roles within its own training schools based predominantly in two locations: Taunton in Somerset and Tipton in the West Midlands. With 32 skills trainers, 27 classrooms, 12 workshops and 5 training fields we are self-sufficient for the training of new starters, for the training of refresher courses for existing staff and for the 'upskilling' of existing staff in more advanced skills or operations.

The development of in-house apprentice schemes, training facilities, technical knowledge, operational capability and bespoke systems increases self-sufficiency. This allows the business to respond quickly to new requirements and obligations and have better control over succession planning.

Our culture

At WPD we try to get whatever we are delivering right first time. To encourage this, we stress that all employees should:

- take personal responsibility;
- follow the problem through until the end;
- work with others to find a solution;
- keep the customer informed;
- follow our Golden Rule – treat customers the way you would like to be treated.

Our simple Golden Rule, 'Treat customers the way you would like to be treated', has become second nature to all WPD staff. We empower staff and expect them to take ownership of any problems, concerns or complaints that customers may bring to us and to ensure that these are followed through with the customer being kept regularly informed. We do not transfer customers unnecessarily or 'bounce' them from one department to another. This simple philosophy has enabled WPD to be recognised as the top performer in respect of customer satisfaction.

We continue to look for and make use of innovative techniques and encourage creativity so that we carry out all of our work in an effective and efficient manner. This helps to ensure value for money for our customers, stakeholders and the right return for our shareholders.

Optional further reading, information and resources

Live power cut information map: https://powercuts.westernpower.co.uk

Who we are video: http://youtu.be/1RZnelYmxZ4

Safety

Safety is fundamental to everything we do. WPD has committed to a range of outputs to improve overall safety performance. These aim to minimise the safety risks to staff, contractors and members of the public. These safety outputs are in four themes.

- Compliance with health and safety law.
- Reducing accidents.
- Substation security and theft of equipment.
- Educating the public

Our safety performance is good, but we know that we can always improve. We produce a new safety action plan every year based on accident reports, near misses, and industry-wide incidents and initiatives.

Some highlights from our 2017/2018 action plan are set out below.

- We arranged new behavioural-safety training for staff. The 'Five Traps' workshops explore five common scenarios that lead to accidents, and challenge staff to consider how their actions contribute to accidents.
- We introduced a new safety conference for apprentices – covering a range of safety topics, including learning from past incidents and an introduction to behavioural safety.
- We launched an independent safety climate assessment, which will be carried out by an external consultant. During the first stage, a random selection of employees have been sent surveys asking them to identify areas where safety performance is strong and any areas where improvements could be made.
- We have introduced a range of actions to reduce both emissions from vehicles, and the number of accidents involving vehicles. This has included a trial of dashboard cameras for fleet vehicles.
- We carried out a poster campaign designed to remind staff of the most common causes of accidents – slips, trips and falls.

Education

Children and other members of the public may not always be aware of the potential dangers from the electricity distribution network. This lack of awareness can lead to them becoming exposed to more risk during certain play, leisure or work activities.

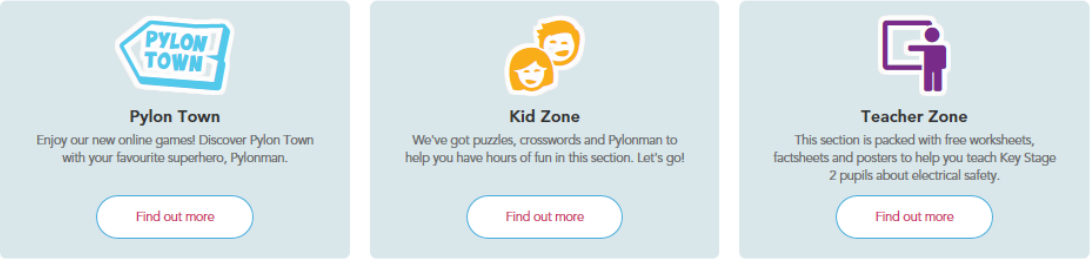
<u>Children</u>

For many years we have developed and provided safety information to children. We carry out educational sessions in schools, join forces with other professional services to deliver multi-agency safety education at 'Crucial Crew' and 'Lifeskills' events and lead sessions at five permanent centres, with the aim of teaching children about safety, especially electrical safety.

School visits provide an opportunity to make children aware of the dangers, helping them to recognise overhead lines and substations and explaining what they should avoid doing near to electricity distribution equipment.

School visits are provided by dedicated community education safety advisers as part of WPD's corporate communications activity.

These visits supplement the resources available on WPD's Power Discovery Zone – an interactive, curriculum-linked website for schools that relates to electricity and safety. It was launched in September 2012 and provides resources for teachers and educational games for children. The site contains over 35 curriculum-based resources, enabling teachers to easily plan lessons that incorporate WPD's important safety messages.



Other members of the public

We also attend a range of events such as county shows, which allows us to interact with visitors of all ages, raising awareness of the importance of behaving safely around electrical equipment. People engaged in work or taking part in recreational activities near network assets are usually focussed on what they are doing and can be unaware of the potential hazards around them. WPD produces a range of information leaflets describing the dangers from overhead lines, electricity substations and underground cables and have committed to distributing 500,000 safety leaflets over the course of RIIO-ED1.

We use a variety of methods of communication and have reached over 1.6 million people to date. This includes using social media to target groups who may be more at risk of coming into contact with electricity as a result of their leisure activities and providing safety information to landowners who have our equipment on their property.

Using innovation to promote electrical safety

We are currently trialling a new tool to promote electrical safety to schoolchildren. In 2017 we started developing a short virtual-reality film experience, which places viewers in a scenario where two teenagers choose to enter a substation site to retrieve a lost drone. The viewer is immersed in events as though they were a third member of the group, facing questions and comments from the characters. The film demonstrates the very real dangers involved in our sites, and challenges children to understand the potentially life-threatening consequences of their actions.

We have been gathering feedback from children and parents attending events such as the Royal Welsh and Bath and West shows. The film is hard-hitting but parents have supported our view that it is extremely important to make clear the dangers associated with our equipment. The current film is aimed at children over 11. In the future we intend to develop an animated film aimed at 7 to 10 year olds. We will use the films to support our existing school-education programmes, making young people aware of electrical safety by using a multi-media approach.

Optional further reading, information and resources

Health and Safety Policy: https://www.westernpower.co.uk/downloads/1846

Examples of our public safety advice leaflets can be found at: https://westernpower.co.uk/customers-and-community/health-safety/public-safety-advice

Our safety performance 2017/18: https://westernpower.co.uk/customers-and-community/performance-reporting-riio-ed1/safety

Working near the electricity network report: https://www.westernpower.co.uk/downloads/4945

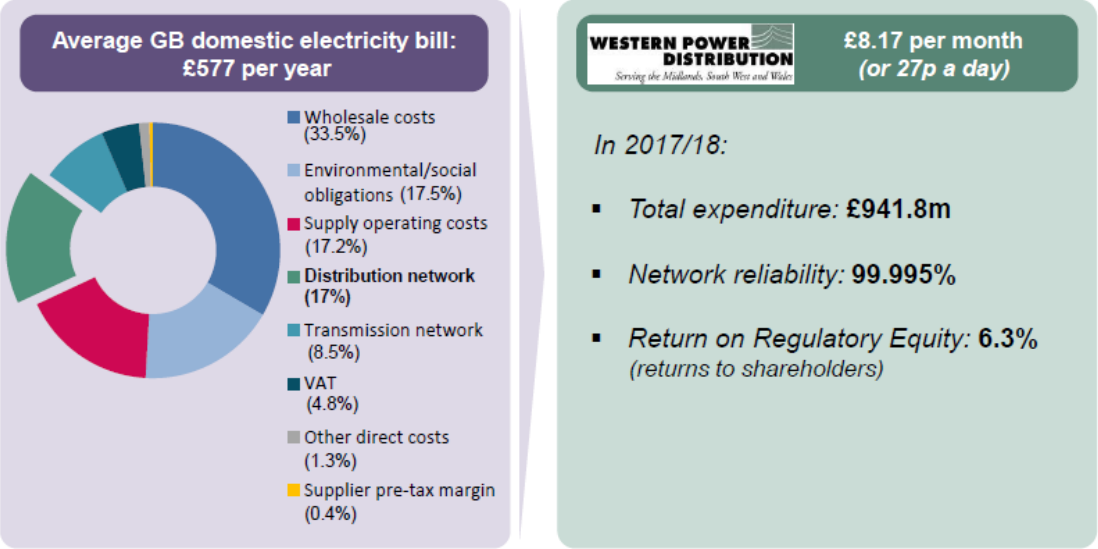
A Regulated Business

Although we are facilitating competition in some of the services we provide (such as new connections) we are a natural monopoly within the geographic area we serve. We are therefore regulated by the Office of Gas and Electricity Markets (Ofgem).

Ofgem issues licences to DNOs that set out the obligations and responsibilities of the companies and also determines the revenues they are allowed to earn each year. WPD has four licences covering the four geographic areas of the West Midlands, East Midlands, South Wales and the South West.

Periodically, Ofgem scrutinises the Business Plans of DNOs through a process known as a Distribution Price Control Review. This determines how much DNOs are allowed to charge in total per year for network investment, operating costs and allowed returns.

