WESTERN POWER DISTRIBUTION

Serving the Midlands, South West and Wales

Our Business Plan 2023 – 2028 Second draft

March 2021

westernpower.co.uk

Version Control

Issue	Date
First draft Business Plan	27/01/2021
Second draft Business Plan	24/03/2021

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WPD Chief Executive, Phil Swift, sets out our commitment to consumers for RIIO-ED2

The energy sector is currently undergoing an exciting and challenging period of significant change as the UK works towards achieving a net zero carbon future. Our Business Plan for RIIO-ED2, which runs from 2023 to 2028, sets out how we will meet this challenge to continue to deliver high standards of safety, reliability and customer service while adapting to the changing environment in which we operate.

We have already faced many challenges, including the COVID-19 pandemic and the need to do our bit to help revive the economy. We created our 'In This Together - Community Matters' fund and have already awarded £1 million to support over half a million vulnerable customers who have been worst affected by the pandemic. We have also committed to investing up to £80 million before the end of this price control period to support the green recovery.

Our plans are hugely ambitious. We expect up to 1.5 million electric vehicle (EV) charging points and 600,000 heat pumps to be connecting to our network between 2023 and 2028. Our domestic customers will be able to use a simple tool to determine whether they can install EV charging points, making it simpler for everyone to connect to our network. We will also work with partner organisations to ensure no-one is left behind in the take-up of low carbon technology and that 113,000 fuel poor customers are supported to save £60 million on their bills.

We will use flexible services first in preference to investing in the network, to ensure that the capacity is available to assist local authorities and industry to realise their net zero ambitions.

We will be meeting environmental challenges by reducing our own business carbon emissions to be net zero by 2028 (excluding network losses) and enhancing network resilience to combat increasing cyber threats. In our Business Plan, we recognise our responsibility to respond to these challenges and to do so in a way that is as affordable as possible, in order to keep our portion of the average domestic bill at or around the current level of £96.

I am extremely proud that our Business Plan is co-created with stakeholders. We have gone further than ever before in developing a robust stakeholder engagement process which ensures that we understand and meet their needs and expectations. During the RIIO-ED2 business planning process, we have so far interacted with over 9,600 stakeholders (5,700 of these were direct, in-person engagements) through a multitude of events and group sessions and we will continue to broaden this interaction. Each stage has enabled stakeholders to influence our decision-making processes and shape our Business Plan proposals. The input and feedback from the independent Customer Engagement Group has provided robust challenge and scrutiny at every stage of the process.

We are publishing this second draft version of our Business Plan early to give you a further opportunity to review our proposals and influence our plan.

Thank you for your support,

Phil Swift

WPD Chief Executive

Foreword

Dear Stakeholder,

Achieving a net zero carbon future is sparking an exciting transformation across the energy sector. Ambition and dynamic delivery will be vital to meeting our customers' calls for the creation of a low carbon community, at the same time as keeping the lights on and delivering excellent customer service. So we're proud to share this second draft of our Business Plan with you and to ask for your views on our vision for the future of our network.

We will be sending our first submission Business Plan for the price control period 2023 to 2028 to our regulator Ofgem for their Challenge Group in July 2021. Before we do, we believe it is critical that you, our stakeholders, have the opportunity to provide feedback to influence our plan. In fact, we think this is so important that you will be given the chance to see our draft plan **twice**, as we refine it before the first submission to Ofgem. We published our first draft business plan on 27th January 2021 and undertook a consultation exercise which resulted in feedback from over 2,200 stakeholders (over 700 by direct engagement with the remainder through surveys). We have used this feedback to refine our plan and to produce this second draft Business Plan which will also be opened up to consultation with our stakeholders.

It was clear from our first consultation that our stakeholders place a high of value on being ambitious in key areas, including the environment, support for community energy organisations and enabling all stakeholders to make the net zero transition. We have embraced this feedback to shape our second draft Business Plan which has changed significantly from the first draft.

Chapter 4 'Our Core Commitments' now contains:

- 58 core commitments (streamlined from 67 in the first draft Business Plan)
- 35 core commitments where we have been more ambitious
- 4 new core commitments
- 11 restructured core commitments with clearer, more measurable outcomes

Chapter 5 'Delivering a smart and flexible electricity network' has been re-written, to reflect stakeholder feedback.

We have added three new chapters – 7, 8 and 9:

- Chapter 7 – Managing uncertainty
- Chapter 8 – Competition
- Chapter 9 – Financing our plan

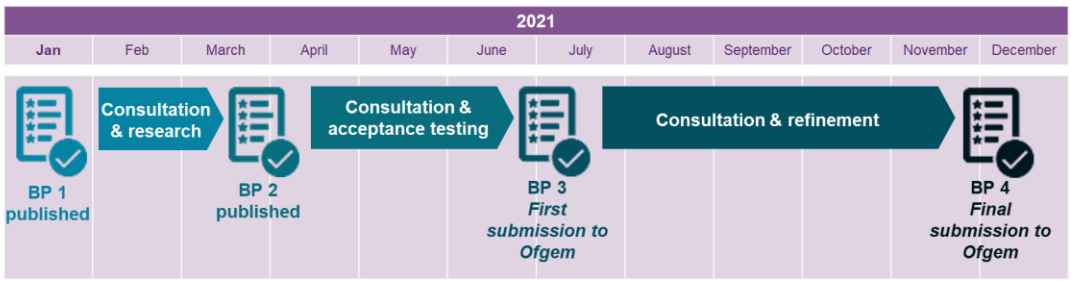
All the other chapters in the Business Plan have had fewer changes but remain an accurate picture of what our stakeholders told us they want to see delivered. From the very beginning, this draft Business Plan has been co-created with our stakeholders, following an enhanced and robust approach to stakeholder engagement. We engage with stakeholders annually through various routes, and in 2019 began to focus specifically on RIIO-ED2, launching our specific Business Plan engagement at face-to face workshops. Since then, we have involved more than 9,600 stakeholders (5,700 of these were direct, in-person engagements) at over 70 direct engagement sessions. We are now in a position for our stakeholders to review and corroborate our second draft Business Plan, as part of our ongoing engagement.

The most important goal for us is to provide the services our customers need and want. By liaising closely with stakeholders, we have built a challenging and ambitious Business Plan.

We hope you agree that this second draft of our Business Plan captures all the key priority areas and makes commitments that accurately reflect our stakeholders' expectations and establishes a network for

a low carbon future. We are sharing the plan at this early stage to hear from you if we have got it right. Please tell us if **we are still on the right track?**

Our plan will evolve throughout 2021, as outlined in the timetable below. Your views on the overall Business Plan, including our 58 core commitments and what we are planning to do during from 2023 to 2028, are important to us. Although our plan has been revised and improved following the first consultation, we still believe that there is more we can do to deliver a plan which meets your requirements – so please take the time to participate in our consultation.



BP 1: 27th January 2021 First draft Business Plan was published, followed by our consultation exercise.

BP 2: 24th March 2021 Second draft Business Plan published with second round of consultation.

BP 3: 1st July 2021 First submission to Ofgem for its Challenge Group.

BP 4: 1st December 2021 Final submission to Ofgem.

Your feedback from this consultation will be incorporated into our Business Plan for first submission to our regulator Ofgem on 1st July 2021.

I would like to take this opportunity to thank you for your support and your feedback, both of which are extremely important to everyone at WPD, as we plan a network for the future together.

Please see below for details on how to respond to this consultation.

Mark Shaw
RIIO-ED2 Business Plan Manager

How to respond to this consultation

Please take the time to read through our second draft Business Plan and use the accompanying stakeholder consultation document to give us your views.

Visit: yourpowerfuture.westernpower.co.uk/
https://yourpowerfuture.westernpower.co.uk

Email: yourpowerfuture@westernpower.co.uk

Write to us at:
Stakeholder Team
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WESTERN POWER DISTRIBUTION

Serving the Midlands, South West and Wales

Chapter 1

A summary of our plan

Chapter 1 Contents

1. A summary of our plan

Who we are and what we do

1.1. Western Power Distribution (WPD) is a Distribution Network Operator (DNO) and a Distribution System Operator (DSO), responsible for distributing electricity to 7.9 million customers. We look after a network of wires, poles, pylons, cables and substations, distributing electricity to homes and businesses across the West Midlands, East Midlands, the South West and South Wales.

Figure 1.1 Geographical area map

1.2. The distribution network sits between National Grid transmission network and our customers. The drive towards a low carbon economy has led to increasing levels of generation directly connected to our distribution network along with new forms of electricity demand, including electric vehicles, heat pumps and battery storage.

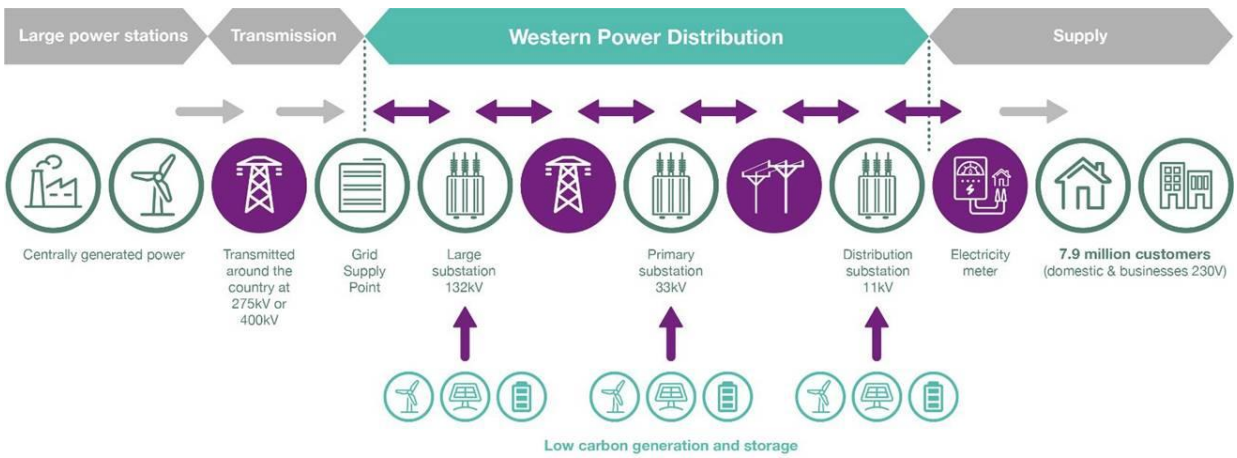

Figure 1.2 Electricity network system

1.3. Our main responsibilities to our customers are illustrated below:

Figure 1.3 Main responsibilities to our customers

1.4. The energy system is undergoing a huge transition because of the changes to electricity generation and use, including the growth of distributed generation and the increasing popularity of electric vehicles and heat pumps. These changes and the associated increases in demand have required us to develop new processes and systems, including adopting flexible solutions to manage different power flows on the network. To continue to operate a smarter, more efficient energy system, we are carrying out the functions of a Distribution System Operator.

A summary of our RIIO-ED1 key performance areas

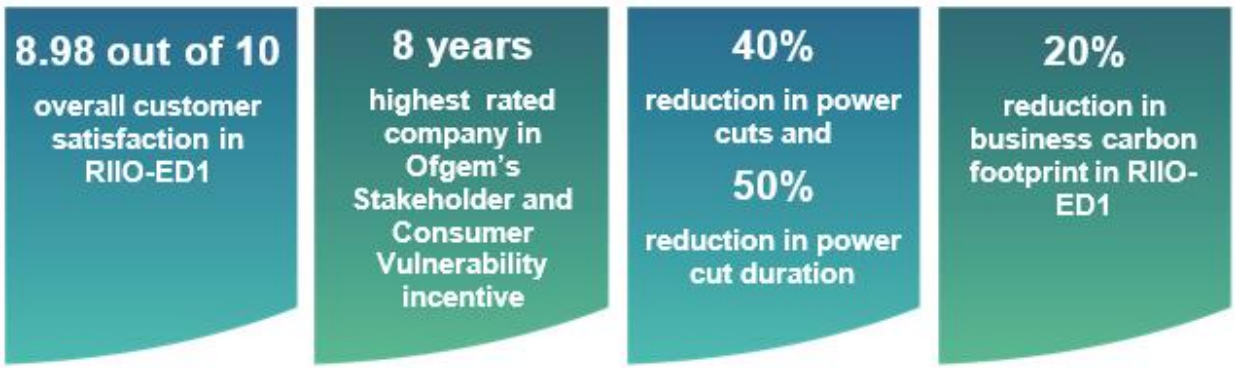

Figure 1.4 Summary of our RIIO-ED1 performance areas

1.5. We operate an efficient business model, with a flat organisational structure that enables us to deliver excellent performance levels for our customers at a low cost. We are on track to meet or exceed the commitments that we made to customers for RIIO-ED1.

1.6. We pride ourselves on delivering excellent customer service and are the top-performing DNO for overall customer satisfaction with an average score of 8.98 out of 10. We continue to deliver fast telephone response times of 1.91 seconds in 2019/20, along with quick complaint resolution and effective mechanisms for communication with our customers. The number of customers signed up to our Priority Services Register (PSR) has increased from 1.3 million in 2016 to 1.9 million in 2020.

1.7. We have a vital part to play in supporting our vulnerable customers and, during RIIO-ED1, we have worked with partner organisations, to enable 70,000 customers to save over £27 million on their bills. We have consistently been the highest scoring DNO for Ofgem's Stakeholder Engagement and Consumer Vulnerability (SECV) incentive. Thanks to a range of successful

initiatives we are in a strong position to ensure that vulnerable customers are not left behind in a smart future.

1.8. We are committed to keeping the power on and restoring it quickly when it goes off. We continue to improve our performance by reducing fault response times, for instance, by using technology to produce 3D imagery of tree proximity to overhead lines and undertaking post-fault helicopter inspections of our circuits.

1.9. We have achieved a 20% reduction in our business carbon footprint during RIIO-ED1, significantly exceeding our original target of 5%. We also intend to replace 643 diesel vehicles with electric vehicles by 2023 which will lead to further reductions.

1.10. We have seen significant changes in the way electricity is generated and consumed, largely as a result of the growth in electric vehicles and the use of heat pumps for domestic heating. We were the first DNO to publish a Distribution System Operator plan as well as a Distribution Future Energy Scenarios document. We are also the first to commit to a six monthly procurement cycle for flexibility services. To date, the Flexible Power brand has been utilised to contract flexibility services totalling 440MW, the highest level in the industry. The use of flexibility defers the need to undertake conventional reinforcement on our network and as a result delays the need to invest.

1.11. In Chapter 2 – 'We deliver on our commitments', we provide full details of what we are delivering in RIIO-ED1.

What is RIIO-ED2?

1.12. The Office of Gas and Electricity Markets (Ofgem) regulates how much revenue we can earn and what we must deliver under the RIIO-ED2 model. RIIO-ED2 stands for Revenues = Incentives + Innovation + Outputs in Electricity Distribution. It is the second price control under this model.

1.13. The RIIO framework:

- **Incentivises** companies to deliver leading performance in areas of customer service, network performance, environment and connections
- Requires **innovation** to run networks more efficiently and meet the needs of the customers
- Requires companies to deliver a set of **outputs**

1.14. This Business Plan outlines the network investment we propose to deliver for the period from April 2023 to March 2028, how much it will cost and the benefits to customers and stakeholders.

1.15. The commitments fall into three output categories, which are:

- Meeting the needs of our consumers and network users
- Maintaining a safe and resilient network
- Delivering an environmentally sustainable network

Our Business Plan is co-created with stakeholders

1.16. It is essential that we provide the services that our customers require. We have listened to stakeholder feedback and incorporated challenging and ambitious commitments into our Business Plan that exceed our targets for RIIO-ED1. These commitments are based on priorities identified by our stakeholders during our extensive engagement programme.

1.17. We have followed an enhanced and expanded approach to stakeholder engagement in order to co-create the Business Plan. Beginning with a blank sheet of paper, the process involved not only a greater number of engagement activities but also increased opportunities for stakeholders to review and collaborate on the draft plans. We have engaged with over 9,600 stakeholders (5,700 of these were direct, in-person engagements) so far - more than ever before - through strategic stakeholder workshops, topic-specific workshops and 'surgeries' for local authorities. Customers have shaped the outcomes themselves, leading to the identification of 58 core commitments which can be used to measure our performance throughout RIIO-ED2.

1.18. Throughout the engagement process, we have held regular meetings with the Customer Engagement Group (CEG). The broad range of expertise of the CEG members has proved an excellent source to challenge us throughout the production of the Business Plan. The CEG was instrumental in the design of our engagement plan, encouraging us to continue to be ambitious and industry-leading in our approach.

Principles of our RIIO-ED2 Business Plan

1.19. Our RIIO-ED2 Business Plan has been built on key principles. These require that it is:

- Co-created with our stakeholders and supported by them.
- Our Plan – 'prepared with our stakeholders for delivery by us'.
- Aligned with WPD's purpose and values.
- Affordable for all of our customers.
- Sustainable and enabling net zero before 2050.

A summary of what we will deliver during RIIO-ED2

1.20. Our RIIO-ED2 Business Plan will ensure that we continue to provide excellent levels of network performance and industry-leading customer service, maintaining efficient costs while ensuring that the network is equipped to support the government's ten point plan to deliver the net zero carbon initiative.

Figure 1.5 RIIO-ED2 key core commitments

What are we delivering in RIIO-ED2

1.21. We propose to invest around £6 billion in the network across the period 2023-2028 to deliver our commitments and provide the level of service our customers want. This is an increase in overall expenditure of around £835 million from current levels. This will deliver significant benefits to customers and move us towards net zero. At the same time, customer bills are set to remain broadly the same as present day levels.