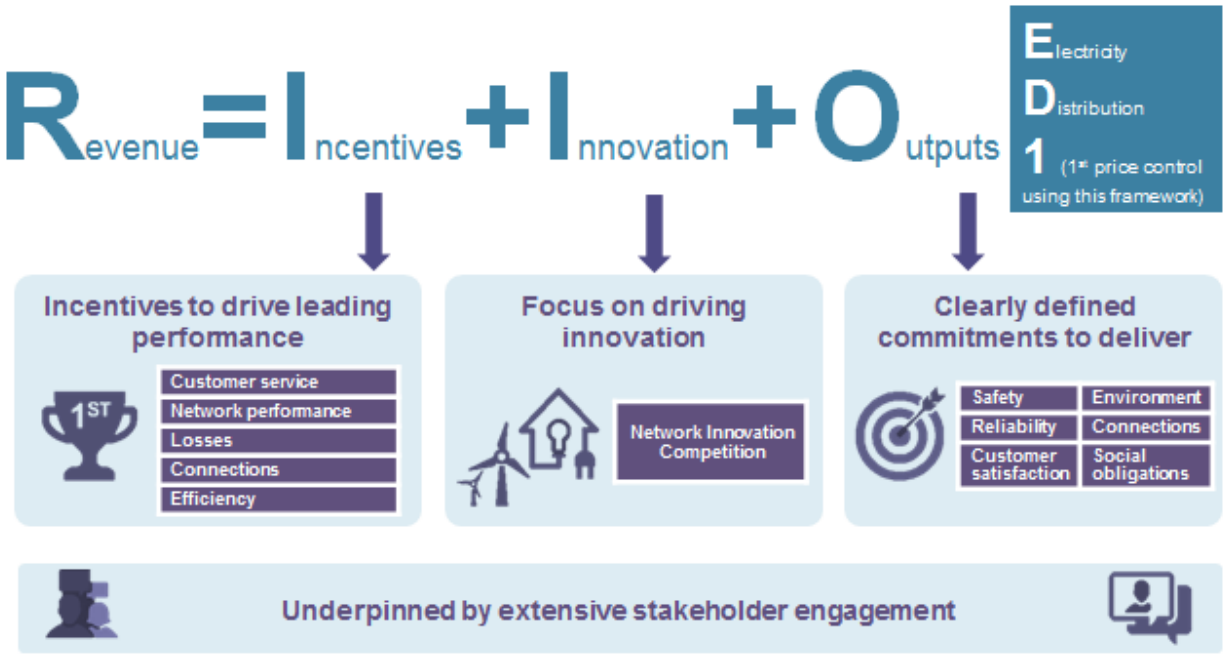
This charge, known as DUoS (distribution use of system), is payable by the electricity suppliers who, in turn, incorporate it into electricity charges to customers. Our costs account for around 17% of the make-up of an average domestic customer's bill.



For 27p a day, in 2017/18 WPD customers received:

- Highest customer satisfaction in the industry – 7th consecutive year
- Number one for stakeholder engagement – 7th consecutive year
- Better than target network performance – on average customers have a power cut once in 2 years, for 26 minutes
- Better than target for connection time to quote and time to connect – small schemes get a quote in 8 days and connected in 42 days
- Transition to a Distribution System Operator underway
- Supported 15,229 fuel poor customers to save over £5.4 million a year

RIIO



RIIO is Ofgem's performance-based framework to set the price controls.

RIIO-ED1 is the price control for electricity distribution.

The RIIO-ED1 price control set the outputs that the 14 electricity Distribution Network Operators (DNOs) need to deliver for their consumers and the associated revenues they are allowed to collect for the eight-year period from 1 April 2015 to 31 March 2023.

RIIO-ED1 is the first electricity distribution price control to reflect the new RIIO model for network regulation. RIIO is designed to drive real benefits for consumers. It provides companies with strong incentives to step up and meet the challenges of delivering a low carbon, sustainable energy sector at value for money for existing and future consumers.

In February 2014 Ofgem published their decision to settle WPD's price control early (termed 'fast-tracking') – the only DNO to achieve this. WPD achieved 'green' in every assessment category. The plan was deemed sufficiently high quality, efficient and well justified (following extensive stakeholder engagement) that it was accepted in full, first time around.

Incentives

Incentives are a fundamental element of the RIIO regulatory framework. They are used to drive innovation and the delivery of outputs, rewarding DNOs that do well but also applying penalties for poor service. Incentive measures and monitoring of appropriate outputs is an important part of ensuring that the services that customers receive are delivered at an appropriate cost.

<u>Interruptions Incentive Scheme (IIS)</u>

Keeping the lights on is consistently at the top of stakeholders requirements. IIS rewards outperformance (and penalises underperformance) against targets for the number of interruptions and the duration of those interruptions. Since its introduction, IIS has resulted in improvements to network performance and WPD's

resource management, business processes and network investment have enabled WPD to outperform the targets (please see the tables on page 11).

Broad Measure of Customer Satisfaction (BMCS)

The BMCS quantifies customer views on the service level we provide and rewards outperformance. There are three distinct components to this incentive:

- Customer satisfaction
- How complaints are resolved
- Effectiveness of stakeholder engagement

For example, in relation to customer satisfaction, over 22,000 WPD customers are independently surveyed each year. This includes the following services:

- Interruptions (planned and unplanned)
- Connections (quotes and completed work)
- General enquiries

Questions cover all aspects of the service received including staff politeness, communication, speed etc., and building up to a 'killer' question of overall satisfaction. Customers give their score out of ten. Performance of DNO's is compared with a maximum reward target of 8.9/10 overall. Scores of below 8.2/10 received a penalty.

Excellent customer service is a key WPD business objective and this incentive provides the opportunity for WPD to be rewarded for providing industry leading customer service. WPD is the best performing DNO group under BMCS.

Network Innovation Competition (NIC) /Network Innovation Allowance (NIA)

As part of RIIO-ED1, Ofgem has introduced the Network Innovation Competition (NIC) and Network Innovation Allowance (NIA). The NIC is an annual opportunity for electricity network companies to compete for funding for the development and demonstration of new technologies, operating and commercial arrangements. The NIA is a set allowance each RIIO network licensee receives as part of their price control allowance to fund smaller technical, commercial, or operational projects directly related to the network.

Guaranteed Standards of Performance (GSOPs)

There are a range of GSOPs covering the provision of connections, supply interruptions and response to problems such as voltage complaints. They represent minimum levels of service and therefore where failures occur, customers are entitled to standard payments, set by Ofgem. WPD targets zero failures against the standards, and is the best performing DNO group under this incentive. However, should a failure occur during RIIO-ED1, WPD will voluntarily double the value of each payment. For example, if a customer is off supply for more than 12 hours, WPD must provide an automatic payment of £54 (which is voluntarily doubled by WPD to £108 following stakeholder feedback).

Time to Connect Incentive

Connection customers suggest that the time taken for a new connection is an important aspect of good customer service for them. The time to connect incentive combines the time to provide a quotation and, once the offer is accepted, the time to complete the works. Improving the overall time taken, will provide customers with a better service.

Incentive on Connections Engagement (ICE)

Major connection customers have a requirement for more detailed interactions with DNOs. ICE will support the development of engagement strategies that will improve the information provided and service delivered. Delivery against these strategies will be assessed by Ofgem and where engagement is inadequate a penalty will be applied.

RIIO-ED1 Outputs

We will deliver 76 outputs by 2023 in 6 main areas:

- Safety – reducing risk to our staff and the general public.
- Reliability – improving the performance of our network.
- Environment – reducing our effect on the environment and supporting the Government's plans for a low carbon energy future.
- Connections – providing an efficient service for customers connecting to the network.
- Customer satisfaction – maintaining excellent customer service.
- Social obligations – supporting customers in vulnerable situations.

Our detailed Business Plan Commitments Report contains more information on our performance against each of the 76 commitments in our business plan and new areas that stakeholders express an interest in. You can read the report at the following link: www.westernpower.co.uk/downloads/14581

RIIO Accounts (financials)

WPD is mindful of the external focus on our business and considers openness and transparency a key requirement. We want to make it clear for customers what we cost to them, what service levels they receive for this and what levels of profit we return to shareholders.

We have published RIIO accounts for the second time on a voluntary basis. In its report, WPD is aiming to provide information which will enable readers to assess its stewardship of the DNOs' resources and the appropriateness of returns.

The report can be found at: https://www.westernpower.co.uk/downloads/13241

Optional further reading, information and resources

2018 Annual Reports and Financial Statements:
South West: https://www.westernpower.co.uk/downloads/320
South Wales: https://www.westernpower.co.uk/downloads/334
East Midlands: https://www.westernpower.co.uk/downloads/367
West Midlands: https://www.westernpower.co.uk/downloads/325

Distribution charging overview: https://www.westernpower.co.uk/downloads/643

Distribution Charging Update: We held a webinar on the 12th March 2018 to discuss distribution charging. To download the slides click here https://www.westernpower.co.uk/downloads/649

To download the audio click here https://www.westernpower.co.uk/downloads/940

DUoS Charging for LV and HV Metered Connections: https://www.westernpower.co.uk/downloads/6787

Connections charging statements: https://www.westernpower.co.uk/connections-landing/legal-permissions-performance-standards-charging-methodology/connections-charging-statements

WPD Business Plan Overview**:** https://www.westernpower.co.uk/downloads/440

WPD RIIO-ED1 Business Plan Commitments Report (Year 3)**:**
https://www.westernpower.co.uk/downloads/14581

Performance Snapshot - Business Plan Commitments Report 2017/18:
https://www.westernpower.co.uk/downloads/14105

Ofgem guide to RIIO-ED1: https://www.ofgem.gov.uk/publications-and-updates/guide-riio-ed1-electricity-distribution-price-control

WPD RIIO-ED1 Performance Reporting: https://www.westernpower.co.uk/customers-and-community/performance-reporting-riio-ed1

Network Performance

We have challenging targets to reduce the number of power cuts that our customers experience and the length of time that these power cuts last. To make sure that our network performs effectively, we regularly inspect and maintain equipment, replacing any that is in a poor condition. We reinforce the network to make sure that it can cope with the demands placed on it. We also clear away trees to prevent them from coming into contact with equipment. Automation is used on the network to redirect supplies and we reduce the time that power cuts last by promoting a culture which prioritises restoring customers' electricity supplies quickly. All of these actions mean that our performance continues to be better than the targets agreed with Ofgem.

Measuring network performance

We measure our network performance in three ways:

- Security of supply is the number of supply interruptions recorded as a percentage of customers connected in a year. We call this 'Customer Interruptions' (CI);
- Availability of supply is the average number of minutes that a customer has their supply interrupted. We call this 'Customer Minutes Lost' (CML);
- Restoration of supply is the percentage of customers restored in one hour if their electricity supply is interrupted due to a fault.

The energy regulator, Ofgem, has set us tough new IIS (Interruptions Incentives Scheme) targets, the results of which (for 2017/18) can be seen below:

Security of Supply*	**WPD South West (CI)**	**WPD South Wales (CI)**	**WPD East Midlands (CI)**	**WPD West Midlands (CI)**
Ofgem Target	58.5 CI	53.3 CI	51.4 CI	85.4 CI
IIS Performance	62.0 CI	48.5 CI	46.5 CI	55.7 CI
WPD Performance	5.9% under target	8.9% better than target	9.6% better than target	34.8% better than target

Availability of Supply*	**WPD South West (CML)**	**WPD South Wales (CML)**	**WPD East Midlands (CML)**	**WPD West Midlands (CML)**
Ofgem Target	43.5 CML	33.4 CML	38.8 CML	53.0 CML
IIS Performance	42.8 CML	28.5 CML	23.5 CML	31.04 CML
WPD Performance	1.6% better than target	14.8% better than target	39.4% better than target	41.4% better than target

**The performance figures shown in the Business Plan Commitments Report will differ slightly from the above. The above figures are based on unplanned interruptions (excluding exceptional events) and 50% of planned work – as per the methodology of Ofgem's IIS incentive. In the Business Plan Commitments Report, figures are shown for unplanned work only.*

Restoration of supply - Target 60

In addition to the performance reported to Ofgem, WPD has its own initiative called Target 60. Target 60 is designed to ensure that as many customers as possible have their electricity supply restored within one hour of a HV fault.

For 2017/18 our performance against this initiative was:

- WPD South West = 85.6% of customers restored within one hour
- WPD South Wales = 87.2% of customers restored within one hour
- WPD East Midlands = 88.9% of customers restored within one hour
- WPD West Midlands = 90.7% of customers restored within one hour

When there is a fault on the HV network, engineers in our control centres are automatically notified and restore most electricity supplies immediately using remotely controlled switches to redirect the route of electricity.

In many cases, computer-controlled sequence switching works straight away to restore large blocks of customers. We will also send staff to the site of the fault to carry out local switching. Our priority is to get our teams to the source of the problem and restore customers' electricity supplies.

Clear management focus on restoring electricity supplies quickly has led to industry-leading performance in this area of our work.

Restoring power during a storm

During Storm Emma and 'the Beast from the East', we dealt with high winds and heavy snowfall. Spanning six days in February and early March 2018, the two events brought logistical challenges to teams across the areas we cover. For the first time in five years the Met Office issued a red weather warning for the South West and South Wales. In the South West, the weather caused 1,151 incidents during the six days. All 115,885 affected customers had their power restored within 48 hours (in line with Ofgem's standard for category-two storms). In the other three network areas the number of incidents ranged from 500 to 800, with all customers having their power restored within 12 hours. Our thorough preparation made sure that extra resources were available in the worst affected areas. Our control centre, contact centres and local depots all had extra staff on duty to make sure we could continue to provide excellent service in challenging circumstances.

Losses

We're committed to driving down customer costs and carbon emissions and we're doing as much as possible to reduce losses.

The importance of reducing electrical losses on distribution networks is growing. As electricity usage increases, the control of losses to an economic level will become a key feature of network operation. It has only been in the RIIO-ED1 period that Distribution Network Operator's (DNO's) have started to publically document a Losses Strategy.

The energy lost in distribution creates a financial cost which is fronted by the customer. DNO's are obliged, as part of their license, to reduce losses on their networks as far as reasonably practicable. Reducing the energy lost will reduce carbon emissions, which impacts climate change.

Reducing losses effectively increases the network capacity. This is crucial with energy consumption likely to increase sharply in the near future, as a result of The Carbon Plan and the uptake of new technologies such as

electric vehicles and heat pumps. By reducing losses wherever possible, it could reduce the need for costly network reinforcement projects.

Western Power Distribution is committed to driving down customer costs and carbon emissions. Hence the company are doing as much as possible to reduce losses, although a certain economic level of losses are required in the normal running of the network.

Over the past circa eight years large amounts of distributed generation have been added to the existing WPD electricity network which adds to the issues faced by DNO's.

The total quantity of electricity supplied in the United Kingdom during 2015 was 338TWh, but only 311TWh was consumed by customers. The difference between these two values is known as the electrical loss. Ofgem quote a societal cost of £42.48/MWh for losses.

Distribution network losses can be broadly defined as the difference between the electrical energy entering the distribution network, from base generation or embedded generators either upstream / same level / downstream networks, and the electrical energy exiting the distribution network, for consumption purposes and properly accounted for it, in percentage terms for a particular period.

Raw levels of losses in kWh are of significance for any DNO, but a direct comparison with other DNO losses levels is more difficult: indeed, DNO losses depend not only on the network structure, but also on network energy flows.

Losses rates make a comparison between loss and energy flow levels. Consequently, they provide reference values that may be rather comparable between networks, even if they are detailed by voltage level for relevant benchmarks.

WPD's website (https://www.westernpower.co.uk/our-network/losses) provides an introduction to the concept of losses; an explanation of what can be done to reduce them and a comprehensive list of what Western Power Distribution are doing to limit them. More detail on all of these topics can be found in our most recent losses strategy.

Business carbon footprint

Business Carbon Footprint (BCF) is a calculation that brings together information on activities that affect the environment. Each year we compare our performance against a benchmark year of 2012/2013, and we have committed to reducing our BCF by 5% during RIIO-ED1. In 2017/2018 we have achieved a 13% (like-for-like) reduction in our business carbon footprint compared with 2012/2013.

This performance means we are beating the targets we set for RIIO-ED1. However, certain aspects of our BCF will continue to be a challenge. For example, during 2017/2018 we have seen increases in leaks of SF6 gas (a greenhouse gas that is used in some types of switchgear). The targets that we set ourselves for reducing the leakage rate of SF6 have been missed during 2017/2018 for our South West and South Wales licence areas.

We continue to work to improve our performance in this area. We have invested in new detection equipment to quickly find SF6 leaks when they happen, and we have carried out research projects to test the effectiveness of other gases, but at present there are no suitable alternatives.

Optional further reading, information and resources

WPD RIIO-ED1 Business Plan: https://www.westernpower.co.uk/downloads/475

WPD RIIO-ED1 Business Plan Commitments Report (Year 3)**:**
https://www.westernpower.co.uk/downloads/14581

Investment Map - We are constantly carrying out works to maintain and improve the network yet, the large one-off projects that we commission by looking at the entire network tend to get reported more often. However, we believe that the smaller, local projects are just as important and therefore have detailed a selection of the projects that are planned and being completed in 2017 and 2018 in our investment map: https://www.westernpower.co.uk/our-network/investing-in-our-network/investment-map

An example of one of our Local Network Investment Booklets can be found at:
https://www.westernpower.co.uk/downloads/6982

Losses strategy: https://www.westernpower.co.uk/downloads-view/27001

Customer Service Performance

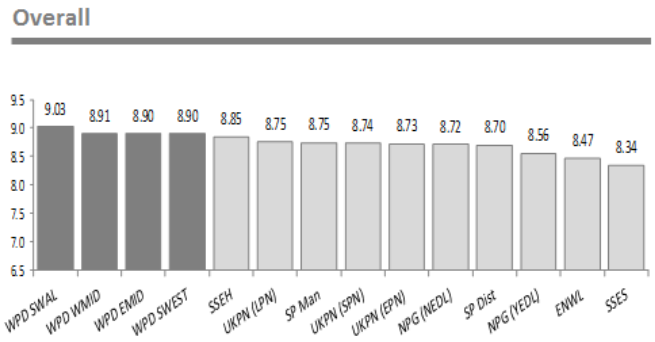
Providing excellent customer service to our 7.9 million customers is one of our main business objectives.