1.22. The chart below compares our average annual spend in RIIO-ED1 to our current forecast for RIIO-ED2. Our total annual spend is forecast to increase, driven primarily by an increase in reinforcement of the network – which is absolutely essential to facilitate the move to net zero carbon emissions.

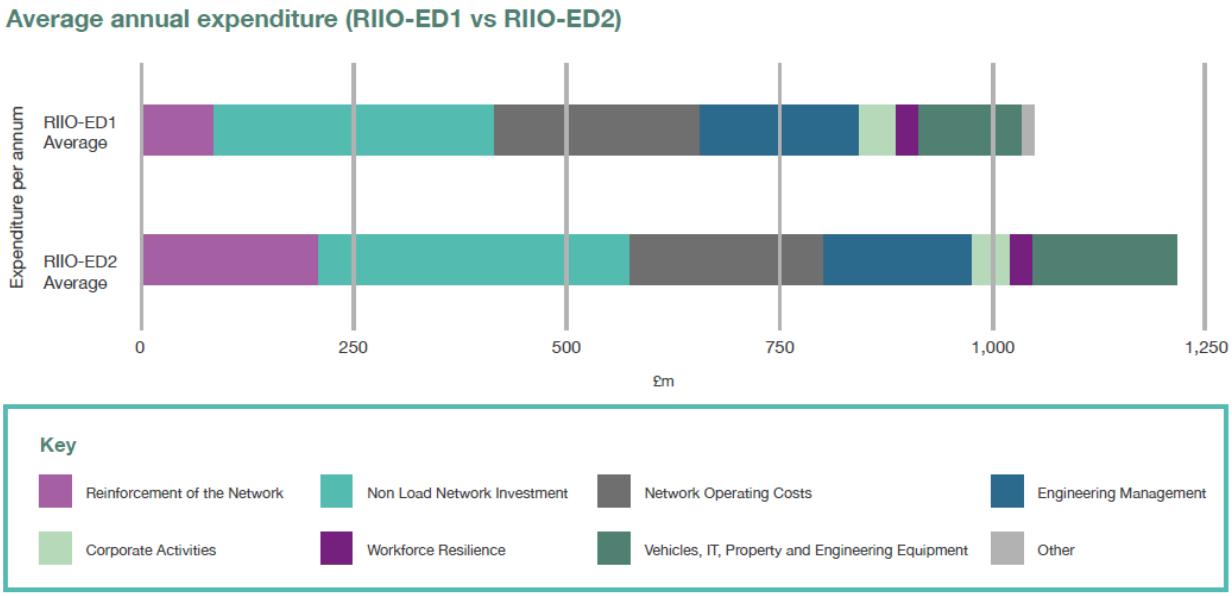

Figure 1.6 Average annual expenditure RIIO-ED1 vs RIIO-ED2

1.23. Our portion of the bill typically makes up around 17% of an average domestic customer's yearly electricity bill, charged by suppliers. We expect this to remain broadly at the same level in RIIO-ED2.

1.24. Customers do not pay their bills directly to WPD but to their chosen electricity supplier. Ofgem regulates WPD's allowances through the price control process. Enabling us to fund our operations and also undertake required additional investment.

1.25. The impact on customer bills is driven by a number of factors including the overall expenditure we are proposing, the efficiency measures we implement, and the allowed finance package and inflation rates. Any impact on expenditure and customer bills will be explained in future publications of WPD's Business Plan.

1.26. Our current calculations estimate that the impact of the increased expenditure above, based on our view of Ofgem's finance package, would result in an approximate £1.95 increase to the average domestic bill. However, we predict that this will be offset by our efficiencies, changes to the financing parameters and other aspects of the RIIO-ED2 framework. At present, these changes mean that we intend to keep bills broadly flat across the five year period 2023-2028, with no anticipated increase.

1.27. If expenditure levels did not increase as proposed, and remained at today's levels (£1.05bn per year), bills could be reduced, based on the financing assumptions we expect for RIIO-ED2. However, we are proposing to spend more money per year than in RIIO-ED1 to deliver the commitments outlined in this document, as well as to deliver against key government policy including the transition to a net zero carbon future.

Creating a sustainable future

1.28. Our RIIO-ED2 Business Plan recognises that we will play a critical role in supporting the UK to move to a low carbon future. Network investment requirements are informed by our Distribution Future Energy Scenarios which provide a forecast of future electricity, based upon national scenarios and regional low carbon plans. We will need to spend more on providing the network capacity required, but are incorporating the use of lower cost alternatives, including using flexibility services instead of conventional reinforcement.

1.29. Our plans take into account the need to work closely with other electricity distribution and transmission companies as well as other utilities and stakeholders. This whole system collaboration is essential to identify solutions that enable us to make informed investment decisions, tackle the limitations of the network and ensure that data from the network is available to those who need it.

Chapter 2

We deliver on our commitments

Chapter 2 Contents

2. We deliver on our commitments

Summary

2.1. It really matters to us that we build on our successes during RIIO-ED1 to deliver even more for our customers in RIIO-ED2. By delivering on our current commitments, we continue to demonstrate to stakeholders our determination to achieve our future goals. We have learnt from our achievements and, as we approach RIIO-ED2 and the challenges of a rapidly-changing energy landscape, we are more ambitious than ever to exceed our customers' expectations and to deliver on our latest commitments.

2.2. WPD has an enviable record of delivering on its commitments. For RIIO-ED1, we were the only Distribution Network Operator to be fast-tracked by the regulator. This means that our Business Plan covering all four licence areas was judged by Ofgem to be of a sufficiently high standard and well justified to be accepted in full. Ofgem recognised WPD as the leading company for customer service and for our ability to reduce costs and operate efficiently. Throughout RIIO-ED1, we have continued to focus on fulfilling our commitments and are on track to deliver and, in some cases, exceed what we promised.

2.3. We have a strong belief that utilising in-house regional resources is key to cost effective and efficient delivery which is why we use local teams to serve each local area. Our staff are part of these communities. Therefore, they know the area, network and many of our customers, enabling us to provide efficient, high quality customer service.

2.4. This section explains not only why we are ahead of the majority of our targets for RIIO-ED1 but how we will go even further before the end of this period. In RIIO-ED1, WPD is the top DNO for customer satisfaction with an average score of 8.98 out of 10. We have also achieved many other successes, including significantly improving our network reliability and reducing our business carbon footprint.

2.5. We have gone beyond commitments we made at the start of the price control period. We were the first DNO to set up a Distribution System Operator operation which has helped to accelerate the move to local generation and flexible services. We have also supported local community projects through our £1m 'In This Together - Community Matters' fund during the Covid pandemic and committed up to £80 million to the green recovery.

2.6. We have achieved these outcomes by utilising the allowances we received in RIIO-ED1, ensuring that customers receive service improvements and value for money.

Our performance in RIIO-ED1

2.7. We have a strong track record of delivering excellent levels of performance for customers and are confident we can build on the successes of RIIO-ED1 to deliver our RIIO-ED2 plan.

2.8. The customer service experience and the safety of our customers, contractors and staff are our top priorities. We are on track to deliver or exceed our original RIIO-ED1 targets and, as we continue to respond to the changing needs and expectations of our customers, our focus will be on outperforming these targets.

RIIO-ED1 Output Performance

Safety

- ✓ Complying with health and safety law
- ✓ Reducing accidents
- ✓ Enhancing substation security
- ✓ Educating the public

Reliability

- ✓ Improving network performance
- ✓ Meeting our Guaranteed Standards of Performance
- ✓ Reducing the number of Worst Served Customers
- ✓ Making our network more resilient

Environment

- ✓ Making it possible for more people to use low carbon technologies
- ✓ Reducing network losses
- ✓ Reducing the carbon footprint of the business
- ✓ Reducing the environmental risk of leaks from equipment
- ✓ Improving the appearance in National Parks and Areas of Outstanding Natural Beauty

Connections

- ✓ Providing a faster and more efficient connections service
- ✓ Improving communications with customers
- ✓ Enhancing engagement with major customers
- ✓ Meeting our Guaranteed Standards of Performance
- ✓ Further developing a competitive market

Customer Satisfaction

- ✓ Improving customer service
- ✓ Improving our telephone response times
- ✓ Enhancing our communication with customers
- ✓ Involving stakeholders
- ✓ Reducing complaints
- ✓ Promoting Guaranteed Standards of Performance awareness

Social Obligations

- ✓ Improving understanding of vulnerability
- ✓ Improving the data held on the Priority Services Register
- ✓ Improving the services provided for customers in vulnerable situations
- ✓ Reducing fuel poverty by supporting customers to access help

Figure 2.1 RIIO-ED1 Output Performance

Proven delivery of excellent customer service

2.9. We understand how important excellent customer service is for our 7.9 million customers and are determined to be industry-leading in this area.

2.10. We have consistently been the top performer with a five year average result for customer satisfaction of 8.98 out of 10 during RIIO-ED1.

2.11. Customers are at the heart of everything we do. Our staff and contractors are customers too, so we ask them 'to treat customers as you want to be treated' which we call the golden rule.

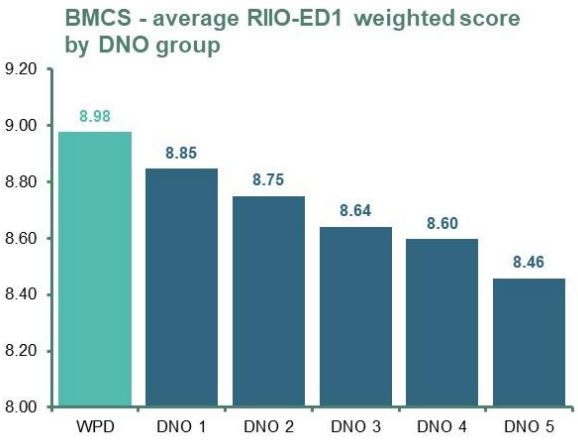

Figure 2.2 Broad Measure of Customer Satisfaction

2.12. We also aim to 'get things right first time' meaning that whoever is dealing with the customer takes responsibility for resolving that query to that customer's satisfaction. We recognise that it is extremely frustrating for a customer to be passed around an organisation or, worse still, to be unable to speak to someone about their enquiry.

2.13. We believe in talking to our customers. We have regionally based, in-house contact centres, where we answer calls within an average of two seconds. We ensure excellent customer service by regularly engaging with customers through a range of channels, including annual stakeholder workshops. Engagement helps us to understand and refine our approach in line with customer need.

2.14. We won four awards at the December 2020 International Engage Awards for our outstanding customer service, fighting off stiff competition from the likes of Microsoft, Sainsbury's, Coca-Cola, DPD, British Gas and Royal Bank of Scotland. We picked up three gold awards and one bronze and even received a special mention from Steve Hurst, Chair of the International Engage Awards judging panel.

2.15. We recognise that we are not perfect and things go wrong. When this happens, we will resolve complaints quickly and use this as an opportunity to show our customers the excellent customer service we provide. This approach has enabled us to resolve 89% of complaints in one day in 2019/20. Ultimately, we aspire to turn every complaint into a 'thank you'.

An external view on our performance ……..

2020 ENGAGE AWARDS WINNER

Gold - *Best Customer Service Team*

2020 ENGAGE AWARDS WINNER

Gold - *Best Customer Contact Strategy in a Crisis*

2020 ENGAGE AWARDS WINNER

Gold - *Best Innovation in Customer Engagement*

2020 ENGAGE AWARDS WINNER

Bronze - *Best Use of Training*

Steve Hurst, Chair of the International Engage Awards judges said: *"Our winners came from a variety of industries, but **we must give a special mention to our triple winner Western Power Distribution**, who were named winners in 'Best Customer Service Team', 'Best Customer Contact Strategy in a Crisis' and 'Best Use of Innovation in Customer Engagement'. **This is a real testament to the team to achieve so much in such uncertain times."***

Figure 2.3 International Engage Awards 2020

Proven delivery of an industry-leading social obligations strategy

2.16. We have invested £9.5 million since 2015 to support our vulnerable and fuel poor customers. We have also expanded our activities, tailoring our approach to what our customers tell us they want from our engagement programme.

2.17. We are committed to helping customers in vulnerable circumstances which is why we have taken significant steps to improve our understanding of customer vulnerability during RIIO-ED1.

2.18. In February 2021, we won the award for Customer Vulnerability at the Utility Week Awards. The award demonstrates our commitment and our ongoing success in this area.

WPD's social obligation success

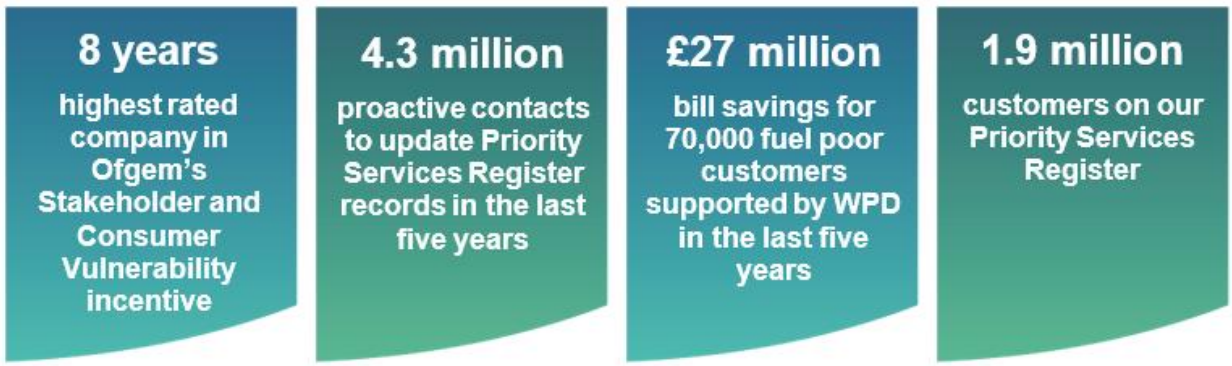

Figure 2.4 WPD's social obligations success

Improvements to network performance

2.19. Our customers deserve a reliable electricity supply. A growing reliance on electronic equipment, the move to electric vehicles and heat pumps, and an increase in home working makes this supply more critical than ever. Our customers tell us that network performance is a high priority and that it makes a real difference to people's lives. We have a proven track record of improving network reliability and have made further progress during RIIO-ED1.

Reliability performance success

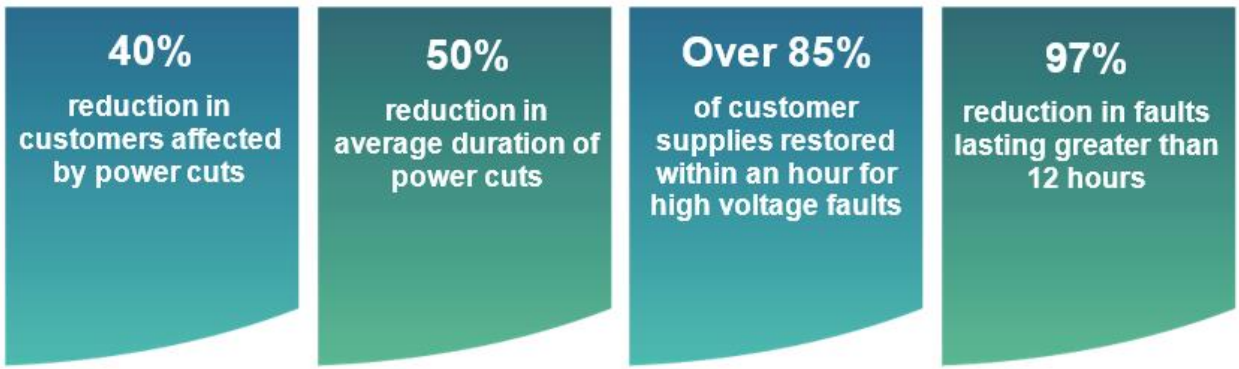

Figure 2.5 Highlights of our reliability performance during RIIO-ED1

Proven safety record

2.20. We regard the safety of our staff, contractors and the general public our highest priority. We strive to achieve the very highest safety standards and to nurture a strong safety culture.

Our safety performance RIIO-ED1

Figure 2.6 Highlights of our safety performance during RIIO-ED1

Proven reduction of our environmental impact

Reducing our business carbon footprint

2.21. We fully embrace the part we can play to reduce the impact on the environment. During RIIO-ED1, we have focused on reducing our business carbon footprint which is a measurement of the impact on the environment from our work activities. We now regard this as an even higher priority going forwards.

Reducing our environmental impact

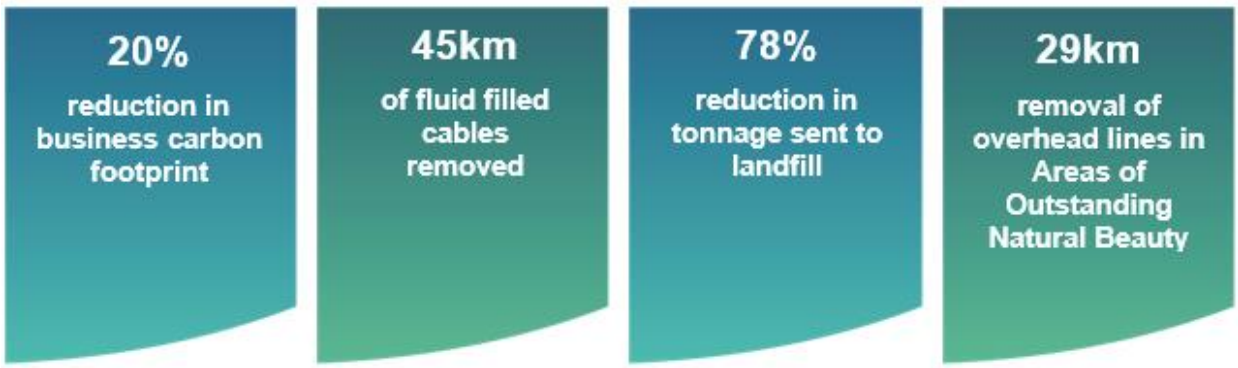

Figure 2.7 Areas where we have reduced our environmental impact

Enabling increased volumes of low carbon technology connections

2.22. Over the course of RIIO-ED1, we have seen huge changes in the way that electricity is generated and consumed. As a result, the scope of our activities has developed beyond the commitments that we made in our RIIO-ED1 Business Plan.