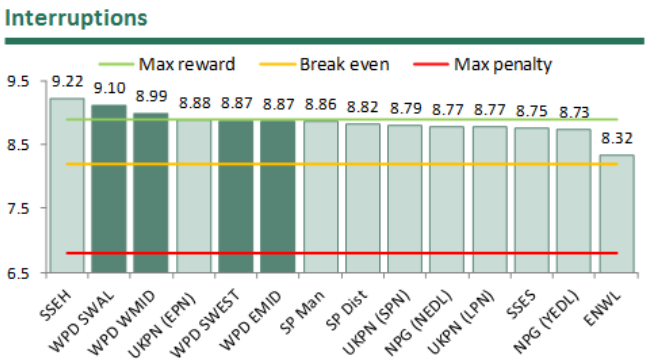
Customer satisfaction

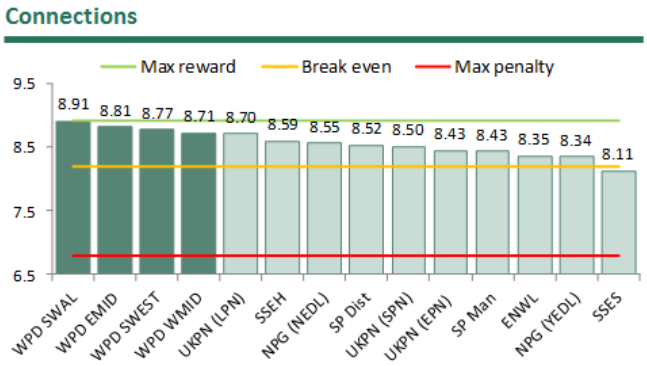
As part of Ofgem's Broad Measure of Customer Satisfaction (BMCS), a research agency undertakes satisfaction surveys every month with around 350 customers for each of the 14 electricity network companies. Surveys take place with customers who have had an interruption to their electricity supply (planned or unplanned), applied for a new connection or contacted the company with a general enquiry. In 2017/18, WPD ranked as follows:

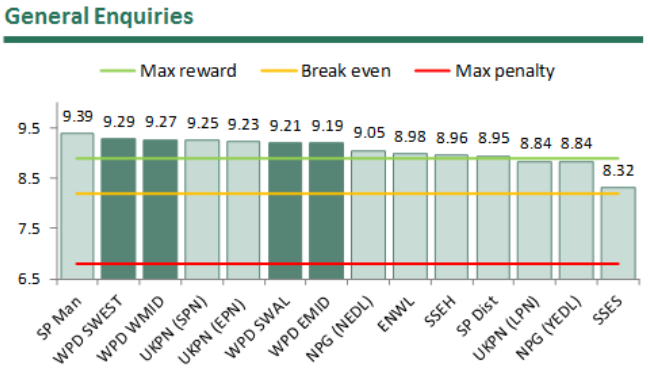
	Rank (out of 14 companies)	Average overall satisfaction (out of 10)
South Wales	1st	9.03
East Midlands	3rd	8.90
South West	4th	8.90
West Midlands	2nd	8.91

A more detailed overview of this is shown below:









Contact Centre Performance

WPD Service to customers 2017/18:

Service	Target	WPD Performance
General Enquiries	To answer 80% of calls in 20 seconds To achieve abandoned rate of 4% or less	99.49% answered in 20 seconds Abandoned rate 0.02%
No Supply	To answer 80% of calls in 20 seconds To achieve abandoned rate of 4% or less	99.3% answered in 20 seconds Abandoned rate 0.18% Average speed of answering 1.73 seconds

We consistently achieve excellent levels of customer service. We are proud of our performance and work hard to promote a strong culture of customer service.

- We respond to calls quickly. During 2017/2018 our average response time was 1.84 seconds.
- We called back 99.7% of customers who contacted us about a fault.
- We sent 623,348 text messages during high voltage power cuts to keep customers up to date.
- We contacted 99.6% of customers who contacted us with an enquiry which was not about a fault within two days.
- We always provide customers with the option to talk to a member of staff when they call our contact centre.

New communication options for customers

We provide customers with a range of communication methods so that they can access information quickly and easily without necessarily having to call our contact centres.

On every page of our website, customers can access a 'webchat' facility which allows them to communicate online, in real time, with a member of staff based in our offices in the UK. The webchat facility is used regularly with 28,720 'chats' taking place in 2017/2018. On average, 93.3% of customers were satisfied with the information they received.

During 2017/2018, we added a number of new functions to the website to make it more user-friendly for our customers. Here are some examples.

- 'ReciteMe' has a range of features including the ability to convert text to speech, reading out the text to the user. The programme allows translation into 103 languages and a text-only view which provides a reading ruler and adjustable colour schemes for people with dyslexia and eyesight difficulties.
- 'Interpreternow' allows deaf customers to contact us in British Sign Language (BSL), using an online interpreter.
- A series of animated customer information videos include BSL features

Complaints

WPD complies with the Complaints Handling Standards Regulations and an independent Energy Ombudsman service deals with unresolved complaints about energy companies. We aim to resolve all complaints from customers as quickly as possible without the need for the customer to take the matter to the Energy Ombudsman. During 2017/18 WPD South West, WPD South Wales, WPD East Midlands and WPD West Midlands as a whole received 7,042 complaints. In 17/18 there were no findings against WPD by the Energy Ombudsman.

Optional further reading, information and resources

Guide to customer service: https://www.westernpower.co.uk/downloads/290

Stakeholder Engagement

Stakeholder Engagement

Stakeholder engagement is embedded in our business and WPD regularly engages with stakeholders. Customers pay for everything we do and therefore have a right to influence all aspects of our service. Our decisions must be well justified and, reflect their views and address their concerns. The focus of our engagement covers four key areas. We will:

- Engage on current service standards and options to drive continual improvement (including measuring the value stakeholders place on these).
- Allow stakeholders to understand and review our delivery against our current Business Plan.
- Involve stakeholders at every stage of our transition to a DSO, enabling them to influence our plans and participate fully in (and benefit from) our future operations.
- Seek early input to develop our future Business Plan and identify longer-term strategic priorities for the business.

Stakeholder Strategy

WPD has a comprehensive and mature stakeholder engagement strategy. It is updated annually and reviewed by our Chief Executive and Directors. Its longevity is a sign of its continued appropriateness and flexibility to change. The continuity within our core strategy also ensures that everyone at WPD understands what we are working to achieve and their role in its delivery. This is integral to ensuring stakeholder engagement is truly embedded in our business.

WPD's delivery strategy is updated every year, to ensure we respond quickly to changes in stakeholder priorities and external factors impacting the business. WPD's transition to become a DSO is a prime example of this change, and a great deal of WPD's engagement activities in 2017/18 have focused on this issue and its impact on stakeholders of all types.

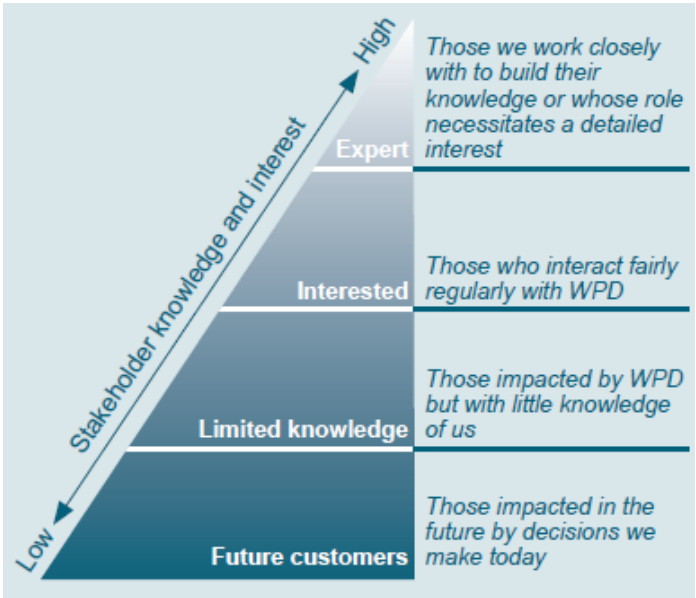
How we engage

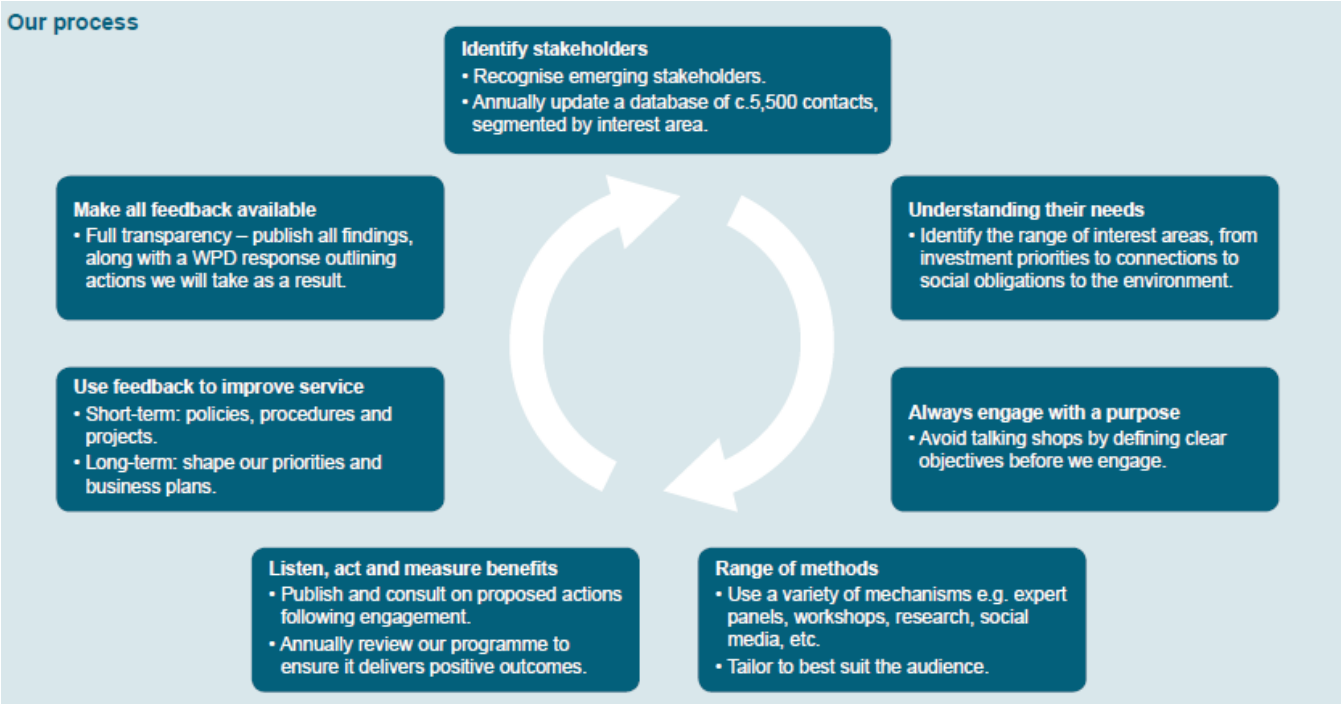
We are committed to be:

Inclusive: of all stakeholders, including the hard to reach.
Tailored: using methods to best suit each group.
Focused on action: engagement must lead us to deliver measurable outputs as a result.

It is essential that we employ a wide range of engagement mechanisms and match the most appropriate method to suit each type of stakeholder.

We consider our stakeholders in relation to a knowledge and interest pyramid:





The top priority for WPD is that engagement leads to action. Key outputs for 2017/18 included:

**BSI is the British Standard for Inclusive Services.*

In 2017/18 we delivered 195 key outputs and positive outcomes for customers. All these actions, and the engagement mechanisms that initiated them, are set out in detail within WPD's Ofgem Stakeholder Engagement and Consumer Vulnerability Incentive – 2017/18 (Part One Submission): Stakeholder and Consumer Vulnerability Strategies (https://www.westernpower.co.uk/downloads/6691).

Social Obligations

WPD's Priority Services Register (PSR)

WPD manages a free and confidential register of customers who require priority assistance during a power cut, for reasons including age, disability, medical dependencies on electricity, special communication needs or temporary vulnerabilities. There are currently 1.7m customers on WPD's PSR. We aim to make sure that every eligible customer is given the opportunity to register.

We have created a network of trusted organisations that work with customers in vulnerable situations every day and as part of their work, they ask customers for permission to add their names to the PSR. In the last year we have significantly increased the number of referral partners from 34 to 63. We've also carried out 'social indicator mapping' to identify areas with high levels of customers eligible to be included on the PSR. This allows us to target the areas of greatest need.

As a result of this work, 23,035 new PSR customers registered directly with us in 2017/2018.

During 2017/2018 we've taken a range of extra steps to promote the PSR.

- We promoted the PSR in our yearly 'Power for Life' newsletter, which we sent to all our 7.9 million customers.
- We created a short, animated, internet-based learning tool for the PSR, to help our partners with the work they do with customers in vulnerable situations.
- We launched a scheme for young people completing the volunteering section of the Duke of Edinburgh award, supporting them to promote the PSR to customers in vulnerable situations.

Consumer vulnerability

Stakeholders are clear that WPD's overarching objective must always be to address consumer vulnerability during power cuts. WPD's efforts in relation to its Priority Services Register are therefore critical. In particular, we must ensure we identify those in greatest need of assistance, keep this data up-to-date and use it to deliver tailored and support during emergencies. In doing so, we aim to mitigate their vulnerability and ensure they can fully access our services.

Fuel poverty

We consider a wide range of factors that can affect vulnerability, including cold homes and struggling to afford energy.

We have an extensive programme of support schemes to provide practical support for customers living in fuel poverty, including help with switching energy tariffs and arranging funding for energy efficiency measures. We work with over 85 expert agencies including Citizens Advice and the Energy Saving Trust. In the last year, we helped 15,229 customers who were facing fuel poverty to save £5.4 million.

In 2017/2018, we introduced a number of new partnerships to help customers living with health issues made worse by living in cold homes. These new schemes supported 409 customers to save a total of £193,000 in the first year.

Supporting customers during power cuts

When there is a power cut, we work to support customers, particularly those who may be more vulnerable without electricity. During prolonged power cuts we call customers who depend on electricity for medical

reasons to give them an update on when we expect their power to be restored and to find out whether they need any extra support.

During 2017/2018 we issued 1,914 crisis packs, each containing a flask, a torch with batteries, gloves, a hat, a reusable hand warmer, a foil blanket and an information leaflet. We also work with the British Red Cross, who can provide warm meals, drinks and general welfare checks. We used this support 22 times during 2017/2018.

Using innovation to support customers in vulnerable situations

We have introduced some new features to support customers in vulnerable situations:

- The latest smart meters can tell us when a customer has lost power. We contacted every PSR customer with a smart meter installed to ask whether they would like us to call them during a power cut, whatever the time. (Under our sociable hours policy, we only call people between 9am and 8pm).
- A new 'power cut alarm' feature has been added to our power cut reporter app for smartphones and tablets. This feature raises an alarm if power to the device is lost. The feature was developed following feedback from a sleep apnoea sufferer on our PSR register whose monitoring equipment does not have a built-in alarm. The app is used to wake customers up when there is no power for their medical equipment. We have promoted the app to 8,569 PSR customers with sleep apnoea.

Working with gas and water companies

Our customers have told us that they want to be able to join the Priority Services Register with one company and for their details to be easily shared with other utility companies. As a result, we have introduced new processes to securely share information with other companies working in our region.

- We now ask for customers' permission to share their details with other utility companies on their behalf. We have shared information in this way for nearly 700,000 PSR customers in the last year.
- We worked with Welsh Water to launch the UK's first PSR data-sharing process between an electricity distribution and water network company. This saved nearly 14,000 customers the effort of needing to register separately with each company.

Optional further reading, information and resources

Priority service register: https://www.westernpower.co.uk/downloads/4156

Social indicator mapping: https://www.westernpower.co.uk/customers-and-community/priority-services/social-indicator-mapping

Your opinion matters video: https://youtu.be/V5SOAUWUMeY

WPD's latest Stakeholder workshops: https://www.westernpower.co.uk/customers-and-community/2019-stakeholder-workshops

Customer Panel – We have a permanent Customer Panel that we meet with four times a year to help keep us up to speed with the issues affecting our customers. More information can be found on our website: https://www.westernpower.co.uk/customers-and-community/your-power-future/customer-panel

WPD's Ofgem Stakeholder Engagement and Consumer Vulnerability Incentive – 2017/18 (Part One Submission): Stakeholder and Consumer Vulnerability Strategies: https://www.westernpower.co.uk/downloads/6691

WPD's Ofgem Stakeholder Engagement and Consumer Vulnerability Incentive – 2017/18 (Part Two Submission): https://www.westernpower.co.uk/downloads/6692

WPD's Ofgem Stakeholder Engagement and Consumer Vulnerability Incentive – 2017/18 (Part Three Submission): Consumer Vulnerability Outcomes: https://www.westernpower.co.uk/downloads/6693

RIIO-ED1 Business Plan – SA-01 Supplementary Annex – Stakeholder Engagement: https://www.westernpower.co.uk/downloads/431

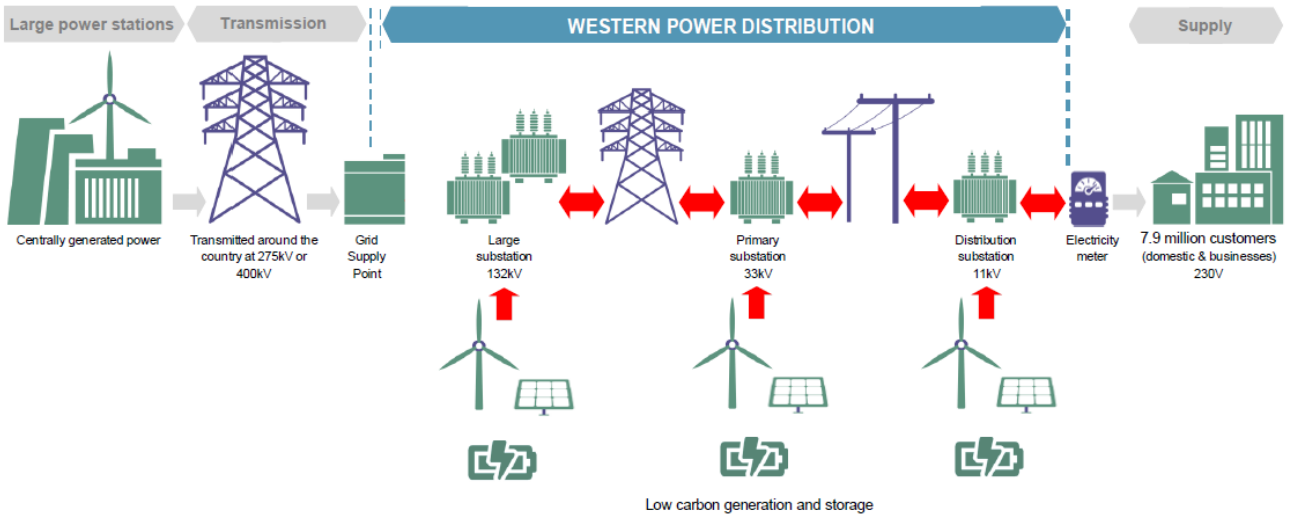
DNO to DSO transition

DNO to DSO transition

The UK energy system is experiencing the biggest revolution in its history. With the introduction of electric vehicles and the increasing electrification of heat, we are becoming more and more dependent on electricity as a fuel source. At the same time, the way we generate energy is becoming more renewable and intermittent in its output, requiring more active balancing of the local distribution networks.