2.23. We have undertaken work in RIIO-ED1 which supports our aim to achieve a decarbonised network for our customers in the future. By starting the work ahead of RIIO-ED2, we have already made improvements to our network which will support the achievement of net carbon emissions in the UK by 2050.

Establishing a Distribution System Operator (DSO) capability

2.24. The significant changes in the way electricity is generated and consumed, are largely as a result of the growth of distributed generation, electric vehicles, heat pumps and development of other emerging technologies.

2.25. We were the first DNO to react to these changes, developing our Distribution System Operator capability. These enable us to operate the network more flexibly, balance sources of supply and demand in real time and avoid the need for costly network reinforcement, where possible, by local management of generation output, load and power flows. We also created a DSO and Future Networks team, which operates separately from our existing operational teams.

2.26. In June 2019, we were the first DNO to publish a fully costed DSO transition plan. This outlined our strategy, implementation plans, costs and timescales for undertaking wider DSO activities. This plan is updated every six months.

Figure 2.8 Highlights of our DSO activities impact.

Highlights of our DSO activities

Producing Distribution Future Energy Scenarios (DFES)

2.27. In 2015, we were the leading DNO to publish a Distribution Future Energy Scenarios document, forecasting the volumes and regional distribution of low carbon technology uptake in our region. This uses stakeholder-informed 'bottom up' analysis to align with national 'top down' industry-developed future energy scenarios. DFES are key to our continual assessment of the distribution network, helping us to highlight potential network constraints before they arise.

2.28. To enhance the quality of our DFES process further, our Distribution Managers work proactively with the local authorities in their areas to understand the authorities' strategic ambitions and delivery plans, allowing these to be factored into WPD's Best View of the future energy requirements.

Procuring flexible services

2.29. We implemented the first dynamic purchasing system for the procurement of demand side flexibility services. This system enables us to maintain a register of potential flexibility providers and directly engage with them when procuring demand side flexibility services, while remaining compliant with EU procurement law.

2.30. We were the first DNO to commit to a six monthly procurement cycle for flexibility services through our customer-facing flexibility service, known as 'Flexible Power. We have also implemented weekly processes for identifying short term flexibility need and use an electronic, automated dispatch platform. Our work in this area again makes us an industry leader.

Making our network data available to our stakeholders.

2.31. We recognise that digitalisation of the energy system is key to building a smart and efficient energy system and underpins our RIIO-ED2 strategy.

2.32. Digitalisation is the process of using digital technologies to make fundamental changes to the way the network is operated. Over the course of RIIO-ED1, we have gradually increased the level of digital technologies on the network – from automation to monitoring equipment.

2.33. Key activities undertaken during RIIO-ED1 to support digitalisation in RIIO-ED2 include:

Supporting the green recovery and net zero

2.34. The UK's 2019 commitment to reduce greenhouse gas emissions by at least 100% by 2050 (compared to 1990 levels) presented new challenges for us. We must ensure that the development of our network supports the achievement of the government's net zero targets.

Key activities supporting Digitalisation
✓ Publishing a Digitalisation Commitment in December 2019
✓ Making data available via our Energy Data Hub on the WPD website
✓ Using a wide range of external data from developers, government and local authorities to produce future energy scenarios
✓ Investigating the potential to automatically detect homes with solar panels or electric cars using shared data from ElectraLink, the central body responsible for sending energy data around the whole industry
✓ Allowing communities and energy service providers to access consumption data securely from their local distribution substation as part of our Open LV innovation project
✓ Launching the Carbon Portal to provide accurate real-time historic and future CO2 content for the actual electricity being delivered to our customers' homes.

Figure 2.9 Key activities supporting digitalisation during RIIO-ED1

2.35. To date, we have connected almost 10GW of distributed energy resources (including distributed generators and storage) to the network. We have re-engineered our network, which was designed to supply 14GW of maximum demand, to accommodate up to 20GW of distributed energy resources.

2.36. We have committed to spend up to £80 million in the last three years of RIIO-ED1 to support the green recovery. We will invest into our EHV network our high voltage network to boost network capacity, allowing low carbon technologies to connect to our system and accelerate the green recovery.

Electric vehicles (EVs) and heat pumps

2.37. We recognise that the growing popularity of EVs and heat pumps has the potential to significantly alter daily load profiles and increase the amount of power used.

2.38. During RIIO-ED1, we were the first DNO to introduce an EV strategy. This describes our plans to support the development of an EV charging infrastructure, enabling EV drivers to charge their vehicles at a time and place to suit them. Our strategy was developed using learning gained from RIIO-ED1 innovation projects and designed to enable DNOs to identify the parts of their networks likely to be affected by plug-in vehicle uptake and domestic charging.

2.39. We have also published a Heat Pump Strategy outlining our plans to support the expected rise in heat pump installations as part of the UK's transition to net zero.

Case study - Sharing the results of the industry leading Electric Nation Smart Charging trial

In July 2019, we held an event to share the results of our Electric Nation Smart Charging trial. We shared detailed data gathered from the trial and the conclusions reached, including the following:

- Customers can be flexible in the time of day they choose to charge their vehicles but, without incentives, the demand for evening charging requires management
- Remotely managing customer charging is technically feasible, as well as being acceptable to participants
- 'Time of use' incentives appear to be effective at moving demand away from the evening peak

Figure 2.10 Our Electric Nation case study

Innovation in RIIO-ED1

2.40. We recognise the importance of innovation to enhance the efficiency of our business and drive cost savings for our customers. During RIIO-ED1, we undertook a wide range of innovation projects but recognise that the key to success is translating any learning into business as usual efficiencies. We have also developed a culture where can not only staff see the benefits of making changes to improve our performance but are empowered to get on with it. Examples of where we have harnessed innovation to boost efficiency can be found below.

Innovation activities	Benefits
Adoption of 'Agile Auditing' techniques to enhance the audit process. The concept of 'Agile Auditing' represents an innovation in audit approaches and technique. The team have explored the opportunities that the concept provides to Internal Audit within WPD. The team has refreshed its methodology and approach to embed those aspects that help the team to deliver efficient and effective services. In particular we have revised planning and reporting templates to enhance service delivery.	Quicker delivery of key audit findings to enable business manager to enact opportunities as soon as possible.
	Enhanced and shortened templates that improve communication of audit results.
Launched bespoke services for deaf and hard of hearing customers – Interpreter Now, including Video remote interpreting for engineers on site. NGT Lite.	Improved access for our deaf customers, allowing them to contact us directly without an intermediary or interpreter and give the ability for our front line staff to talk directly to deaf customers on site.
Introduced the WPD support app, to specifically reach PSR customers.	Allows PSR customers to update their details as circumstances change, obtain support from us 24/7 & quick access to power cut updates and provides an alarm to be used for this with sleep apnoea machines.
Losses estimation tool for flexibility.	Estimation of additional losses due to flexibility.
Integration network model.	Digitalisation, data quality
Vegetation management from LiDAR data.	Business efficiency, digitalisation, data quality
LV network investment forecasting tool.	LCT connections, business efficiency, data quality, digitalisation
Customer enquiry tracker.	Customer service, business efficiency, replacement of legacy system
Hazardous waste app.	Regulatory compliance, business efficiency, digitalisation

AR -Automatic CROWN refunds.	The CROWN refund project has been implemented, automating cheque refunds in CROWN to improve efficiency, adding a dropdown box with predetermined narrative, routing to the appropriate authoriser online and adding an interface between CROWN and E5 and vice versa, updating CROWN with confirmation of cheque processing. Saving duplication of data entry and substantial time creating the manual payment request in e5.
Company-wide automated work flow	Automate as many tasks to reduce man hours, delays and mistakes
LV Connectivity Model	Creation of an LV connectivity model in Electric Office enables:
	Users to simulate electrical traces on the network, Simulation of feeder changes, Association of customers to feeders and load analysis, Supply of circuit based data to other products - e.g. LVConnect, Essential for transition to DSO.
Tree Species Identification	Using LiDAR and stills imagery to identify tree species. Trial being rolled out in ED1 with quick implementation if proved successful.
Replacement GIS System	Productivity, Interoperability between systems, Asset Tracking, System alignment/interfacing, Reporting, Network connectivity - creation of LV Connectivity model, Future proof GIS system.
Introduced GIS data to the helicopter camera system.	Camera using inertial navigation system recognises the asset it is looking at and displays this on the screens within the aircraft.
Use of LiDAR data for engineering.	LiDAR system tested for accuracy on 132kV line refurbishment. Saved the company approximately £20K.
Continual development of ANM. ANM was rolled out in 2014, but full scale business roll out required significant further development, including working with the ANM suppliers to develop their systems to work more efficiently.	Allows more customer connections without reinforcement.
WPD Field Team Work Instructions issued electronically	Paperless approach. Immediate access to job information. Reduced travelling to office to collect which reduces carbon footprint and increases efficiencies.
Network changes sent to Mapping Centre electronically direct from site by Jointers	Immediate update, paperless, reduced Admin process.
Introduction of 'What's App' & 'What Three Words' in Contact centre	These applications give greater flexibility and clarity to passing on emergency information for call takers, Control and field staff. Particularly useful for network damage, and fault incidents.
Automation of the production of health indices	The production of health indices requires processing of data about 1.7 million discrete assets and 7700 km of linear assets, through around 100 CBRM models that carry out the calculations to implement CNAIM. The data extraction, combination of data from different systems and running of models was previously manual and would take around a month to complete. All the processes have been automated which allows the health indices to be refreshed every month allowing operational teams to have more up to date information for the selection of assets to replace or refurbish. It also speeds up the end of year processes for population of regulatory returns, providing more opportunity for checking and review.
Targeting support with social indicator data.	Social indicator mapping tool. Comprises 67 datasets which are used by WPD and our referral partners to better identify potentially vulnerable or fuel poor households and therefore better target support and outreach services. Open sourced for anyone to use and drive further innovation and partnerships, with ability to filter data by 28 different criteria, from traditional areas of DNO concern including “PSR eligibility” and “fuel poor households”.
IRIS - The new incident reporting information system (IRIS) was implemented in 2020. This replaces the old NAFIRS system but with the capability to track the impact of network incidents down to individual customers.	Our external auditors said this was the first reporting system they had seen in the UK that was able to report down to this level of detail.
App developed for Comms engineers for fault reports.	Allows communications engineers to update fault reports from site rather than having to return to offices to complete paperwork. Also allows monthly KPIs to be produced online rather than having to use paper methods.

Figure 2.11 Innovation activities undertaken during RIIO-ED1.

Supporting community energy

2.41. Community energy groups are expected to play an important part in achieving net zero, by enabling future networks to be smarter and more flexible.

2.42. As part of our commitment to this during RIIO-ED1, we have:

Key activities supporting Community Energy
✓ Undertaken a range of innovation projects focused on community energy projects from early stage Demand Side Response trials to large scale demonstration projects such as Open LV, providing distribution substation data in real-time to enable communities to understand their energy use and increase their flexibility
✓ Developed new sources of online information for community energy customers covering a range of topics from connections to flexibility markets
✓ Facilitated shared learning between community groups, including site visits
✓ Provided opportunities for stakeholders to discuss innovation project ideas and seek feedback

Figure 2.12 Key activities supporting community energy during RIIO-ED1

Our expenditure in RIIO-ED1

Total expenditure (Totex)

2.43. Our total expenditure includes capital investment in the network (e.g. building new network or replacing old assets) and operating costs for areas including maintenance, fault repairs and training.

2.44. We invest the money we receive from our customers effectively and efficiently to make our network more reliable and to ensure the capacity to meet future connection requirements.

2.45. In the first two years of RIIO-ED1, we spent more than our allowances to get ahead in our work programmes and deliver benefits for customers. Expenditure has progressively been brought in line and at the close of 2019/20, our expenditure was 2% below our Totex allowances for RIIO-ED1 to date as shown in the table below. While the COVID-19 pandemic and the restrictions it imposed on our work will impact on what we are able to deliver in 2020/21, we expect that the majority of this work will still be completed by the end of RIIO-ED1, particularly as we seek to deliver increasing levels of reinforcement to aid the green recovery.

	2015/16 Actual	2016/17 Actual	2017/18 Actual	2018/19 Actual	2019/20 Forecast	2020/21 Forecast	2021/22 Forecast	2022/23 Forecast	RIIO-ED1 Total
Totex £m	1,120	1,169	1,007	935	962	978	1,095	1,099	**8,366**
Allowance £m	1,094	1,090	1,029	1,055	1,039	1,031	1,052	1,058	**8,447**
Variance £m	26	79	-21	-119	-77	-53	43	42	**-81**
Cumulative variance £m	26	105	84	-36	-113	-166	-123	-81	
Cumulative variance %	2%	5%	3%	-1%	-2%	-3%	-2%	-1%	

Figure 2.13 Our Totex performance during RIIO-ED1

2.46. We continued to ensure we deliver on the commitments in our RIIO-ED1 investment plan, as well as making service enhancements above and beyond our original commitments. The costs of these service enhancements have been offset by efficiencies throughout the period, which means we remain on track to deliver within our RIIO-ED1 allowances by the end of the price control period.

Proven efficient cost of delivery

2.47. As the only fast tracked DNO in RIIO-ED1, we have a proven reputation for efficient delivery. From the outset of RIIO-ED1, we have focused on delivering the Business Plan outputs agreed with our stakeholders in the most efficient way possible.

2.48. Our approach demonstrates our commitment to providing a value for money service without compromising the high standards which our customers have come to expect. We believe efficiency is about much more than the cost of delivery and will continue to emphasise the importance of customer benefits in our decision-making processes.

2.49. We continue to embed efficiency improvements introduced at the start of RIIO-ED1 and to see the impact of these in the second part of the current price control period.

Customer bills in RIIO-ED1

2.51. Our aim is always to deliver an excellent and affordable service to our customers. In RIIO-ED1, we will not only deliver our outputs and continue to invest in the network to improve our services but will go beyond these commitments. Our efficient approach to operating the business has enabled us to do a lot more than we planned, while keeping customers' bills at a consistent level throughout RIIO-ED1. Overall, our average domestic customers pay £96 a year for our service.

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Chapter 3

Giving customers a stronger voice

Chapter 3 Contents

3. Giving customers a stronger voice

Summary

3.1. In this chapter, we outline how we have undergone the most comprehensive and inclusive stakeholder engagement programme ever to arrive at the proposed commitments we will deliver for stakeholders in RIIO-ED2. More than 9,600 stakeholders have already had their say (over 5,700 via direct, in-person engagement) as part of a rigorous engagement process that will continue throughout 2021 right up to the submission of WPD's final Business Plan in December 2021. Insights from over 50,000 wider stakeholders and customer surveys have also strongly informed our approach and proposed commitments for RIIO-ED2. Our stakeholder engagement has included our broadest ever range of stakeholders, including perspectives from bill-paying customers and future customers.

3.2. We have followed an ambitious process to co-create and negotiate our Business Plan with stakeholders, to ensure that it meets the different, wide ranging needs and expectations of the customers and communities we serve. We have sought to collaborate with stakeholders at every stage to develop the specific commitments and targets we must deliver and to ensure our plans address stakeholder priorities.

3.3. As part of our engagement approach, we host annual workshops to set our strategy and priorities, as well as conducting research, surveys, conferences and bilateral meetings. This enables us to identify new and emerging priorities, reflecting shifts in wider society and stakeholder expectations.

3.4. Every core commitment in this draft Business Plan is in response to an area of focus identified as a priority by stakeholders. Our ongoing consultation will determine whether they consider these first proposals to adequately address their priorities. Where this is the case, we will collaborate with stakeholders to set the precise scale of ambition and delivery targets for each commitment. Where our proposals fall short, we are asking stakeholders to suggest additional or alternative commitments.

The environment we expect to operate in

3.5. This is an exciting time for the future of energy in the UK. WPD's Business Plan sets out an ambitious programme of work to drive key changes, including the decarbonisation of transport, the widespread adoption of energy flexibility services and support for the ambitious, bespoke energy plans in the local communities we serve.

3.6. As a result of our longstanding approach to stakeholder engagement, we have built a strong understanding of the needs of our stakeholders. In addition, there are key environmental and regulatory obligations and government policy decisions that we must deliver. For example, WPD has a fundamental responsibility to help to drive the government's target for net zero carbon emissions by 2050.

3.7. When we began the process of planning for RIIO-ED2, there were key focus areas we expected to see in our Business Plan. These included the shift to build and operate a smarter, more flexible energy network and the need to facilitate the connection of increasing volumes of electric vehicles and other low carbon technologies. Our decades of expertise running the electricity network allows us to use our considerable knowledge to anticipate some of the needs of our customers. However, we are careful never to assume what our customers expect from us, which is why we place such a high importance on engaging regularly with our stakeholders.

3.8. In a number of areas, stakeholders may want us to build on our track record of delivery and achieve incremental improvement, but in others they may want to propose entirely new ways of operating. That is why it is vital that we ask open, non-leading questions to understand stakeholder requirements. Customers pay for everything we do, so they have a right to influence every aspect of our delivery.

3.9. In 2019, before starting our RIIO-ED2 engagement programme, we asked stakeholders to start with a 'blank sheet of paper' to tell us the high-level outcomes they wanted WPD to achieve for customers in our next Business Plan. We sought to provide only essential context and information on our current baseline performance.

3.10. Since then we have built our Business Plan in stages – collaborating with stakeholders throughout, in a process of 'co-creation'. The decision to start from a blank sheet of paper was an intentional strategy to:

- Update our understanding of stakeholder priorities
- Identify significant changes in expectations
- Invite suggestions for ways to improve, change or evolve our operations.

Highlights of our stakeholder engagement

Figure 3.1 Highlights of our engagement with stakeholders

WPD's first draft Business Plan consultation and how the findings have impacted this second draft

3.11. In January 2021, WPD became the first Distribution Network Operator to publish its Business Plan with an accompanying stakeholder consultation, 10 months ahead of its final submission to Ofgem. We did this to provide full transparency to stakeholders and maximise their opportunity to have an input into our planning process. We invited stakeholders to help negotiate and refine our precise commitments, levels of ambition and performance targets for RIIO-ED2.

3.12. We are building a plan that is well justified and wholly reflective of the needs and priorities of our full range of stakeholders. To arrive at our first draft, we engaged with 7,341 stakeholders (over 4,500 via direct, in-person engagement) to co-create our proposals. Since then, we received a further 2,331 responses to aspects of our consultation from a wide cross section of stakeholders across the four week consultation period. This included a mix of qualitative and quantitative engagement methods.

3.13. Stakeholder feedback has led to significant changes in the core commitments proposed in this second draft Business Plan. We have:

- **Streamlined our core commitments to 58 (reduced from 67)**
  - With previous actions categorised within our 100+ wider commitments
- **Introduced 4 new core commitments**
- **Increased the ambition of 35 of the core commitments (60%) and**
- **Reworded 11 core commitments to ensure they deliver clearer outcomes**

First draft Business Plan consultation

3.14. WPD's 'Have Your Say' consultation on the first draft of the Business Plan was published on 27th January 2021 and requested responses to our consultation by 28th February 2021.

3.15. We set out 13 specific questions covering WPD's core commitments, proposed expenditure, the presentation and accessibility of the plan, its overall acceptability, and actions to deliver a low carbon future.

3.16. Our overarching goal was to understand the priorities of a wide range of stakeholders (including major representation from end-user, bill-paying customers) and ensure our proposed commitments deliver the core outcomes and appropriate scale of ambition that stakeholders want to see from WPD. The document therefore presented:

- Options for investment and the costs
- The service improvement to be delivered by each investment option
- The impact on the average domestic electricity bill.

3.17. To explain our core commitments, we gave an overview of the stakeholder views which helped us to arrive at our initial 'current view' proposals, as well as a summary of WPD's current performance and key information. We asked stakeholders to indicate areas where they would like us to go further than our initially proposed baseline, as well as to suggest entirely new commitments.

Figure 3.2 Our first draft Business Plan consultation

3.18. It was essential to maximise the opportunities for stakeholders to participate in, and respond to, the consultation. We published the first draft Business Plan and accompanying consultation on our website, along with four introductory, contextual videos from WPD senior managers with responsibility for key aspects of the Business Plan. We also created an online response hub for stakeholders to submit their views directly, as well as an option to download a response form to submit via email or post.

3.19. We sent the draft Business Plan and consultation to almost 9,000 stakeholders and invited them to participate in a follow-up webinar and stakeholders' workshops. The audiences with whom we shared the consultation included:

- **Website:** First draft Business Plan (BP1); consultation; online response form; downloadable form; explanatory videos **(4,561 page hits)**
- **Ofgem, BEIS and Challenge Group:** Sent BP1, consultation and the offer of a bilateral meeting, from WPD's CEO **(10 stakeholders)**
- **Members of Parliaments and Welsh Assembly Members:** Sent BP1, consultation and an offer of a bilateral meeting, from WPD's CEO **(181 stakeholders)**
- **Local Authorities and LEPs:** Sent BP1, consultation and an offer of a bilateral meeting **(130 stakeholders)**
- **Key stakeholders (e.g. Citizens Advice, ENA, trade associations):** Sent BP1, consultation and a webinar/workshop invitation **(460 stakeholders)**
- **Wider stakeholders:** Sent BP1, consultation and a webinar/workshop invitation **(>8,000 stakeholders)**
- **Customer Engagement Group, Customer Collaboration Panel & Connections Steering Group:** Sent BP1, consultation and a webinar/workshop invitation **(94 stakeholders)**
- **Press release and media:** National and local media; Phil Swift Utility Week interview
- **Social media:** Monthly campaign and end-customer surveys **(305,497 views; 3,222 engagements)**
- **Trade Unions, Pension Trustees, Investor community and contractors:** Sent BP1 and consultation from Directors **(>50)**
- **Our staff:** Bespoke intranet page; surveys and response form; news and CEO bulletins **(6,500)**

3.20. As well as achieving an excellent rate of direct responses, we ran a series of stakeholder workshops to walk stakeholders through our proposals, provide essential context and allow them to provide extensive qualitative feedback. This included five workshops to specifically discuss WPD's delivery strategies and commitments in the following areas: customer vulnerability, environment, innovation, digitalisation, and DSO and connections. We also hosted an innovative consultation 'sprint' event featuring quick-fire presentations on every key focus area of the plan and live quantitative voting on every core commitment, followed by breakout discussion sessions to flag new commitments or areas of significant change that stakeholders would like to see.

3.21. In total, WPD received feedback from 2,331 stakeholders, including 803 via direct, in-person sessions. We proactively encouraged a great deal of participation from end-user, bill-paying customers whose less detailed knowledge of WPD and our operations can sometimes lead to a lack of representation. In all, 1,487 end-customers delivered feedback on their preferred levels of ambition relating to WPD's core commitments. The overall responses received can be broken down as follows:

Engagement method	Number of stakeholders	Stakeholder types represented	
Four stakeholder workshops *(commitment creation and playback)*	**222**	*Usual full spectrum of stakeholders: local authorities, utilities, parish councils, charities, environmental groups, connections customers, developers, businesses, community energy groups etc.*	
Online engagement portal *(above workshops replicated online)*	**41**		
Webinar	**86**		
Direct consultation responses – online & written *(Commitment options – questions 4 &5)*	**78**		
Direct consultation responses – online & written *(narrative questions 1-13)*	**63**	*Including:* • *Utilities (e.g. E.ON UK)* • *Local Authorities (e.g. South Hams District Council; Torfaen County Borough Council; Herefordshire Council; Powys County Council)* • *LEPs*	• *Expert stakeholder groups and major customers (e.g. Centre for Sustainable Energy; Mozes; JRC)* • *Domestic customers* • *Environmental groups* • *Parish Councillors*
Bilateral expert sessions	**11**	• *Citizens Advice* • *Welsh Assembly Government*	
Consultation 'sprint' stakeholder workshop *(Commitment options)*	**86**	*Usual full spectrum of stakeholders: local authorities, utilities, parish councils, charities, environmental groups, connections customers, developers, businesses, community energy groups etc.*	
Five strategy workshops *(including reviews of associated BP1 commitments)*	**257**		
Bill payer/consumer surveys *(Commitment options)*	**1487**	*End user consumers*	

In addition, feedback from: ***110 WPD staff***

Figure 3.3 Methods of engagement

First draft Business Plan consultation – what we learned

3.22. An independent review of the consultation's findings helped to make sure all key points were captured. As a result of this first successful consultation, we have made multiple changes to our core commitments.

3.23. At that early stage, we still had a further draft business plan, this one, to publish and refine before the final submission to Ofgem. We welcomed the very positive, initial feedback we received from stakeholders. The resounding verdict was that our first proposals accurately reflected their priorities and provided an excellent starting point for negotiating exact levels of ambition. This is a testament to the extensive co-creation processes used to develop the plan.

3.24. **An early view of the acceptability of WPD's plan is illustrated by** the following feedback to our first draft:

Figure 3.4 Percentage of customers who did not request changes or alternatives to the core commitments

3.25. The full changes made as a result of the consultation are set out in Chapter 4. As a result of feedback, we have increased the scope of 60% of our core commitments, most notably relating to environment and sustainability, where five of our seven core commitments have been made more ambitious.

Our overarching approach to stakeholder engagement

3.26. Frequent, challenging and high quality engagement with stakeholders is crucial to the success of any organisation and is the core foundation on which our Business Plan for RIIO-ED2 is built. We set ourselves a number of challenges when developing the approach to stakeholder engagement in RIIO-ED2, which involved answering the following questions.

- Are we speaking to the full spectrum of people impacted by our operations now and in the future?
- Are we always avoiding asking leading questions - handing the decision-making power to stakeholders themselves and allowing them to start with a blank sheet of paper?
- Most importantly, are we turning these conversations into meaningful and measurable actions to improve the lives of the people who rely on us every day, and to allow stakeholders to track the results of their feedback?

3.27. Our overarching goal for engagement for RIIO-ED2 is to deliver the most extensive programme possible. We sought to deliver the highest quality engagement, identify our broadest stakeholder audience ever (including new and emerging groups) and engage using a range of techniques specifically tailored to our stakeholders' diverse and bespoke needs.

3.28. We adopt the widest possible definition of the term 'stakeholder', which means we strive to engage with anyone who has an interest in, or is impacted by, our operations. This can present its own challenges as each group brings a unique perspective and set of priorities. The key to overcoming this has been to work closely with our stakeholders, balancing the various considerations and reaching a consensus that works for everyone, wherever possible. After all, their views reflect the diversity of our 7.9 million customers, who pay for the work we do and, therefore, have a right to influence our service. The types of stakeholder we serve are summarised in this table:

Figure 3.5 Stakeholder engagement event

National policy	Government departments; industry bodies; Energy Networks Association; MPs and Welsh Assembly Members; media; trade press
Local energy influencers/partners	Local government; local authorities: Mayors and combined authorities; local enterprise partnerships; community energy groups; highways agencies; universities and research institutes
Customers	Domestic; business; future; fuel poor / vulnerable; vulnerable customer representatives; charities; consumer interest bodies; healthcare; emergency services; parish councils; distributed generation; storage/renewables providers and installers; energy aggregators; flexibility service providers; developers; major connections customers; energy consultants; independent connections providers; independent distribution network operators; non-government organisations ; trade associations; environmental groups; academic institutions; major energy users; electric vehicle charge point manufacturers and installers
Industry, workforce and supply chain	Suppliers; transmission companies; gas distribution networks; innovation project partners; WPD staff; supply chain and contractors; shareholders; investors; trade unions

Figure 3.6 Types of stakeholders

3.29. We have a comprehensive stakeholder engagement strategy It has undergone extensive external scrutiny - including benchmarking across a wide range of sectors - to ensure it is as effective and innovative as possible (as part of assessments via the British Standards Institute and Customer Service Excellence Standard).

3.30. Ultimately, we have co-created the Business Plan with stakeholders using an iterative process. This means it has been built up in stages, starting with a blank sheet of paper and regular interaction with stakeholders to play back what we have heard. Using this process, we have shared our proposed actions at an early stage, addressed any feedback and continually refined and added detail to our commitments. This has resulted in the most scrutinised, well justified, stakeholder-endorsed plan we have ever produced. To achieve this, our approach has been guided by six key principles:

- **Inclusive**: Our plans take into account all stakeholders, including the hard-to-reach and seldom heard voices. We have explicitly targeted and represented these within the testing sample of the various 'end user' surveys, research sessions and workshops we have undertaken. This is to ensure that we build our Business Plan with a broad, representative range of stakeholders. We have identified new, emerging and increasingly local stakeholder groups, as well as changes in the needs of existing stakeholders. For example, in recent years we have seen the emergence of storage operators, flexibility service providers, energy aggregators and electric vehicle charge point operators. There have been significant shifts in the requirements, responsibilities and interests of existing stakeholders including local authorities, community energy groups, fuel poverty charities and vulnerable customer support services because of the move to a low carbon future and the pursuit of net zero carbon emissions. Using a targeted engagement approach, we have developed insight that is representative of our entire community and worked with them to co-create a Business Plan to match.

- **Transparent**: This means publishing all feedback we have received and the actions that have resulted from it. We have not only shared the findings from each individual engagement activity, but have also produced a standalone synthesis report after each key engagement stage (see below for an overview of our five core engagement stages). These were produced by an independent, third party to combine the feedback received objectively and to present the key, overarching findings in a single, comprehensive report. This reassures stakeholders that no views have been omitted or ignored and shows how consolidated stakeholder feedback has led to action in our Business Plan. As a result, stakeholders do not need to review multiple engagement activities and reports.

- **Proactive**: We identify and reach out to stakeholders; they do not need to seek us out – however, we welcome all views and will not exclude any group. We have built trust by ensuring engagements include the full spectrum of stakeholders and have demonstrated an enduring commitment to acting on their feedback and using this feedback to influence short and long term planning, extending beyond the five year RIIO-ED2 period. We have sought to act in a fair, socially responsible way at all times, engaging early on key issues and ensuring a proactive response to challenging issues.

- **Tailored**: We use a wide variety of engagement methods to suit the audience, avoiding a 'one-size-fits-all' approach. For this Business Plan, we have engaged with our largest ever number of stakeholders. This means a much wider variety of representatives who all have their own very different knowledge of, interest in and direct experience of, WPD and the energy sector. In response, we must broaden the range of techniques and mechanisms we use to engage, drawing on best practice. The methods we select must suit the type of stakeholder we are engaging, not what is convenient for us. When tailoring our programme, we aim to include stakeholders from all levels in our business planning processes, and to avoid giving disproportionate attention to those who are 'louder' or better resourced to engage than others. This includes reaching out to hard-to-reach consumers who may not have participated in engagements before and ensuring a representative sample of these types of stakeholders are included in our feedback.

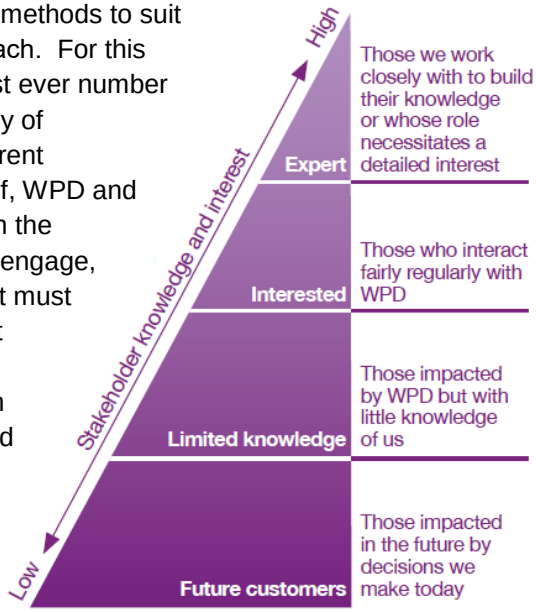

Figure 3.7 Knowledge and interest levels of our stakeholders

- **Purposeful**: Engagement needs to lead to action. The intention of every engagement is to learn, improve and involve stakeholders in the co-creation of our plans. We seek to engage as widely and inclusively as possible, using methods that encourage discussion and meaningful engagement. We avoid short survey responses and other information-gathering that makes it difficult for stakeholders to offer detailed responses. Our focus is always on meaningful, two-way engagement that hands decision-making power to stakeholders and directly shapes our actions.

- **Expert-led**: Our engagement programme is headed up by those best suited to the job, with appropriate expertise, experience and responsibility for acting on insight. Stakeholders tell us they value the fact that the WPD staff responsible for acting on their feedback are also the ones who participate in the delivery of the engagement.

3.31. The successful application of this approach has led to a richer, more comprehensive understanding of stakeholder requirements than ever before. In turn, this has produced an ambitious, wide-ranging Business Plan that delivers real value and innovative change for customers, by addressing the priorities, expectations and evolving needs of our stakeholders.

3.32. Stakeholder engagement is an enduring exercise at WPD. It underpins our decision-making processes across every strand of our business. We therefore focus on building long-term relationships with stakeholders, who frequently return to engage with us because they recognise the value we place on their feedback. To continue this success, it is vital we continue to challenge ourselves to develop our approach further, learn from best practice, and seek to deliver our most pervasive and stakeholder-led engagement programme ever. Everything we do is driven by our engagement with stakeholders and will enable us to co-create a plan that is fit for all our futures.

Key context: Identifying the landscape in which we expect to operate

3.33. Key changes in our operating landscape include:

- **Our vital role delivering net zero:** Low carbon technologies are already changing energy flows across the distribution network, in particular on the low voltage network. On top of this, demand for electricity is expected to rise significantly. These huge increases are largely a result of increased local generation, and the growing use of electricity for transport and heating.

As a Distribution Network Operator with a Distribution System Operations function, we have a fundamental responsibility to help deliver – and not just facilitate - the government's 2050 net zero target. Stakeholders do not want us to be passive. Instead, they believe we should be a key driver and innovator of the changes needed. That means we must actively encourage the connection of 'clean' local generation, proactively enable electric vehicle uptake and develop new ways of utilising existing capacity through extensive flexibility services, avoiding the need to build bigger networks.

- **Localism and supporting the bespoke energy plans of individual communities:** Net zero is a national target but will be delivered regionally. In WPD's area, almost 80% of the local authorities have declared climate emergencies, setting targets well in advance of 2050. It will take a co-working approach between WPD and a wide range of stakeholders to achieve an effective, decentralised energy system to deliver these ambitious targets. Change is happening at different pace across sectors and regions. For example, Lincolnshire (which has significant coastline with offshore wind) is planning to connect high volumes of distributed generation to our system, while urban areas like Nottingham and Bristol, which have set ambitious decarbonisation goals of 2028 and 2030 respectively, are pursuing huge increases in electric vehicles to decarbonise transport, alongside other key measures. That is why our engagement strategy could never follow a 'one-size-fits-all' approach. Instead, we must adapt our strategy to meet the differing requirements of our stakeholders and to tackle the very individual and complex issues facing each region. This calls for increasingly localised engagement. We must engage with local stakeholders to understand their existing energy plans, which can then be fed into our future energy scenarios. Equally, we will provide stakeholders with details of our modelling to help inform the creation and updating of their local energy plans.