At high voltage, where there has been rapid increases in distributed generation such as solar and wind, as well as energy storage and heat pumps connecting directly to our system, we will use smart grid technologies to create flexibility in the existing network. This ensures we are making maximum, efficient use of existing capacity, therefore avoiding some unnecessary investment to conventionally reinforce the network (install bigger cables), which can be costly and take a long time to complete. At low voltage, we must build modern infrastructure to accommodate technologies such as electric vehicles that present a significant increase to the electricity usage levels our network was designed for.

Informed by our 30 years' experience delivering high quality services for our customers and utilising the expertise and technology we have developed through significant investment in our innovation programme, we are adapting our operations and capabilities in response to the changing requirements of energy users – transitioning from a passive distribution network operator to an active distribution system operator.



DSO strategy

As WPD moves from being a Distribution Network Operator to a Distribution System Operator, it will carry out its existing functions and take on some new ones to:

- develop and maintain an efficient, co-ordinated and economical system of electricity distribution;
- facilitate competition in electricity supply, electricity generation and flexibility services;
- improve the resilience and security of the electricity system at a local level;

- facilitate neutral markets for more efficient whole system outcomes;
- drive competition and efficiency across all aspects of the system; and
- promote innovation, flexibility and non-network solutions.

With WPD, as a DSO, managing the co-ordination of services at a local level, the complexity and risk can be reduced for the National Electricity Transmission System Operator (NETSO), resulting in a more efficient and cost-effective whole system.

Our DSO Transition Programme

As a regulated business with no interests in UK generation or supply, WPD views the facilitation of our customers into these neutral markets as a natural extension of our current role in managing the power across our distribution networks. We are uniquely placed to ensure simple and consistent access to new markets for our active customers through maximising the utilisation of our existing electrical and communication networks. We are also able to use the flexibility inherent in our network to ensure all customers benefit; through both receiving a resilient and secure supply and through cost effective delivery.

More intermittent and less predictable use of the electricity distribution system is inevitable as customers substitute carbon based fuel sources (oil and gas) with cleaner electricity. Traditional DNO operations would require very substantial investments in passive grid infrastructure, which would be underutilised much of the time.

Continued construction, maintenance and operation of passive distribution networks is no longer going to deliver the best outcomes for UK electricity bill payers. DNOs therefore need to transition to become DSOs in order to operate and maintain efficient, economic and co-ordinated networks. WPD plans to be at the forefront of this transformation.

We will roll-out DSO competences using a top-down approach, ensuring the 132kV, 66kV and 33kV networks are targeted first, prioritising those areas which will benefit most. This enables the rest of the network to be

incrementally upgraded as the customer need dictates. Networks tend to have higher levels of utilisation at the upper voltages, due to the historical certainty of the diversity of load, so as these assumptions are most disrupted by the addition of LCTs and other distributed energy resources. We will protect the integrity and safety of lower voltage networks through a combination of advanced modelling, additional visibility and conventional reinforcement. We will maximise the use of smart meter data, apply additional network sensing where relevant and implement simple control schemes. We aim to develop wider flexibility for the use of import/export capping as an alternative to conventional solutions only reinforcing the networks when these solutions cannot deliver what is required.

Our DSO Transition Programme

Through implementation of our DSO Transition Programme, WPD will build on our Future Networks Programme and invest £125million by 2023 to ensure that our network, and our business, has the capacity to deliver all the emerging system requirements our customers have, both now and in the future. We will roll-out DSO competencies using a top-down approach, prioritising those networks and areas which will benefit most from intervention. This enables the rest of the network to be incrementally upgraded as the customer need dictates, without the risk of leaving assets stranded. Our strategy will focus on enhancing and developing key competences in three core business areas:

Assets	Customers	Network operations
Investment in technology to ensure networks operate at high performance levels	Propositions for DSR services will be developed for specific customer group, prioritised in regions and customer segments as the need arises	Invest in technology to give us unprecedented visibility and monitoring of the network Use complex data analytic tools to forecast requirements and ensure the network is proactively managed
Roll out of Active Network Management across entire network by 2021, with expanded connections options available for customers allowing them to get quicker and cheaper access to the network.	Creation of a localised visibility platform that will demonstrate where there is congestion or capacity on the network, informing localised tariffs and supporting the development of a Local Energy Market	Upgrade business areas to facilitate flexibility services such as demand side response
Telecommunications readiness and strategic investment in fibre networks will deliver more visibility and controllability	Alternative connection products will be extended to all WPD areas and extended to include demand and storage connections	Continue work to develop and update regional energy scenarios that will establish future network needs and inform strategic investment in the network

There is more information on our website at: www.westernpower.co.uk/our-network/strategic-network-investment/dso-strategy/

EV Strategy

The Government's "The Carbon Plan" (2011) set out the UK's objectives to reduce carbon emissions, with an 80% reduction achieved by 2050. This will be achieved through the decarbonisation of heating and transport and we need to take action to support this transition of vehicle power from carbon sources to electricity. Our electricity networks need to be ready to accept this additional demand. We build networks with a 50 year asset life so will take steps now to ensure we build the right network for foreseeable future demands.

The requirements of The Carbon Plan have been strengthened with targets to improve air quality and reduce Nitrogen Dioxide levels. These targets will all support the transition to electric vehicles.

The Government set a target in 2015 to "ensure almost every car and van is a zero emission vehicle by 2050". In July 2017 the Government announced that "it will end the sale of all new conventional petrol and diesel cars and vans by 2040". In May 2018 the Prime Minister announced a further target for 2040, that all new cars and vans should be "effectively zero emission" and in July 2018 the Road to Zero Strategy set an aspiration for "at least 50%, and as many as 70%, of new car sales and up to 40% of new van sales being ultra-low emission by 2030".

Alongside the sales targets, the Government has set a goal for the UK to be "a world leader in the development, manufacture and use of zero emission vehicles… [and] in the design, development and manufacture of batteries" in the Automotive Sector.

2019 has brought the first electric vehicle as a "What Car" Car of the Year. The Kia e-Niro took this award and What Car describe it as being described as the first sensibly priced electric car that can fit into most people's lives. It provides a substantially longer range than almost all rivals without costing substantially more. We consider this to be an indicator to a future when there is price parity between electric and conventional petrol/diesel vehicles. We anticipate it to become a reality in 2021 or 2022 and will create a step change in ownership models for car buyers.

As an electricity system operator our approach is to ensure that a suitable network exists for all charging requirements in all situations. This has many factors as charging requirements vary dependent on the type of vehicle and the owner's access to either their own or public charging infrastructure.

In one sense the actual charging infrastructure is of less concern to us than our ability to provide the adequate and safe electricity connection which serves it. Our plans will vary depending on the application and we detail various different options in this section.

The principle is simple, the charging infrastructure requires higher volumes of energy and it is our job to provide the conduit for this energy.

We predict that the majority of our larger local transformers will be able to accommodate one 35kWh charge every five days for each of the customers connected to it. This provides a charged range of around 150 miles in many EVs and it is likely that this will support the demands of home connected EV charging.

We also expect that our backbone 33kV network and transformers will be able to accommodate this level of charge point activity.

As we focus in to the specific cables which supply local streets, or to the service cables which feed individual properties, there is more chance of the network becoming constrained. We are already installing larger cable assets from new and have identified areas where the proactive uprating of cable networks is appropriate.

An electric vehicle uses, on average, the same volume of electricity as a domestic house. As a network operator, we have a wealth of experience in designing housing networks and recognise the need to evolve our design methodologies to include new use cases. We will use this experience to ensure that electric vehicle charging can be accommodated in the most efficient and economical way.

Where existing network architecture is not best suited to permit electric vehicle charging we will take steps to mitigate this and, if upgrades are required, use innovative solutions to allow faster and efficient connections.

When we build new networks we will design them to be ready for the future demands that low carbon technologies (LCTs) will place upon them.

Optional further reading, information and resources

Our DSO Forward Plan is available to view here: https://www.westernpower.co.uk/downloads/254

Our DSO Strategy is available to view here: https://www.westernpower.co.uk/downloads/260

Our Distribution System Operability Framework (DSOF) is available to view here: https://www.westernpower.co.uk/our-network/strategic-network-investment/dsof

Role of Innovation within WPD

Innovation is core to our business strategy. We always seek to find better ways of working. We have adopted many innovative ideas into day to day operations that improve the efficiency and effectiveness of the way we deliver our services to customers. Our track record of innovation and change spans from the implementation of good innovative ad-hoc ideas from staff all the way through to formal innovation projects.

The objectives of WPD's innovation are to:

- Develop new smart techniques that will accommodate increased load and generation at lower costs than conventional reinforcement;
- Improve performance against one or more of our core goals of safety, customer service, reliability, the environment or cost effectiveness;
- Ensure solutions are compatible with the existing network;
- Deliver solutions so that they become business as usual;
- Provide value for money

The way that we approach innovation is fundamental to delivering these objectives efficiently.

WPD's Innovation Strategy is to:

- Actively involve staff from across the business in the generation of ideas, development of solutions and implementation of projects;
- Work with our stakeholders to understand their needs;
- Make use of innovation incentives and funding provided by the Government, the regulator and other funding organisations;
- Use a small core team to coordinate innovation projects;
- Define clear objectives for each project so that delivery can be focused and progress can be tracked;
- Avoid theoretical research or innovation which does not have clear objectives;
- Incorporate innovative solutions into existing equipment and processes;
- Share what we learn with other organisations and learn from others.

Our innovation projects shape how we are thinking about the future. We will continue to innovate and undertake new projects that will build upon what we have already learnt from the projects we and other DNOs have carried out. We set out within this Innovation Strategy the progress we have already made, the predicted output from the various projects currently being undertaken and the future projects planned.

Joint Electricity Innovation Strategy

As part of network licences, we are now required to produce a joint electricity innovation strategy. This strategy sets out the areas of focus where we as network companies are looking to provide value to customers from innovation projects being undertaken and how the lessons learnt from these projects will be shared with other organisations. The ENA has coordinated this strategy and the document can be found on their website: http://www.energynetworks.org/assets/files/electricity/futures/network_innovation/electricity_network_innovation_strategy/Energy%20Networks%20Association%20-%20Electricity%20Network%20Innovation%20Strategy-March%202018.pdf.

Innovation Funding

Ofgem have provided an innovation mechanism for the previous three distribution price control periods as shown in the below table:

Table 2-1: Innovation Mechanism by Year

Mechanism	Years
Innovation Funding Incentive	2005-2010
Low Carbon Networks Fund	2010-2015
Network Innovation Allowance / Competition	2015-2023

The Innovation Funding Incentive (IFI) provided an opportunity to improve the quality of research and development within the UK electricity industry. As part of this mechanism we delivered 62 projects, where a number provided lower Technology Readiness Level (TRL) development to inform further Low Carbon Networks Fund (LCNF) and NIA projects.

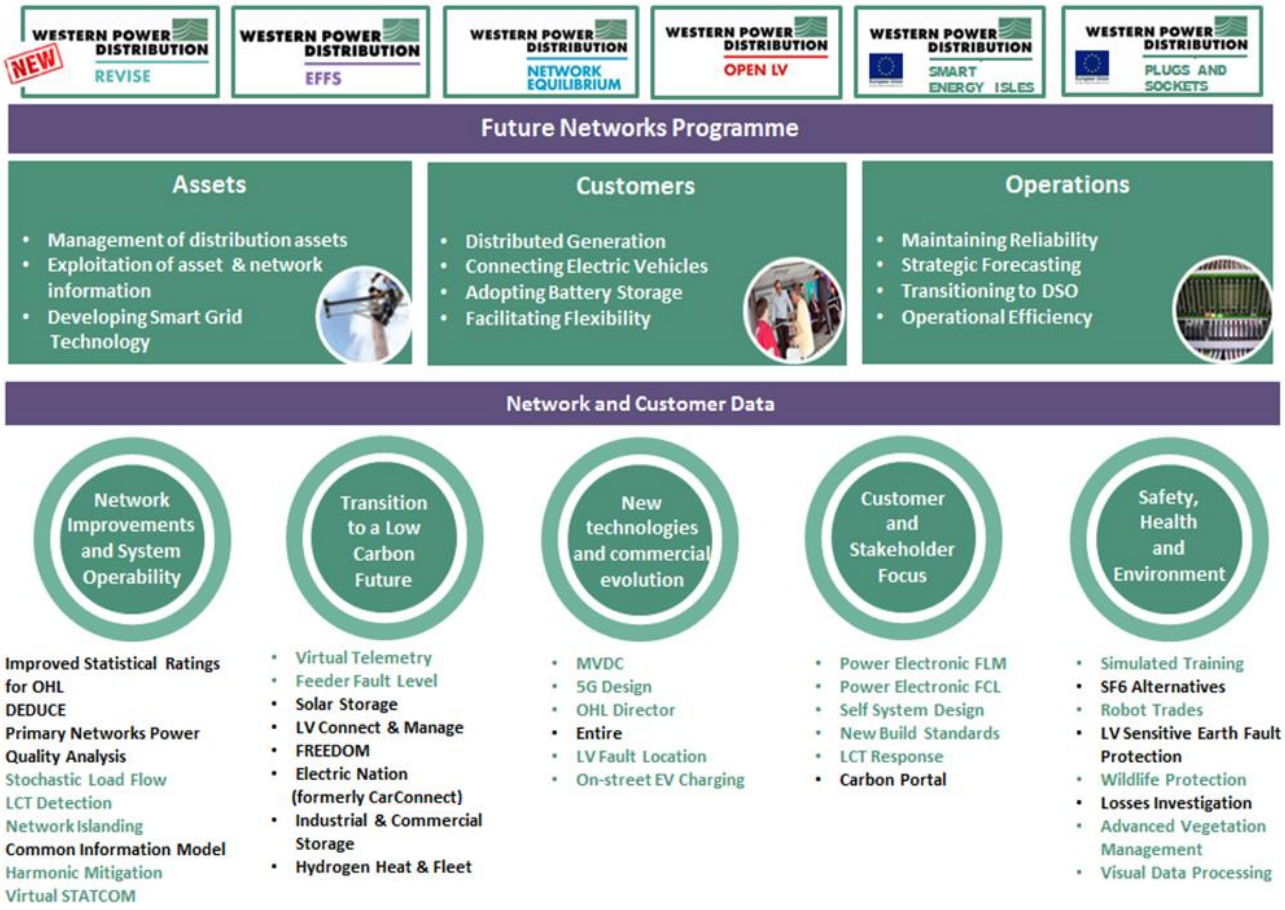
The LCNF was designed to support the development of low carbon technologies within the UK electricity industry and facilitate the changes brought about by the Carbon Plan. It contained three elements; large scale projects funded through the competitive process, Tier-2; smaller scale projects that were self-contained, Tier-1, and a discretionary reward where Ofgem have and continue to provide an additional allowance for companies that successfully develop learning that generates benefits for the wider industry.

In RIIO-ED1 the Network Innovation Allowance (NIA) and Network Innovation Competition (NIC) replaced the previous LCNF schemes. The NIC has a greater value and is funded through an annual competition open to both distribution and transmission companies. We will continue to develop innovation projects through these mechanisms; we also now have an established process for third party participation that involves the publication of an annual Call for Proposals relating to NIC bids and in 2018 also ran a similar Call for NIA project proposals.

We have also previously secured support, and continue to proactively explore non-Ofgem driven funding mechanisms, from the Engineering and Physical Sciences Research Council (EPSRC), Energy Systems Catapult, Innovate UK and the European Regional Development Fund (ERDF).

Projects

Our existing portfolio of innovation projects has already shaped how we are thinking about the future. We will continue to innovate and carry out new projects that will build upon what we have already learnt from the projects we and other DNOs have delivered. A current snapshot of our programme can be seen below.



For example - A brief overview of two of these projects can be found below:

Project FALCON (Flexible Approaches for Low Carbon Optimised Networks)

This investigated how new 11kV network techniques work in practice and, by simulating their use in different scenarios, tried to determine the best ways of managing network problems expected to arise from the increased use of low carbon technologies and generation. The project broadly divided into two main parts:

- *The technique trials which involved installing equipment, creating commercial frameworks and operating the techniques on our network in the Milton Keynes area;*
- *The simulation tool and the supporting elements, that calculated the likely load increases, determining constraints on the network and modelled the result of applying those possible techniques*

The Problem: *Distribution Network Operators (DNOs), such as Western Power Distribution, are expecting large increases in the electricity flowing through their networks at peak times. This increase is expected due to customers adopting low carbon technologies such as electric vehicles and heat pumps. At the same time, the networks need to accommodate more generation which also requires alterations to the network. Traditionally, new generator connections and increased demand for electricity have been handled using reinforcement - essentially increasing the network capacity, for example with larger cables. Traditional reinforcement can be costly and disruptive and may be difficult to implement if the changes to the network are rapid and widespread.*

FALCON is concerned with techniques which can be applied to resolve issues on the 11kV system. This is the backbone of how we deliver electricity to homes and businesses and making these networks more flexible is critical to support the low carbon transition.