- **Delivering an 'open data' future:** To deliver net zero, we not only need to change the way energy is used and delivered; we also need to ensure that the data that underpins this change is effectively utilised. Stakeholders are already asking for access to more and better quality data to help plan their own energy initiatives.

Data will be vital to show how and when electricity is being used and to avoid disruption to the network, as changing electricity habits make demand much less predictable in the future. Factors including 'clustering', where several electric vehicles are charging in the same street, and contrasting behaviour, for example where one consumer charges while another discharges, will drive significantly different flows on low voltage (LV) networks. Where the LV network becomes stressed and complicated, more detailed analysis is required – and that is where access to data is vital. Without data, the increased usage of electricity and changes in customer behaviour could cause massive disruption to the distribution network system. Data will be required to inform key network management decisions on investment or the development of Distribution System Operator services, including demand side response, flexible additional generation or flexible demand/access arrangements. Stakeholders expect us to adopt an open data policy, sharing all data unless restricted by privacy, security or commercial confidentiality reasons. We will then work alongside partner agencies to unlock value from this data and use it to trigger new, innovative services.

How stakeholders have co-created our Business Plan

3.34. We understand the need to pursue a highly ambitious stakeholder engagement programme if we are to create an equally ambitious Business Plan. We are proud of the quality, range and impact of our programme which is inspired by our aim to be an industry leader and to deliver the best performance in the UK. To deliver the most effective and meaningful engagement possible, we use every opportunity to build proactive relationships with stakeholders, organising face-to-face, enduring engagement wherever possible. This enables us to explore issues in greater detail and results in well-informed, granular feedback, helping us to drive maximum improvement and explore innovative and ambitious ways of improving our service. Where face-to-face sessions are not possible, such as during the Covid-19 pandemic, we have successfully adapted our approach to facilitate online engagement, video conferencing, webinars, online focus groups and research surveys. During the pandemic, we continued to engage as widely and inclusively as possible, maintaining similar volumes of stakeholder engagement despite the change in circumstances, enabling us to stimulate and act on meaningful feedback in the same way as before.

Figure 3.8 Stakeholder event to identify suggested actions for RIIO-ED2

3.35. From the beginning, the aim of our engagement has been to give customers a strong voice in our planning process. To do this, we have organised bespoke co-creation engagement events to enable stakeholders to influence and shape our decisions in the most pervasive, 'bottom-up' way possible. We have challenged ourselves to go further, asking stakeholders not simply to influence, change or refine our plans but to take part in collaborative engagement. This means stakeholders have been asked to start from a blank page and work alongside our staff to co-create our plans.

3.36. When the Customer Engagement Group (CEG) asked how we planned to achieve an engagement programme to address the needs of a broad cross-section of stakeholders, we commissioned an independent review of best practice approaches to engagement. The review covered a wide variety of sectors including water, gas and rail and revealed a broad range of engagement activities by these companies.

3.37. Our engagement approach during the RIIO-ED1 process (for which our plan was accepted first time by the regulator in a process known as being 'fast-tracked') involved stakeholders heavily in decision-making. But we wanted to go further during the RIIO-ED2 process by working with stakeholders to co-create plans from scratch, giving stakeholders free rein to go beyond the areas covered in previous stakeholder engagement. As a result, we have invited external scrutiny and challenge from the CEG as well as WPD's expert Customer Collaboration Panel, to ensure all

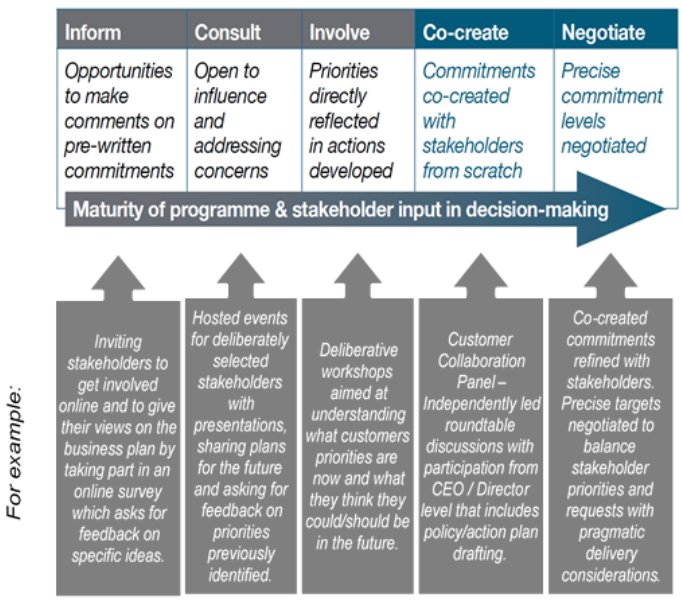

Figure 3.9 Levels of engagement maturity

our foundation stage engagement truly began from a ‘blank sheet of paper’ and used neutral, non-leading language.

3.38. We have asked stakeholders first to devise our overall priorities, before building these up to specific commitments and finally adding measurable performance targets - all from scratch. By doing this, we will deliver the best outcomes possible for customers, thanks to a Business Plan that reflects their needs and will adapt to their changing priorities over time.

Co-creation in action: Stakeholders’ high-level priorities for the future

3.39. In 2018, before starting our RIIO-ED2 engagement programme, we asked stakeholders to tell us the high-level outcomes they wanted us to achieve for customers in our next Business Plan. While the specific service expectations differed among stakeholder groups, they all agreed on eight core priorities that must underpin WPD’s Business Plan:

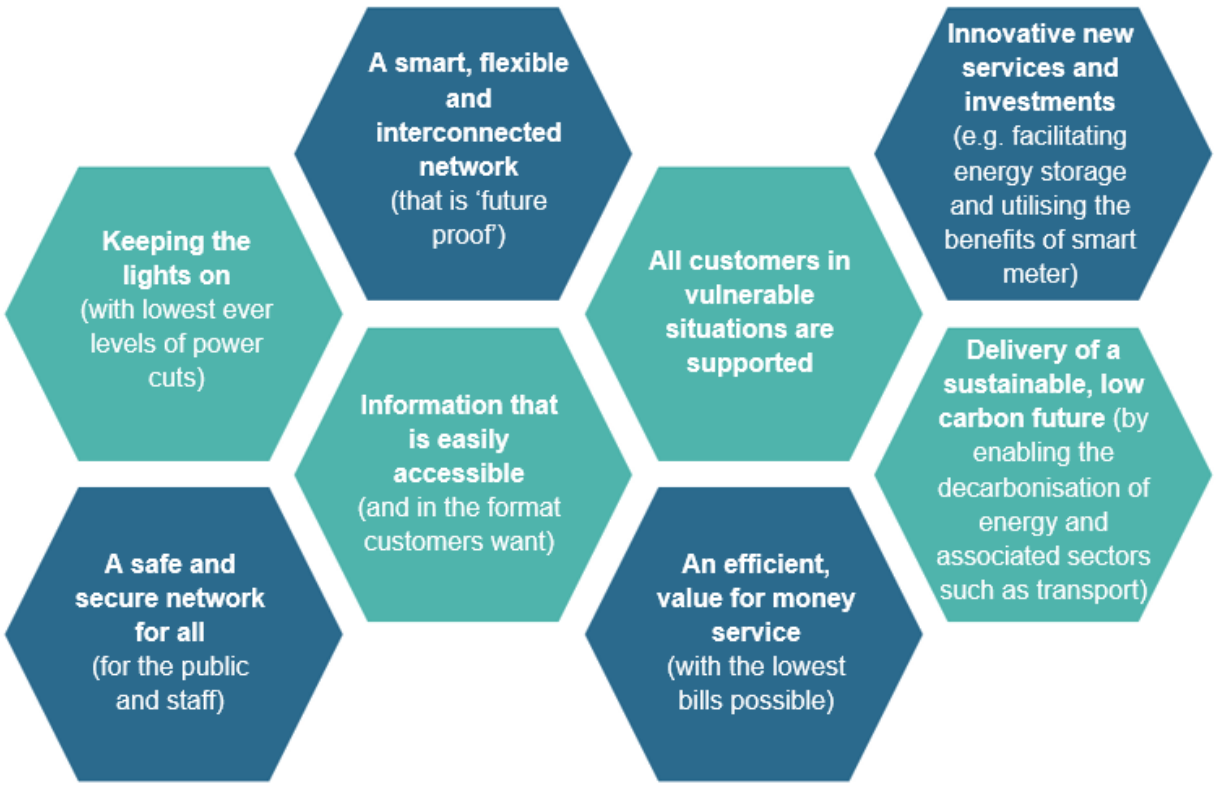

Figure 3.10 Stakeholder high-level priorities

Co-creation in action: Over 1000 initial actions suggested by stakeholders

3.40. As set out in the sections below, we have engaged over 9,600 stakeholders (5,700 of these were direct, in-person engagements) at over 70 engagement events to date. While some of these provided more insight - particularly where we were looking to reach out to all 7.9 million customers - most have been designed to encourage discussion. Sessions like these help us to define issues, develop proposals, resolve areas of conflicting feedback and identify preferred solutions. For example, in February and March 2020, we held specially designed, Business Plan commitment co-creation events at six locations (rural and urban) across all four of WPD's licence areas. This was our largest series of events ever with 393 stakeholders attending in person.

3.41. The objective of the six sessions was for stakeholders to start from scratch to identify our Business Plan commitments. They were briefed on some of the factors to be considered by our managers responsible for each topic area before taking part in roundtable 'co-creation surgeries'. In this way, we have again shown our commitment to industry-leading practice which goes beyond simply consulting on our proposed plans.

3.42. Stakeholders were asked to:

- Identify the high-level topics they wanted us to address, then;
- Identify specific focus areas within each topic, then;
- Begin to draft the commitments for each focus area – and what they would like us to deliver to achieve these.

3.43. Each table began with a different topic. Facilitators then swapped topics, enabling stakeholders to review, amend and add to the suggestions of others. This helped to refine the proposals as part of the creation process, as well as ensuring weighted feedback so the views of individuals were not allowed to feature too heavily. Each session closed with electronic voting to gain a quantitative view on the importance of the topics discussed. These findings were updated live on the day to incorporate the priorities and commitments co-created by stakeholders during the roundtable discussions.

In total, stakeholders identified 14 key topics, over 300 focus areas and over 1,000 initial suggestions – all in the stakeholders' own words

3.44. Many of the items raised by stakeholders as part of this process have been included in our Business Plan commitments. Where suggestions were not carried forward in the exact terms requested, this was due to the following:

- We were already fulfilling the commitment. It is therefore considered to be part of our business as usual activities and will continue.
- The suggestion was based on a misinterpretation of our role and responsibilities.
- There was lack of awareness of our regulatory context.
- Suggestions were not supported sufficiently by wider stakeholders when tested and triangulated as part of our ongoing engagement process.

3.45. To give an indication of the scale and value of our co-creation process, the table below gives an example in each topic category of the types of issues raised by stakeholders for us to address:

Topic	Focus areas	Suggested actions
1. Network reliability	**37 aspects** to consider. e.g.	**161** e.g.
	• Overall health of network assets • Use flexibility and local generation to address demand needs	*"Create accurate forecasting models and ensure that assets can respond to future (higher) demand"*
2. Network resilience	**30 aspects** to consider. e.g.	**80** e.g.
	• Scenario planning / data analysis • Flood protection	*"Use long-term climate scenarios (1:100 years is no longer fit for purpose) and work with a range of stakeholders to mitigate flood risk"*
3. Cyber resilience	**15 aspects** to consider. e.g.	**60** e.g.
	• Network security – risk of power cuts due to a cyber-attack • Systems security – risk of data loss / access	*"Commit to external security testing and seek accreditations from third parties"*
4. Whole systems approach to net zero	**41 aspects** to consider. e.g.	**144** e.g.
	• Help local communities to achieve their net zero carbon emissions targets • Facilitate / incentivise local low-carbon generation and storage	*"Engage with local authorities to support them to deliver on their net zero targets, sharing knowledge and information"*
5. Innovation and new services	**43 aspects** to consider. e.g.	**114** e.g.
	• Support community energy projects to connect to the network • Collaborate within the industry to offer tariffs to encourage flexibility	*"Educate and inform communities about the benefits of community energy, using workshops and forums"*
6. Environment	**37 aspects** to consider. e.g.	**121** e.g.
	• Reduce harmful leaks from our equipment • WPD to be net zero before 2050	*Having a more ambitious net zero target than the government's target of 2050"*
7. Electric vehicles	**34 aspects** to consider. e.g.	**158** e.g.
	• Facilitate electric vehicles on a mass scale • Lobby for national EV strategy ensuring standardisation	***"**Work with the government and Ofgem to deliver a clear, coordinated EV strategy"*
8. Vulnerability	**23 aspects** to consider. e.g.	**120** e.g.
	• Protect the interests of vulnerable customers in the switch to a smarter network • Communication / collaboration with others to raise the profile of WPD's services	*"Work cross-agency to publicise and deliver vulnerability services"*
9. Fuel poverty	**14 aspects** to consider. e.g.	**50** e.g.
	• Partnerships and outreach services • Identifying fuel poverty	*"Work closely with key stakeholders and partners to provide education and support for customers in fuel poverty"*

Topic	Focus areas	Suggested actions
10. Safety and health	**13 aspects** to consider. e.g.	**22 e**.g.
	• Maintaining a safe, healthy and motivated workforce • The potential post-Brexit legislative changes to health and safety law	*"Ensure the mental health needs of the workforce are being met and supported by promoting a healthy work-life balance"*
11. Connections	**30 aspects** to consider. e.g.	**60** e.g.
	• Low-carbon technologies (including EVs) • Investment in local development plans	*"Invest ahead of need and undertake forecasting for EV connections to ensure sufficient capacity, e.g. new apartment blocks"*
12. Workforce resilience	**8 aspects** to consider. e.g.	**59** e.g.
	• Retention and upskilling of a specialised, highly skilled workforce • Improving the diversity of our workforce	***"****Develop a diversity strategy that is long-term and reflects wider demographic changes"*
13. Customer service	This topic was considered by stakeholders to be a 'golden thread' that must run through all our Business Plan commitments. It was therefore tested as an explicit aspect of each of the topics listed above, rather than as a standalone topic. In addition key standout considerations emerged as: • Customer satisfaction • Quality of communication/information	
14. Affordability	Stakeholders requested that the plan must be affordable and represent value for money. This therefore led to standalone social value testing and quantitative testing.	

Figure 3.11 Topics co-created by stakeholders

The role of the Customer Engagement Group

3.46. Every stage of our business planning and decision-making process for RIIO-ED2 has been scrutinised by an independent, challenge body called the Customer Engagement Group (CEG). The CEG reflects the needs and preferences of existing and future consumers and promotes good value customer outcomes, with a focus on affordability, the protection of vulnerable consumers, the environment, sustainability and the transition to a low carbon energy system.

3.47. We followed a robust, independent and transparent process to appoint all members. As part of this, we sought ratification and approval to proceed from Ofgem (Head of RIIO2 Policy on Engagement, Head of RIIO2 Policy and Deputy Director of ED and Cross Sector Policy) on five occasions, including direct oversight of, and input into, the Chair interview shortlisting process.

Chair recruitment

3.48. We appointed an external recruitment agency with expertise in CEO and Non-Executive Director recruitment, resulting in a list of over 40 Chair candidates. We then engaged an independent expert with first-hand experience of holding an equivalent role in the water sector (Chair of Welsh Water's Customer Challenge Group for PR19) to conduct a stand-alone, parallel evaluation of candidates, alongside our own assessment. All candidates were formally assessed against role criteria and a weighted skills matrix that was agreed in advance with Ofgem.

Member recruitment

3.49. Our wider stakeholders wanted CEG members to be drawn from across a range of areas of expertise. In 2018, we ran consultation workshops to identify 24 areas of expertise that must be covered by the group and assessed all candidates using a detailed matrix-based approach. Both WPD and the Chair were determined that the CEG should cover all the areas of knowledge and expertise outlined by stakeholders. We therefore made it a requirement that each candidate must have expert knowledge in multiple areas. Working with the Chair, we developed a thorough 'terms of reference' document for the group, to help with recruitment. This made it clear to candidates that the CEG was more than a consumer interest group, and spanned a diverse range of knowledge areas. The CEG includes experts in everything from low carbon technologies, future energy scenarios and energy system transition, through to major users, vulnerable customers and the representation of local/regional interests.

Figure 3.12 Our Customer Engagement Group members

WPD was the first DNO to establish a CEG, appointing its Chair, Duncan McCombie (CEO of YES Energy Solutions CIC, a fuel poverty company) in October 2018, followed by an independent secretariat and 14 members in February 2019.

3.50. It was also vital to identify senior, high-calibre individuals, who could relate to the needs of the consumers they were there to represent - as well as having a firm understanding of Ofgem's requirements and the RIIO price control process as a whole.

3.51. An initial list of 46 member candidates was drawn up, following an advertising and external recruitment campaign, led by an independent recruitment agency, as well as help from the Chair's network of contacts. The Chair then interviewed a shortlist of 23 candidates.

3.52. A key objective was to build a CEG with knowledgeable members who each represent more than one key expertise area. This will allow a diversity of thought within the panel, and enable members to challenge each other in order to provide the most holistic scrutiny of WPD as possible. The extensive expertise brought by the final 16-strong CEG (when including the Chair and Secretariat) is shown in the following table.