Project benefits:

- *Improved Network Planning*
- *Improved customer satisfaction*
- *Enabling Low Carbon Transition*
- *Understanding and developing future DNO skills*

For more information: *https:// www.westernpower.co.uk/innovation/projects/falcon*

SF6 Alternatives

Funding mechanism: *Network Innovation Allowance (NIA)*
Duration: *May 2017 - May 2019*
Estimated expenditure: *400k*
Research area: *Safety, Health & Environment*
Regions: *South West, South Wales, West Midlands, East Midlands*

The objectives of this project are to:

1. *Conduct a literature review on all previous research considering SF6 gas alternatives;*
2. *Identify alternative solutions from the literature review which can be recommended for initial testing;*
3. *Conduct initial interruption and insulation tests on the proposed gases and document outcomes; and*
4. *Disseminate the lessons learnt to internal and external stakeholders.*

Problem(s):
Sulphur Hexafluoride (SF6) is an extremely potent greenhouse gas, the use of which is increasingly becoming restricted and regulated (2014 EU fluorinated greenhouse gases (F gas) regulations). This presents a significant problem to network operators as SF6 is an excellent insulating medium which is used extensively in High Voltage (HV) and Extra High Voltage (EHV) switchgear.

Network operators are responsible for monitoring SF6 that is leaked into the atmosphere. A biannual check is currently stipulated in the regulations for switchgear containing more than 6kg of SF6. If the equipment contains more than 22kg of SF6 then checks require to be made every three months. The majority of HV switchgear contains less than 5kg of SF6, therefore checks are not mandatory; however, regulations are constantly changing and these levels could change in the future.

The regulations were recently amended and a new requirement came into force on 1 January 2017. This new requirement stipulates that any new switchgear being installed with more than 22kg of SF6 must have an automatic leak detection system fitted. With SF6 regulations anticipated to increase further there may be a requirement for every new piece of switchgear to be equipped with leak detection technology in the future. This could result in expensive modifications and systems associated with managing leak detection.

The increased expense in complying with future regulations may lead to higher consumer charges for electricity use.

Method(s):
The aim of this project is to evaluate alternative insulating medium in place of SF6. The initial phase of the project will involve a literature review to capture previous learning from other projects and research into SF6 alternatives. The literature review should capture all material properties of SF6 to form a basis for comparison of alternative gases and ultimately the selection of a range of the most suitable insulating mediums for test in the next stage of the project. Following the literature review, the next stage will involve identifying and assessing the alternatives that could be used to replace SF6. A selection of insulating mediums will be chosen for initial testing in SF6 switchgear (such as RMUs which have been removed from the system). The results from the testing trials shall be captured in the final phase of the project and recommendations made for transitioning into business as usual (BaU).

It is anticipated that the development of an SF6 alternative will lead to environmentally friendly HV switchgear. The chosen solution will be applicable as an interrupting medium in gas-filled RMUs and insulating medium in indoor switchgear.

As there is a high volume of SF6 11kV RMUs on most DNOs' networks, the project will focus on these devices and specifically the retrofitting of an alternative interrupting medium to replace SF6. It is recognised that most 11kV primary switchgear does contain SF6 with most being air insulated with vacuum interrupters. EHV SF6 Gas Insulated Switchgear (GIS) may be investigated in a future project.

More information on this project including scope, success criteria and potential for new learning can be found on WPD's website (https://westernpower.co.uk/innovation/projects) along with 53 of our other projects.

Optional further reading, information and resources

Energy Storage Investment: https://www.westernpower.co.uk/our-network/strategic-network-investment/energy-storage-investment

Energy Storage Investment Report: https://www.westernpower.co.uk/downloads/4087

Regional Development Programmes: The increase in renewable generation is placing greater and more complex demands on the electricity distribution network than ever before. That's why we're working with National Grid on Regional Development Programmes that look at the whole electricity network. WPD South West is the first Regional Development Programme we have completed. It's an area of the country with large amounts of solar generation on sunny spring and summer days but with low customer demand at these times. This means there are complex interactions between our distribution network and National Grid's transmission network. An executive summary of the South West Regional Development Strategy can be found here: https://www.westernpower.co.uk/downloads/4058

Network Flexibility Map: https://www.westernpower.co.uk/network-flexibility-map/

Smart Future Presentation Video: https://www.westernpower.co.uk/smart-future-and-new-possibilities

Environment and Innovation Report: https://westernpower.co.uk/downloads/14419

NIA summary report 2017/18: https://westernpower.co.uk/downloads/1898

To view our full innovation strategy document: https://westernpower.co.uk/downloads/15334

Connections

One of our key roles is to provide new connections and modify existing ones to our network. We aim to make connecting to our network as straightforward as possible.

Whether customers choose us to complete the entire connection works or choose a competitive connection provider to do some of the work, our locally based teams are on hand to provide the right solution for connection requirements with first class customer service.

Types of connection:

- New connection – we provide a point of connection to our existing network and an electricity supply to a new premises, development or street furniture installation.
- Increases in Supply – where an existing supply needs to be modified to increase its capacity to meet new requirements (e.g. a new machine in a business).
- Connection of generation – where either a new connection or change to an existing connection is required to connect generation safely and securely to our network.

During RIIO-ED1 we are committed to:

Provide a faster and more efficient connections service

- Improve the overall time to deliver a connection by 20%.
- Provide excellent customer service so that customers rank WPD as the top performing DNO group in customer satisfaction surveys.
- Conduct surveys with distributed generation customers to gauge their satisfaction and identify improvements to the service provided.

Improve communication with customers

- Develop and enhance online connections processing and progress tracking.
- Ensure information provided in documentation and online is effective.

Enhance engagement with major connections customers

- Work with major customers to identify where processes can be improved and quickly implement changes.
- Host quarterly 'surgeries' for connection customers to better understand processes.

Guaranteed Standards of Performance (GSOPs)

- Target zero failures of the connection GSOPs.

Facilitation of competitive market

- Improve customer awareness of third party connection providers and carry out regular checks with customers that they understand the options available to them.
- Work with third party connection providers to extend the scope of contestable work to HV and reinforcement work.

The overall speed of connection to the network is important for customers and we measure our performance against Ofgem targets for minor connection customers – this includes single domestic connections (referred to as LVSSA) and projects which require two to four domestic connections or a small commercial connection which doesn't need reinforcement work (referred to as LVSSB).

The targets measure the time taken to provide a quote and, once the quote is accepted, the time taken to provide the connection.

In 2017/2018 we outperformed all the targets for LVSSA and LVSSB.

To achieve this we carry out regular reviews of our processes across all connection types to make sure that timescales are as short as possible and that we provide the services customers want.

During 2017/2018 we have increased the amount of information available to customers, helping them to choose where to connect, the possible cost of connections, and areas where the network could be restricted.

Optional further reading, information and resources

The ICE Work plan including our high level Connections Strategy can be found here: https://www.westernpower.co.uk/downloads/2813

Long term development - The Long Term Development Statement is compiled to assist current and future users of Western Power Distribution's network to identify and assess opportunities available to them for making new or additional use of our distribution system. The statement provides an overview of the design and operation of the distribution network, together with data on the 132kV, 66kV and 33kV systems and the transformation levels down to 11kV. Due to the volume of data and speed with which it can become outdated, data on the 11kV and low voltage systems has not been included in the statement. Please click the following links for further information on the content and how to obtain a copy of WPD's Long Term Development Statements:

East Midlands - https://www.westernpower.co.uk/downloads/3964
West Midlands - https://www.westernpower.co.uk/downloads/3925
South Wales - https://www.westernpower.co.uk/downloads/3922
South West - https://www.westernpower.co.uk/downloads/3928

Our Network Capacity Map can be found here: https://www.westernpower.co.uk/our-network/network-capacity-map

Accreditations and Awards

- ✓ In April 2016 we were awarded the Louder than Words Charter Mark from Action on Hearing Loss (AOHL), the national charity for people with deafness or hearing loss.

- ✓ It is the sixth consecutive year that we have achieved the nationally recognised accreditation, which recognises organisations that provide excellent levels of service and accessibility for customers and employees who are deaf or hard of hearing.

- ✓ To achieve the accolade, businesses must satisfy ten quality standards, and by doing so, they ensure that they are meeting the requirements of the Disability Discrimination and the Human Rights Acts.

- ✓ We were also awarded the prestigious Excellence Award from charity Action on Hearing Loss Cymru in May 2016. The award is given to organisations that go above and beyond to make their services accessible to the one in six people in Wales with hearing loss.

- ✓ We received the overall Excellence Wales 2016 honour after impressing judges with our new text service to help deaf customers during power cuts and for ensuring our Contact Centre staff receive deaf awareness training.

- ✓ In May 2016 we were awarded an Arts & Business (A&B) Cymru Award for our work with disability charity Hijinx Theatre Group.

- ✓ The A&B Cymru awards encourage, acknowledge and celebrate exemplary partnerships between the private sector and the arts.

- ✓ Hijinx Theatre Group actors with learning disabilities use role play techniques to act out scenarios to encourage staff to start thinking about the different ways to communicate in a broader, more flexible manner.

- ✓ In December 2016 we were assessed by the British Standard Institute against BS18477, their Standard relating to inclusive service provision. This was the fourth consecutive year that we were assessed as fully compliant. The Standard assesses our ability to recognise, respond to and provide inclusive services for customers who may be vulnerable and at a disadvantage when accessing services because of illness, disability or difficulty communicating. It sets guidelines to help provide a fair, flexible service for all customers equally.