CEG knowledge & expertise matrix		Number of individuals with expertise in these areas
Customers	Customer research / representation	7
	Stakeholder engagement	10
	Major users	3
	Needs of current and future customers	4
	Vulnerable customers	5
	Fuel poverty	4
	Regional outlook / local issues	6
	Local Government or LEPs	3
Future energy systems	Energy system transition (DSO)	8
	Innovation	7
	Future energy scenarios	7
	Low carbon technologies e.g. EVs	6
	Distributed Generation	8
	Energy storage	5
	Community Energy and non-traditional business models	6
	Sustainability	7
Traditional energy systems	Energy supply	3
	Wider utilities sector (gas / water)	8
	Electricity transmission	4
	Electricity distribution (technical understanding)	6
	Environment (incl. decarbonisation)	6
	Resilience	5
	Regulatory framework / price control planning	10
	Outputs and expenditure	6

Figure 3.13 CEG members knowledge and expertise

3.53. The CEG meets as a full group at least every two months. In addition, seven subgroups have been formed to provide rigour and challenge to our staff responsible for generating the Business Plan in the following areas:

Subgroup	Business Area	
Business Plan development	• Business Plan governance • Business Plan development • WPD's vision & BP success criteria	• Incentives/uncertainty mechanisms • Competition • Business carbon footprint / Environment
Innovation and Competition	• Digitalisation strategy • Modernising energy data • Electric vehicles/Heat pumps	• DSO • Innovation
Regional Drivers / Net Zero	• Future energy scenarios • Community energy	• Innovation • Decarbonisation & losses
Research	• Stakeholder engagement	• Willingness to pay
Customer	• Willingness to pay • Customer vulnerability strategy	• Social contract • Customer value proposition
Asset Management	• Cyber resilience & business IT security • Asset management	• Cost efficiency • Safety & network resilience
Workforce Resilience	• Workforce resilience • Diversity	• Operational training

Figure 3.14 CEG subgroups

So far in total over 60 individual meetings have been held and 24 challenges have been raised.

Scrutinising and informing WPD's engagement approach

3.54. The CEG, and in particular the research subgroup, has provided expert challenge to our engagement process. From the outset, the group reviewed WPD's overall engagement strategy and proposed approach for engagement during RIIO-ED2. Its feedback and scrutiny has directly influenced and improved our programme in a number of ways, as shown below:

CEG scrutiny	WPD response
What factors will inform WPD's approach to consulting with stakeholders at the 'preliminary stage' of the Business Plan process? How will WPD ensure adequate representation of end users (with little prior knowledge of WPD) and future customers within its planning?	• Listed seven 'considered factors' WPD took into account before planning stage one of its preliminary/foundation engagement. • Commissioned an independent review of best practice consultative approaches for preliminary / foundation stage engagement. This review covered a wide range of sectors including water, gas and rail. • As a result, WPD significantly expanded the scope of its proposed preliminary engagement activities, from four initially planned methods to 16 core activities, spanning the full range of stakeholder knowledge levels from future customers through to expert stakeholders.

How will WPD ensure stakeholders are able to influence WPD Business Plan from scratch and not have their ambitions constrained to current roles, responsibilities and services?	• Set out proposals to ensure events always delivered opportunities for 'co-creation' wherever possible, including the use of non-leading language and providing sufficient context to enable stakeholders to have an informed debate and understand the landscape in which we expect to operate, without limiting ambitions to the current status quo.
How will WPD ensure attendees are mindful of the spectrum of customers WPD serve, including those financially challenged (but not technically 'vulnerable') when assessing the costs and services?	• Used multiple engagement mechanisms, tailored to each audience, to ensure we could access the broadest group of hard-to-reach customers as possible, including bespoke events for vulnerable and fuel poor consumers. • That every major research and focus group event included a balanced representative sample of our communities, including considering a range of geographies, ages, demographics and socio-economic levels.
How will WPD ensure that social value research (SVR) is robust ensures participants can comprehend the content to enhance the accuracy of the feedback they are able to provide?	• The SVR exercise was expanded to include a broader range of participant attributes to enable results to be broken down by different segments e.g. geographic, socio-economic, age and both household and non-household (business) customers. • Refinements and testing at design, pilot and fieldwork stages ensured that actions were tested and the survey script were redrafted and adjusted to make it easier for participants to understand, by providing clearer questions and supporting information using less jargon and technical language. • Inclusion of additional explanatory information, helped to further improve the understanding of all participants, enhancing the accuracy of the findings • Information specifically tailored to business customers, ensured they understood why they were seeing initiatives which would impact households to ensure robust feedback and accurate data
How will WPD demonstrate that a 'golden thread' has been maintained throughout the Business Plan engagement, demonstrating clear correlation of stakeholder feedback to the content of the WPD Business Plan as well as ensuring consistency and a robust decision process for elements included, excluded or enhanced?	• A 'golden thread' mapping exercise ensured a clear line of sight was maintained throughout the entire plan, demonstrating that all outputs have been co-created with stakeholders with direct correlation to their feedback. In rare instances where this isn't the case, WPD will clearly set out if it is a compulsory regulatory requirement. • The CEG audited the 'golden thread' for the entire WPD Business Plan providing wider stakeholders and Ofgem the assurance that WPD has accounted for all major stakeholder engagement feedback, have not overlooked any key items of feedback even if challenging to address and all WPD's outputs have a clear stakeholder or regulatory driver (i.e. none are a WPD self-creation).
How will WPD ensure that it seeks and includes insight from future customers into their plans?	• A specific deliberative research exercise targeting future customers established a cohort of future customers able to provide feedback on WPD business planning priorities and commitments on an ongoing basis. • Tailored information and approach ensured these customers were able to self-educate and build knowledge across a number of weeks to ensure that feedback provided was informed and accurate.
How will WPD ensure that there is robust engagement so that the WPD Business Plan is fully reflective of local energy	• An exercise was undertaken to engage every local authority within WPD's regions on their individual planning requirements and to share information on WPD's Future

requirements and across RIIO-ED2?	Energy Scenarios (DFES). This established an ongoing engagement process to shape and inform WPD's plans • WPD's local Distribution Managers were trained to ensure consistency and quality of engagement and information shared and gathered • WPD's strategic investment planning and DFES process now include this activity into the annual cycle of updates improving the accuracy and robustness of local energy forecasting.

Figure 3.15 Examples of CEG scrutinising and informing our engagement approach

3.55. Throughout the RIIO-ED2 engagement process, CEG members have been given first hand insight into our activities by attending events including workshops and market research events and have also scrutinised the process to create research materials and scripts ahead of engagement taking place. This has provided assurance that WPD is delivering the open, honest, transparent and non-leading engagement to which we have been committed from the start.

3.56. In addition, it has enabled CEG members to interrogate the synthesis reports that WPD produced after each engagement stage and assess whether WPD has accurately captured and interpreted stakeholders' views and sentiments.

3.57. Finally, it has allowed the CEG to scrutinise WPD's processes for 'playing back' its findings to stakeholders and explaining how these have influenced the Business Plan.

Providing independent challenge across WPD's business planning process

3.58. The CEG has considered and robustly challenged us in a number of areas, reviewing our proposals, draft plans and the processes by which these have been arrived at. The CEG has either raised formal challenges or clarification requests for further information. We have responded promptly to every intervention. As a result, WPD's Business Plan is significantly more robust and is set to deliver more wide-ranging benefits for a wider variety of customers.

3.59. In total, there have been **24** challenges and **23** clarifications to date. Examples of these, along with WPD's response and improvements, are set out below:

Subgroup	CEG challenge/clarification	WPD response
Business Plan development	• We challenge WPD to set out the criteria through which it will internally assess and judge the quality of its Business Plan in advance of the final determination by the regulator	• A paper from our RIIO-ED2 Business Plan Manager (with approval from the Executive) highlighting the underlying principles to be followed in the preparation of WPD's RIIO-ED2 Business Plan – clearly defining how they will be used to measure the success of the plan. These principles will be visible within the final plan.
Innovation and Competition	• The CEG challenges WPD to test whether its DSO-focused approach to digitalisation delivers best value for customers compared to alternatives, including an organisation-wide approach to data and	• WPD's Digitalisation Strategy and Action Plan was been released for consultation, asking for customers' input on whether their expectations and priorities are being delivered as part of the current approach.

	digital that includes corporate functions.	
Regional Drivers / Net Zero	• We challenge WPD to clarify how it will effectively engage with national (Welsh), regional, and local energy strategies (including LEPs) to: firstly ensure it considers the impact of these strategies on its plans for network investment and services (e.g. flexibility services); and secondly to account for the variance in knowledge and engagement of these bodies.	• WPD produced a summary document of its approach to consultation in this area, in addition to an action plan, progress report and final report. We invited all 130 local authority stakeholders covered by the WPD area to participate in a bilateral meetings and offer feedback enabling them to build a joined-up energy plan and work towards delivering net zero carbon emissions targets. A set of recommendations was established to be implemented going forwards and factored into the development of the Business Plan.
Research and Customer	• What factors informed WPD's approach to consulting with stakeholders at the 'preliminary stage' of the Business Plan process?	• A paper outlining WPD's stakeholder engagement programme for the RIIO-ED1 business planning process (stage one: preliminary) was produced. The challenge raised resulted in WPD taking a broader approach to research than initially planned. An external benchmark exercise across a wide spectrum of sectors was commissioned, core engagement activities were expanded from four to fifteen and a stakeholder database was developed to capture all engagement activity across business (RIIO-ED2 and BAU). Synthesis and triangulation exercises were also introduced and completed following each Business Plan stage of engagement.
Asset Management	• We challenge WPD to set out the strategic position and overall health condition of the network, to understand the starting point ahead of the RIIO-ED2 process.	• Information relating to commercialisation of assets, asset health by area, future proofing, competition and cost breakdowns was compiled by WPD and shared with the group to establish and make clear, our RIIO-ED2 'starting point'.
Workforce Resilience	• The CEG challenge WPD to set ambitious goals and measurable targets which will enable the culture and workforce resilience needed to deliver RIIO-ED2 goals and beyond.	• WPD's Business Plan has been updated to incorporate areas of concern, but work is ongoing to ensure work is progressed in the areas still outstanding.

Figure 3.16 Examples of CEG challenges and clarifications across the whole business planning process

Ofgem's RIIO-ED2 Challenge Group

3.60. To complement the work of the CEG, Ofgem has established a RIIO-ED2 Challenge Group to challenge network companies further on their Business Plans and provide an oversight of all the distribution network companies. We are already engaging with this group in 2021 in the lead up

to our first submission to the Challenge Group in 1st July 2021. As set out in the section below, we will have published two drafts of our Business Plan for stakeholder consultation ahead of this submission.

Our ongoing approach to stakeholder engagement

Our engagement objectives for the RIIO-ED2 planning process

3.61. Our objectives for stakeholder engagement for RIIO-ED2 are to:

- Capture a robust view of what is expected by the broad range of stakeholders across our area
- Deliver the most ambitious and efficient Business Plan – shaped entirely by stakeholder needs and priorities (today and future) – that will act as a vehicle to achieve highest possible levels of service and performance for customers
- Deliver the best, most wide-ranging stakeholder engagement programme, in terms of:
  - Size and breadth of programme
  - Widest scope of influence ever for stakeholders
  - Engagement led by the experts and those responsible for delivery within WPD (to ensure discussions are as productive and meaningful as possible)
- Ensure every decision in the Business Plan is well justified and plans are co-created with stakeholders wherever possible
- Demonstrate that engagement has extensively influenced our decisions at every stage of the preparation, development and refinement of the Business Plan
- Set new standards of transparency and accountability by simplifying and sharing the Business Plan with customers and stakeholders wherever possible

	Overall importance (out of 10)	End users	Informed stakeholders	Expert stakeholders	Special interest groups	Industry parties	Consumer bodies	Ofgem
Outputs	7.4	✔	✔	✔	✔	✔	✔	✔
Incentives	6.7	✔	✔	✔	✔	✔	✔	✔
Innovation	7.9	✔	✔	✔	✔	✔	✔	✔
Expenditure	5.2		✔	✔	✔	✔	✔	✔
Financing	3.8					✔	✔	✔
Uncertainty mechanisms	5.0		✔	✔	✔	✔	✔	✔
Efficiency	4.8						✔	✔
Data assurance	3.5						✔	✔

✔ = input in RIIO-ED1 ✔ = desired input in RIIO-ED2

Figure 3.17 Areas of our Business Plan stakeholders have indicated they would like to influence

Overall RIIO-ED2 engagement process

3.62. As part of the RIIO-ED1 process, we followed a three stage engagement approach, with a further two stages to be completed after the plan's submission to Ofgem. This approach was awarded a 'green' (positive) rating by Ofgem and cited as a key contributory factor in the decision to fast track our Business Plan. It encompassed:

Plan development:	1) Preliminary engagement; 2) Willingness to pay research; 3) Business Plan development and consultation.
Post submission:	4) Business Plan outcomes; 5) Business Plan delivery/performance review

3.63. Before RIIO-ED2, we studied the processes used by water, gas and transmission companies for their latest price control reviews, learned from best practice and identified opportunities to go further and deliver an industry-leading stakeholder engagement programme. We also began working with stakeholders on our approach as early as 2019, before we kicked off our formal RIIO-ED2 engagement programme in February 2020. We held a series of face-to-face workshops to discuss long-term strategic priorities beyond RIIO-ED1. As part of this, we invited Citizens' Advice to give a presentation at every event to introduce a best-in-class approach to engagement in RIIO-ED2.

3.64. At the workshops, stakeholders discussed the ways customers would prefer to be engaged, their desired levels of involvement and their willingness to engage in RIIO-ED2. They also considered ways in which DNOs could give customers a stronger voice in future business planning. The outcome was that stakeholders would like to have a much greater influence than ever before.

3.65. Acting on this stakeholder feedback, we built an engagement programme to deliver co-creation, improve on our leading approach to engagement in RIIO-ED1 and ensure the Business Plan is built in a staged, phased way with multiple points of stakeholder refinement and endorsement before the final plan is submitted.

A seven stage engagement process

3.66. When we submit our Business Plan to Ofgem, this will be built upon a five stage engagement process, with a further two stages to be carried out after the plan is submitted:

Stage	Objective	Deliverable(s)	Approx. timing
Stage 1: Preliminary engagement	Identify the high-level outcomes WPD should commit to deliver. Identify initial stakeholder priorities (areas where outputs and performance improvements are expected); to ensure all stakeholder interest areas have been recognised. Identify suitable representatives for future engagement.	High level outcomes Stakeholder priorities (grouped under outcomes) High-level view of stakeholders to engage	Jan – Nov 2019
Stage 2: High level social value research	Identify specific improvement levels within each priority area and their value to customers	Evidence of value placed on each high-level priority area Evidence of preference/expectation for service improvement levels	Nov 2019 – June 2020
Stage 3: Business Plan development	Co-create early commitments with stakeholders Develop initial costing for each commitment	1st draft of commitments (grouped under outcomes/priorities) Initial costing for commitment (and therefore Business Plan as a whole)	Feb – Oct 2020
Stage 4: Business Plan refinement (detailed social value research)	Negotiate output levels and refine our commitments	2nd draft of commitments Updated costing for each commitment based on changes	Oct – Mar 2021
Stage 5: Business plan acceptance testing	Present the final plan to stakeholders for review (and voting) before submission to Ofgem	Stakeholder approval of the final plan	Mar 2021 onwards

Post submission: Stage 6: *Business Plan monitoring*	*Identify the key performance measures stakeholders would like us to use to monitor progress against our promises*	*2022*
Post submission: Stage 7: *Business Plan performance review*	*Provide an update on our progress in delivering the Business Plan, our performance against key output measures and identify areas of emerging stakeholder interest or concern*	*2023*

Figure 3.18 stages of our stakeholder engagement process for RIIO-ED2

'Synthesis' – the collection and management of stakeholder feedback

3.67. The engagement which has shaped our RIIO-ED2 business plan has been significant. It has featured a range of methods and stakeholder involvement, and has been influenced by insights from additional external research and internal performance monitoring. Because of this, it has been essential to build the plan with stakeholders in stages, to allow the findings from each stage to influence and form the foundations for the next.

3.68. We have put systems in place to collect and organise:

- The sources of information including engagement and research
- The stakeholders with whom we interacted
- The feedback gathered

3.69. This resulted in synthesis reports which were published at the end of each of our five engagement stages. The reports summarised the views expressed and indicated how the synthesised feedback from each completed stage would shape the next stage of engagement. These reports, which were independently compiled by Sia Partners, were then passed to the CEG to be scrutinised, clarified and challenged to ensure key feedback was not left out. The reports demonstrated:

- The chronological stage at which customers and stakeholders influenced the development of the Business Plan and in what way (e.g. brain storming high level priorities from a 'blank piece of paper' or signing off specific service levels)
- How viewpoints compared across different segments and how the feedback collected was used by WPD to come to a final proposal.

3.70. The reports enabled stakeholders to review the consolidated feedback at a single source, making it possible to track our transparent co-creation process from the engagement conducted, to the feedback collected, and finally to the decisions made in response. This included areas of conflicting stakeholder feedback which required further engagement to arrive at a compromise view.

Our engagement timeline and key activities

3.71. To date, we have engaged more than 9,600 external stakeholders on our plans for RIIO-ED2. Engagement has spanned stakeholders from across the knowledge and interest sectors under the headings of expert; interested; limited knowledge and future customer. Engagement carried out with stakeholders from specific sectors was never carried out in isolation. We share the feedback collected with stakeholders from the other sectors, and use the feedback gained to inform the content of our future engagement.

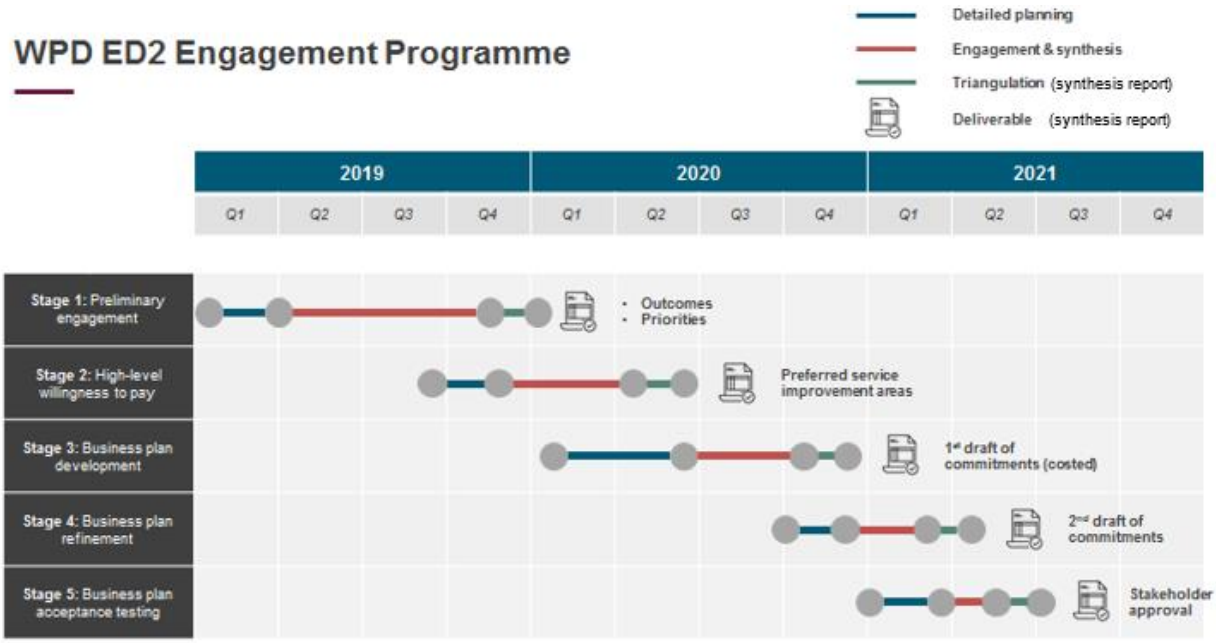

Figure 3.19 Engagement programme

3.72. Examples of how our engagement methods are tailored to stakeholder knowledge and interest level can be found in the following tables. The level of stakeholder is indicated in the last column based upon the key below:

Key – Stakeholder Level

1. Expert
2. Interested
3. Limited knowledge
4. Future customer

Ref	Engagement method	Description	Stakeholder groups involved / targeting	Stakeholder Expertise Level	Total engaged				
					Stage 1: preliminary engagement	Stage 2: willingness to pay	Stage 3: BP development	Stage 4: BP refinement	Stage 5: Acceptance testing
1	Customer Collaboration Panel	Workshops with WPD's permanent panel of 38 expert stakeholders, with representatives spanning all WPD's key stakeholder segments	Domestic, business, connections, emergency resilience, healthcare, government, utilities, academic institutions, fuel poor and vulnerable	1	36	-	38	-	TBC
2	Topic-specific bilaterals and expert workshops	Events with expert stakeholders to explore topics in greater depth and practical considerations and implications to be addressed. e.g. Vulnerability stakeholders; EV stakeholders (e.g. motorway service operators). Example forums include: Community energy workshops, connections surgeries and future networks events	Connections, vulnerable customers, electric vehicles, environment, future energy scenarios, community energy etc	1	1187	-	740	11	TBC
3	Connections Customer Steering Group and Distributed Generation Owner Operator Forum	Workshops with WPD's permanent panel of 40 expert connections stakeholders and 58 Distributed Generation owner/operators, with a broad representation of connection stakeholders	Customers, developers, distributed generation, community energy, Independent Connection Providers, Independent Distribution Network Operators, consultants and utilities	1	98	-	98	-	TBC
4	Local authority local energy plan bilaterals	Bilateral meetings with every local authority and Local Enterprise Partnership in our region to have in-depth discussions on local energy strategy, scenarios and projected low carbon technology and generation uptake volumes	Local authorities and Local Enterprise Partnerships	1	-	-	130	-	TBC
5	Co-creation stakeholder workshops	Qualitative workshops in a roundtable format, with stakeholders with reasonable levels of knowledge and interest in WPD's operations. Designed to identify priorities from scratch and co-create draft commitments to address these	Domestic, small businesses, major energy users, parish councils, local authorities, consumer interest bodies, charities, connections providers, community energy groups, developers, trade associations, utilities, universities, environmental groups, storage providers, energy aggregators	1 2	330	-	393	222	TBC
6	Consultation 'sprint' workshops	Innovative approach where all stakeholders are sent WPD's Plan document sin advance. WPD then deliver a series of 2-3 minute quick-fire presentations on every key priority area, followed by quantitative voting on every WPD proposed commitment (levels of ambition, overall acceptability and stakeholder requirements for alternatives). Then a series of	Domestic, small businesses, major energy users, parish councils, local authorities, consumer interest bodies, charities, connections providers, community energy groups, developers, trade associations, utilities, universities, environmental groups, storage providers, energy aggregators	1 2	-	-	-	86	TBC

		breakout discussions for stakeholders to suggest alternatives							
7	**Webinars**	**Sessions to provide stakeholders with an overview of WPD's Business Plan, how to respond and to invite questions and clarifications on the content**	Domestic, small businesses, major energy users, parish councils, local authorities, consumer interest bodies, charities, connections providers, community energy groups, developers, trade associations, utilities, universities, environmental groups, storage providers, energy aggregators	1 2	-	-	-	86	
8	**Local network investment and net zero workshops**	**Sessions hosted at local depots for key stakeholders with a regional planning focus**	Local authorities, vulnerable customer representatives, community groups, emergency services, non-profit organisations and charities.	1 2	229	-	206	-	TBC
9	**ICP/IDNOs conference**	**Workshop will be aimed at a connections customer audience, to discuss in particular RIIO-ED2 priorities, electric vehicles and local infrastructure plans**	Independent Connection Providers (ICPs), Independent Distribution Network Operators (IDNOs), local authorities, Local Enterprises Partnerships, distributed generation customers, developers and major users.	1 2	89	-	53	-	TBC
10	**Social obligations conferences**	**Conferences held in different locations aimed at vulnerable customer representatives to discuss WPD's social obligations strategy and programme delivery.**	Charities, local authorities, parish councils, non-Government organisations	1 2	53	-	57	-	TBC
11	**EV conferences and workshops**	**Conferences and workshops aimed at local authorities and the staff responsible for planning and implementing their electric vehicle plans - to discuss and support planning for current and future EV charging infrastructure projects.**	Local authorities	1 2	-	-	550	-	TBC
12	**Strategy development workshops**	**Qualitative workshops in a roundtable format, with stakeholders with reasonable levels of knowledge and interest in WPD's operations. Designed to co-create WPD strategies and specific commitments/action plans for RIIO-ED2 in particular relation to:** **DSO; Innovation; Environment; Connections; Vulnerability; Digitalisation**	Domestic, small businesses, major energy users, parish councils, local authorities, consumer interest bodies, charities, connections providers, community energy groups, developers, trade associations, utilities, universities, environmental groups, storage providers, energy aggregators	1 2	-	-	-	257	TBC
13	**Written consultations**	**Seeking views on WPD's draft Business Plans via set questions and voting. Options for stakeholders to submit responses online, via email or post.**	Domestic, small businesses, major energy users, parish councils, local authorities, consumer interest bodies, charities, connections providers, community energy groups, developers, trade associations, utilities, universities, environmental groups, storage providers, energy aggregators	1 2 3	-	-	-	141	TBC

14	**Online engagement portal**	**Replicated WPD's face-to-face co-creation workshops online, with the presentations filmed, followed by a range of multiple choice and free-format questions. Promoted using Twitter, LinkedIn and invitations sent to all registered stakeholders.**	Domestic, small businesses, major energy users, parish councils, local authorities, consumer interest bodies, charities, connections providers, community energy groups, developers, trade associations, utilities, universities, environmental groups, storage providers, energy aggregators	2 3	222	-	126	41	TBC
15	**Online Panel**	**Permanent online community with representatives spanning a range of customer demographics, age, gender and location. Particular focus on current and future end user customers and small businesses. Promoted prominently to all customers on WPD's homepage.**	Anybody who has registered an interest in the business via our website with targeted outreach to specific demographics as required. The overall objective is to have a fair and balanced representation across geography, age and gender	2 3	82	-	82	-	TBC
16	**Quantitative research surveys - *Customers in vulnerable situations***	**Telephone surveys with randomly selected customers as part of well-established satisfaction surveys following a day-to-day contact with WPD regarding the Priority Services Register. Questions independently designed with Accent to ensure they are neutral and non-leading.**	Customers in vulnerable situations	3	100	-	-	-	TBC
17	**Quantitative research surveys - *Major connections customers***	**Telephone surveys with randomly selected customers as part of well-established satisfaction surveys following a day-to-day contact with WPD regarding the major connections applications (+4 homes and above). Questions independently designed with Accent to ensure they are neutral and non-leading.**	Major connections customers	3	273	-	-	-	TBC
18	**Quantitative research surveys – *Distributed generation customers***	**Telephone surveys with randomly selected customers as part of well-established satisfaction surveys following a day-to-day contact with WPD regarding the distributed generation connections. Questions independently designed with Accent to ensure they are neutral and non-leading.**	Distributed generation customers	3	64	-	-	-	TBC
19	**Power cut follow-up surveys**	**Text message sent to every WPD customer as part of the power cut follow-up service, containing an invitation and link to participate in a series of survey questions on WPD's website**	All WPD customers affected by loss of supply	3	131	-	-	-	TBC
20	**Social value / willingness to pay qualitative workshops**	**Six discussion groups with end-user, bill paying customers and customers of the future. Enabled participants to spontaneously raise their priorities of WPD and within 5 key service areas, identify underlying initiatives. Test the understanding of key actions ahead of quantitative survey testing with a wider pool of customers, ensuring the measurability and outcomes/benefits of potential WPD actions are clear**	End-user bill paying domestic customers and future users – ensuring balanced representation in terms of gender, region, urban/rural, age and socio-economic background. Businesses – small, medium and large	3 4	-	48	-	TBC	TBC

21	**Social value / willingness to pay quantitative surveys**	**Quantitative, stated preference research to obtain customer willingness-to-pay (WTP) values for potential service improvements and initiatives. Majority via online surveys, but 100 in-home interviews conducted to ensure robust representation from customers who are typically harder to reach and underrepresented on commercial panels (i.e.: those in the lowest socio economic grouping (E), those at the extremes of the age spectrum (over 75s and under 25s) and those who are digitally excluded.**	985 - End-user bill paying domestic customers and future users – ensuring balanced representation in terms of gender, region, urban/rural, age and socio-economic background. 203 - Businesses – small, medium and large	3 4	-	1188	-	TBC	TBC
22	**Multi-phase deliberative, qualitative focus groups – *end users***	**Identify short and long term customer requirements, from a wide cross-section of representative end users, including future. It will scope out customers' current priorities (uninformed and, thus, uninfluenced by any specific WPD plans) as well as checking these against previously established priorities. It featured a comprehension session, extended priorities sessions, app-based tasks, and deliberative tasks. Co-creation sessions were then held to begin drafting commitments in customers' own words.**	Household, non-household, vulnerable (including representative sample of over 75s, struggling, in debt, low income, BAME communities) Future customers	3 4	50	-	50	-	TBC
23	**Citizen Panels**	**Panels of representative end user customers that will undertake deliberative exercises on a wide range of topics throughout the entire business planning process.**	Representative sample of customer base that meets a number of demographic and behavioural qualifiers including; age, gender, race, variance in needs and habits, customer in vulnerable situations, PSR customers, a mix of socio-economic circumstances, a mix of future and existing customers Future customers	3 4	75	-	-	-	TBC
24	**Social media**	**A series of surveys and consultation questions posed via Twitter, Facebook and LinkedIn, also containing an invitation and link to participate in a series of survey questions on WPD's website.**	All WPD customers. The overall objective is to have a fair and balanced representation across geography, age and gender	3 4	509	-	-	1487	TBC
25	**Multi-phase deliberative, qualitative focus groups – *future customers***	**Scope out customers' current priorities (uninformed and, thus, uninfluenced by any specific WPD plans) as well as checking these against previously established priorities. It featured a comprehension session, extended priorities sessions, app-based tasks, and deliberative tasks. Co-creation sessions were then held to begin drafting commitments in customers' own words.**	Higher education students (those in Sixth Form or higher education colleges and living at home), further education students (living in halls, house shares or at home), first jobbers (living at home or flat/house shares)	4	-	-	54	-	TBC
				TOTAL	**3,528**	**1,236**	**2,577**	**2,331**	

Figure 3.20 Core stakeholder engagement activities

Social value research

3.73. As a socially responsible company, it is essential we deliver services that are valued by our customers. To achieve this, we must first devise a robust way of measuring value. We commissioned PwC to conduct research into existing methods of measuring social value across a range of sectors. In 2020, we joined forces with the other DNOs to develop a system of measuring value that can be applied by all networks and arrive at consistent measures of the value delivered to customers as a result of our actions, combining social value proxies, social return on investment studies and bespoke social value research.

3.74. Where social proxy values do not currently exist, are out of date or do not reflect the specific outcomes WPD intended to deliver as a result of our own bespoke commitments and activities, WPD has commissioned additional 'willingness to pay' research to provide a view on social value. We do this for two reasons:

I. **To establish a customer's priority:** Where a social value is already known via the agreed methodology developed by DNOs (e.g. the value of contacting a vulnerable customer to provide advice), this will give a value for a single unit of activity. For example, the value of one customer being added to the Priority Services Register (PSR) (i.e. £1 for 1 customer, or £30,000 for 30,000 customers). What this does not give is a view of the number of these activities that customers would like to see delivered. WPD's additional 'willingness to pay' research can therefore test options for the volume of 'units' we could deliver (e.g. how much do you value us identifying 50,000 customers for the PSR). Doing so would help to establish a preference for the level and scale of activities we deliver, which can then be applied to the already known social value in order to determine an overall benefit to customers as a result of our specific action.

II. **To establish a value**: If a social value does not currently exist, this research can help to derive a social value.

3.75. In the case of the latter, WPD's own 'willingness to pay' research determines social value by asking customers to make a series of trade-offs between different levels of potential service delivery and to indirectly assign values to the preferred outcomes they would like us to deliver. They do so via techniques that are broadly recognised as best practice in this research field (utilised across the regulated energy and water sectors) and delivered by an independent research expert, Accent. This includes 'MaxDiff modelling' and 'contingent valuation' questions, where respondents are asked what they would be prepared to spend to achieve a range of different outcomes. In reality, we are not asking customers to pay more to fund these activities, but we are using their responses to the hypothetical question of how much they would be willing to pay to gauge the value they place on the range of potential actions we can deliver.

3.76. We do not use the results in isolation, nor as a blanket justification to include commitments within our Business Plan. We have used this data to calibrate the scale of our Business Plan commitments in light of the value customers place on certain activities. It helps us to consider the relative priorities between action areas within the plan and to refine final ambitions that deliver the most effective social value for our customers relative to the cost of delivery. It enabled us to compare and contrast actions within different output categories and then to calibrate the scale of ambition and expenditure in line with customer feedback. For example, where there are a range of options under consideration which all respond to stakeholders' qualitative feedback, a factor including very high social value may influence the scale of action we propose.

3.77. While all potential Business Plan outcomes may have value to customers, the focus must be to reveal priorities and rank potential activities and commitments. We have used this insight to inform our commitment levels, balancing expenditure and time constraints with stakeholder feedback.

High-level social value research

3.78. Working with market research company Accent, we held focus groups, followed by in-depth surveys with 1,188 customers, including domestic (885) and businesses of varying sizes (303). This was a statistical exercise in which customers made choices relating to priority areas.

3.79. The objective was to understand the priority given by customers to different areas of the Business Plan. These were taken from the synthesised feedback from WPD's 'Stage one: Preliminary engagement'. This process was scrutinised by the Customer Engagement Group to ensure appropriate attributes were selected and no key areas of stakeholder priorities were overlooked. In all cases, stakeholders were given current performance levels as context against which they could compare these potential improvement actions.

3.80. In total, 24 attributes (potential actions) were tested. Examples include:

Attribute Description	Mean social value (expressed as a proportion of their average annual domestic electricity bill)
Protect people who can't afford to adequately heat their homes from being disadvantaged in the future	£2.00
Identify and help people who can't afford to adequately heat their homes	£1.92
Protect customers' data from potential cyber attacks	£1.50
Provide proactive support and information to vulnerable customers during power cuts	£1.41
Provide support and information to vulnerable customers to help them be more resilient to potential power cuts	£1.38
Improve the identification of customers potentially vulnerable during a power cut	£1.38
Reduce the number of environmentally harmful leaks of greenhouse gases/oils from WPD's equipment	£1.26
Support communities to install low carbon technologies such as community solar panels or community wind turbines	£1.19
Ensure vulnerable customers only have to register once for all utility companies	£1.15
Protect WPD's electricity network against cyber attacks	£1.13
Pay customers to use less electricity at peak times	£1.10
Reduce the number of unplanned power cuts	£0.99
Future proof the network by ensuring any work done doesn't need replacing before 2050	£0.92
Proactively provide affected customers with relevant updates during power cuts	£0.90
Working with local communities to achieve net zero carbon emissions targets	£0.88
Reduce the number of customers who have 12 or more power cuts over 3 years	£0.85
Reduce the average length of time of power cuts	£0.81
Reduce the carbon emissions from WPD's transport fleet	£0.79
Improve the quality of supply by reducing flickers and dips	£0.71
Provide more charging points and greater network capacity to ensure all customers can switch to electric vehicles when they are ready to do so	£0.67
Communicate the benefits/costs of low carbon technologies to help customers switch	£0.64
Help local authorities and communities switch to electric vehicles on a mass scale	£0.53
Make WPD's offices and local depots carbon neutral by 2050	£0.53
Encourage people into a career in engineering and increase the diversity of WPD's workforce	£0.48

Figure 3.21 Summary table of results – high-level social value findings (September 2020)

3.81. The subject areas were tested first by qualitative focus groups, to make the language and context easier for respondents to understand. We then conducted quantitative surveys, asking a broad cross-section of customers to state their preferences.

3.82. The results revealed the most highly valued focus areas and helped us to decide on our first proposed actions and expenditure in each area. For example, qualitative co-creation workshops highlighted 'reducing the number of SF_6 leaks from equipment' as a key environmental priority. To address this, we had several options, from seeking to remove SF_6 from the system altogether to enhanced monitoring and risk registers. However, the costs and scale of these activities could differ widely. To help arrive at an appropriate level for our first draft commitment proposals (for stakeholders to then consider, debate and refine), we used the social value attributed by our customers to identify the scale of our initial proposals and the associated costs in our first draft Business Plan.

3.83. In general, the attributes tested received notable positive social value. Consumer vulnerability, cyber and environmental initiatives broadly gained the greatest support and valuation from customers. Vulnerability was the single stand out area most valued by domestic customers with five out of six top valued attributes.

3.84. Indications of customers' priorities have been taken into account throughout the Business Plan process. For example, 'addressing fuel poverty' (valued at £2.00) was nearly twice as important an action as 'ensuring PSR customers only have to register with once to join the PSR of all utility companies' (valued at £1.15) – so the scale of our first draft outputs were recalibrated to reflect this.

Detailed social value research

3.85. As part of WPD's Business Plan refinement process, in February 2021 we commenced a second stage of social value research with customers to test the draft core commitments we are proposing. This will seek to measure the value to customers of delivering the intended positive outcomes of each action, including the value of options to do more or less than the initial level proposed. This exercise will help us to arrive at more specific commitments and performance targets, prioritising those with the highest intrinsic value to customers. The findings will be reported on and incorporated into our third draft Business Plan in July 2021.

Dealing with uncertainty in RIIO-ED2 – the role for stakeholder engagement

3.86. As WPD's overall stakeholder engagement strategy outlines, our engagement approach continually evolves to meet the changing needs of our customers. We have robust mechanisms to identify new, emerging and evolving stakeholder types (and a proven track record of doing this) and we have a strategy for delivering tailored engagement for these audiences.

3.87. This core strategy will continue and will be valuable in ensuring we continually update our insights from stakeholders in relation to net zero. There are a number of core commitments proposed within this second draft Business Plan and the wider commitments contained within the narrative that will ensure we deliver robust engagement with stakeholders to shape our investment decisions. For example, we propose to engage every local authority in our region annually to understand their existing local energy plans, as well as to provide support for those that need help to develop such plans for the first time. We will host a series of local network investment surgeries in each of our regions, as well as specialist connections surgeries each year – both of which will deliver insights specifically on the investment requirements resulting from customers seeking to connect low carbon technologies to the electricity grid. These will be hosted at WPD Distribution Area level (30 areas in total), enabling us to build a strong understanding of regional and local variation in investment need.

3.88. The annual publication of WPD's Distribution Future Energy Scenarios (DFES), with subsequent consultations, will provide further opportunity for stakeholders to engage with us on a range of

factors key to the delivery of net zero. The DFES will provide stakeholders with an annual view of the impact of LCT uptake should this begin to move at a pace greater than first predicted (which could result in the application of a net zero reopener). Finally, WPD will continue to host annual flagship workshops for wider stakeholders.

3.89. In addition, in our final Business Plan we will publish standalone strategies for DSO (incorporating our approaches to investment, scenario planning and flexibility for example). This will require specific engagement actions to create and update this strategy annually. This will maintain a line of sight to the evolving requirements of stakeholders which will inform any potential decisions associated with the need for a net zero reopener.

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Chapter 4

Our Core Commitments

Chapter 4 Contents

4. Our Core Commitments

Summary

4.1. This section details what we intend to deliver in RIIO-ED2 based on feedback from our stakeholders. We have created an ambitious and challenging programme of activity which focuses on delivering excellent customer service and operating an environmentally sustainable network while keeping bills affordable for our customers.

4.2. Our plan is underpinned by 58 core commitments which have been identified by stakeholders as their key priorities and will be reflected across all aspects of our Business Plan. Core commitments include actions funded by customers and key regulatory obligations.

4.3. In addition to these high level core commitments, we have drawn up a number of wider commitments, which will enable us to achieve our core commitments and deliver on the promises we made to stakeholders in response to their detailed feedback.

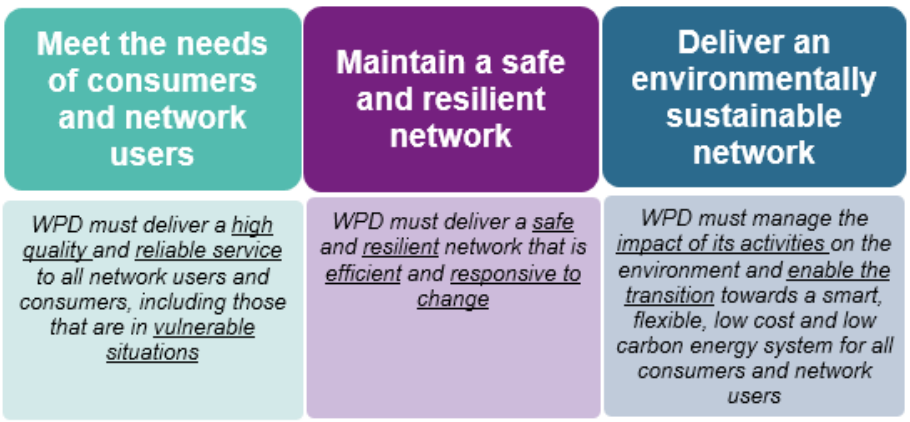

Figure 4.1 Ofgem's RIIO-ED2 high level output categories

4.4. Our core commitments are separated into three high level categories which align with Ofgem's output categories.

4.5. These are: to meet the needs of consumers and network users, maintain a safe and resilient network and deliver an environmentally sustainable network.

4.6. Our performance against these core commitments will be measured annually and will be used to ensure we are delivering what we said we would do. As well as reviewing our progress each year, we will establish an independent RIIO-ED2 Plan Delivery Challenge Group to hold us to account on behalf of our customers. The group will ensure that we keep on track to deliver our commitments.

4.7. As a business, we need to be dynamic in the way we adapt to changes. This means that, while we have established a strong understanding of current requirements, we will need to ensure that we respond to changing needs. That is why we will continue to engage actively with our stakeholders throughout RIIO-ED2 and adapt our plan where necessary to address any new priorities.

Our RIIO-ED2 core commitments highlights

4.8. Below we have highlighted some of key commitments we will deliver in RIIO-ED2.

Figure 4.1 RIIO-ED2 key core commitments

4.9. We are committed to providing excellent customer service. We will continue to build on our success in RIIO-ED1 to ensure we maintain and improve our high levels of customer service. Customer expectations have significantly increased in the last five years and we anticipate that this will continue throughout RIIO-ED2, especially as the way customers use the network (e.g. connections of electric vehicles), seek data and information (e.g. digitalisation and all data presumed 'open') and expect instantaneous information and proactive alerts significantly increases. To this end, we have set the ambitious target of achieving an average customer satisfaction rate of at least 9 out 10 when dealing with WPD including across the entirely new services that will emerge as a result of the shift to a net zero future.

4.10. We are also committed to looking after our vulnerable customers. We have over two million customers on our Priority Services Register who benefit from additional support during power cuts. We make contact with these customers every two years to check they are receiving the services they need from us and to ensure that our contact records are up to date. We propose to support 113,000 fuel poor customers, helping them to save more than £60m by working with our partner organisations over the RIIO-ED2 period.

4.11. Electricity is critical to enable all of us to go about our daily lives. That is why we strive to restore supplies as quickly as possible, when power is interrupted. We will continue to build on the success of RIIO-ED1 by ensuring we improve on our current performance where on average our customers have one power cut every two years lasting 24 minutes. We will also undertake 70 schemes to improve the network reliability for 8,260 of our Worst Served Customers.

4.12. COVID has impacted everyone, with some people suffering hardship. We have therefore supported 600,000 customers in our communities through our £1m 'In This Together - Community Matters' COVID fund, helping local organisations to reach out to those hardest hit by the pandemic. For RIIO-ED2, we are committed to allocating a minimum of £1m a year to continue to support local communities through this funding.

4.13. As part of our commitment to safety, we will carry out a critical project during RIIO-ED2 to divert, underground or fully insulate overhead lines crossing school playing areas. Although we are not aware of any incidents where our equipment has caused harm to school children, we are choosing to take action to mitigate any potential risk.

4.14. Cyber security is one of the items at the top of our agenda. We will conduct a continual assessment of potential cyber threats to ensure we have cyber security systems in place to protect our customers' data and to safeguard the network from a possible cyber-attack. As criminals become more sophisticated, it is our responsibility to invest in effective solutions to rule out potential threats.

4.15. As we move towards net zero, we must make sure our network is ready to support our stakeholders with the connection of electric vehicle charging points, heat pumps and renewable generation. Leading by example, we will focus on reducing our own business carbon footprint (excluding losses) by 2028. We're already working to build a non-carbon fleet of vehicles, make our buildings more energy efficient and reduce our own electricity consumption, amongst other initiatives. We will also use 'offsetting' initiatives including funding tree planting or supporting local photovoltaic installation schemes for the fuel poor. These local projects will benefit communities as well as the environment.

4.16. Stakeholders have also asked us to support the creation of community energy projects across our region. To do this, we'll be holding community energy surgeries where customers can make appointments with our expert advisers to learn more about community energy and how to get their own schemes up and running.

4.17. To deliver our commitments, it is important to have dedicated and talented staff. We have a highly skilled workforce which will continue to evolve during RIIO-ED2 to meet the needs of our stakeholders. We aim to attract innovative and talented individuals with diverse views and backgrounds who are able to reflect, and respond to, the needs of our customers. We strive to create a culture in which everyone shares our commitment to excellent customer service and the delivery of our outputs, and where everyone feels able to contribute. We want our staff to be proud to be part of WPD.

A full list of our RIIO-ED2 core commitments

4.18. The following tables provide a summary of all 58 of the core commitments, which are then described in more detail later in this chapter.

1. Meeting the needs of our consumers and network users

1.1 Customer Service

	Core commitment	Current RIIO-ED1 performance	Change since first draft Business Plan (following stakeholder feedback)	Positive impact for customers	Stakeholder feedback in response to our first draft Business Plan consultation*
1	**Maintain a 90% customer satisfaction score across all key services areas with separate reporting for emerging technology customers.**	>89%	↗ **Increased ambition**	Excellent and improved service across all key service areas, including power cuts, connections and general enquiries.	66% of stakeholders support this ambition level. 75% of surveyed end-user customers agreed. New technologies such as EVs were flagged as important to include and monitor.
2	**Achieve full compliance with the Customer Service Excellence Standard and British Standard for Inclusive Service.**	Full compliance	◆ **No change**	Independent scrutiny of WPD's customer service processes and delivery. This includes benchmarking to other sectors to identify the latest best practice and new improvements WPD could adopt to enhance its services.	98% support for this commitment. No notable alternatives requested.
3	**Answer calls within an average of four seconds and maintain an abandoned call rate of less than 1%, within our UK-based, in-region Contact Centres.**	2-4 seconds	◆ **No change**	Customers immediately get straight through to speak to a call agent on the telephone.	95% support for this commitment. No notable alternatives requested.
4	**Respond to social media enquiries within five minutes and Webchat enquiries in less than a minute.**	6-7 minutes	↗ **Increased ambition**	Customers contacting us for a response on Twitter, Facebook and WhatsApp receive a swift response.	74% of stakeholders support this ambition level. 74% of surveyed end-user customers agreed. Stakeholders flagged the importance of online communications for some customers and the need for an ambitious target for Webchat.
5	**Create an online viewer to provide greater insight on the planned work activity and interruptions on our network.**	New	◆ **No change**	Enable customers to access information online via a 'self-service' function, rather than needing to call us, if that is their preference.	96% support for this commitment. No notable alternatives requested.
6	**Resolve at least 90% of complaints within one day and resolve 99% of complaints within 25 days.**	90%	↗ **Increased ambition**	Complaints resolved to the customer's full satisfaction very quickly.	94% support for this commitment. Stakeholders requested a stretch target for 99% of complaints to be achieve around one working week earlier than the Ofgem target of 31 days.

Please note: where options for the level of ambition within our commitments were offered, there were five choices. Where support for a single option is significantly above 20% therefore, this represents a significant consensus.

1.2 Customers in vulnerable situations

	Core commitment	Current RIIO-ED1 performance	Change since first draft Business Plan (following stakeholder feedback)	Positive impact for customers	Stakeholder feedback in response to our first draft Business Plan consultation*
7	**Proactively contact over 2 million Priority Service Register customers once every two years (with 60% via direct telephone call) to remind them of the services we provide and update their records.**	30% via direct telephone call; 70% by letter/email	↗ **Increased ambition**	Regular contact to keep vital data on the needs of our most vulnerable customers accurate and up to date. Ensure WPD's PSR is representative of the needs of vulnerable customers with appropriate representation from high deprivation areas. More 'in person' contact enables bespoke advice to be delivered to meet that individual's needs.	Whilst 41% of stakeholders favoured achieving '40% via direct telephone calls', the majority of stakeholders voted for WPD to go further. However, there was no consensus on the precise level (between 60% - 80% of direct telephone contact). WPD has picked the mid-point option of contacting 60% of customers as delivering the maximum level did not have majority support.
8	**Achieve a 'one-stop-shop' service so that customers only have to join the Priority Services Register once to be registered automatically with their energy supplier, water company and gas distributor. We will engage to extend this to telecommunication companies where possible.**	Manual data shares with 80% of water companies	↗ **Increased ambition**	Customers no longer have to register multiple times with each individual utility company in order to receive priority support.	97% support for this commitment. Additional suggestions that WPD should attempt to extend data sharing agreements to include telecommunications providers.
9	**Ensure a minimum of 40% of total customers eligible for the Priority Services Register (PSR) are registered (by identifying 50,000 hard-to-reach customers each year to join the PSR).**	20,000 a year	↗ **Increased ambition**	Customers with the most serious vulnerabilities are proactively identified and offered support.	The majority of stakeholders felt WPD should go further than 20,000 a year, with 38% requesting that WPD identify 50,000 new customers a year. An even higher proportion of end-user customers (57%) supported this level. Covid-19 was seen as a factor in increasing the number of people likely to need support. In addition stakeholders wanted WPD to be clearer on the impact this would have on the total people requiring support but not currently registered.
10	**Support 113,000 fuel poor customers to save £60 million on their energy bills over RIIO-ED2.**	70,000 customers saved £27m in the last 5 years	↗ **Increased ambition**	Customers living in cold homes and/or struggling to afford their energy bills receive tailored support to make long term changes to improve their ability to afford to heat their home.	A strong majority of 42% of stakeholders support this ambition level. 75% of surveyed end-user customers agreed.
11	**Develop a model to identify the capabilities of vulnerable customers to participate in a smart, low carbon future and offer 60% of PSR customers specific support and education.**	New	↗ **Increased ambition**	Targeted advice and support for vulnerable customers in relation to low carbon technologies, smart meters, and flexible energy services for example.	97% of stakeholders supported the development of a model, and a strong majority of 47% supported the maximum number of customers to be supported.
12	**Take a leading role in a coordinated approach with a range of industry participants (including funding for collaborations with community energy stakeholders) to share best practice and co-deliver schemes to ensure vulnerable customers are not left behind by the smart energy transition.**	New	↗ **Increased ambition**	Share best practice with other network operators and initiate collaboration where it will lead to better outcomes for customers than if we had acted alone.	99% support for this commitment. No notable alternatives requested.

Please note: where options for the level of ambition within our commitments were offered, there were five choices. Where support for a single option is significantly above 20% therefore, this represents a significant consensus.

1.3 Connections

	Core commitment	Current RIIO-ED1 performance	Change since first draft Business Plan (following stakeholder feedback)	Positive impact for customers	Stakeholder feedback in response to our first draft Business Plan consultation*
13	**Improve availability of information so that customers wishing to connect can easily comprehend the process and achieve customer satisfaction of 90% or higher with the 'ease of process'.**	New	↗ **Increased ambition**	The connections process is easy for customers to understand from the outset. Before applying customers know exactly what to expect and what information will be required.	96% support for this commitment. No notable alternatives requested. Stakeholders wanted more specific measurability of the impact of this commitment.
14	**Achieve an average customer satisfaction of 90% or higher for all connection types (including major connections and low carbon technology connections).**	>89%	↗ **Increased ambition**	Excellent and improved service across all aspects of the connections process including quotations and completed works.	A very high majority of 78% of stakeholders supported this ambition level. The importance of making it as easy as possible for low carbon technologies to connect to the network was made throughout the consultation, leading to its explicit inclusion in this commitment measure.
15	**Improve our performance against Time To Quote and Time To Connect for LCTs by 1% from RIIO-ED1 level (small schemes) and deliver 90% satisfaction with the timeliness of connections for larger schemes.**	Measure to be introduced (current response time to LCT enquiries = 4 days)	↗ **Increased ambition**	Customers receive quick and timely service for quotations and completed connection works	The greatest proportion (58%) supported this ambition level. Several stake holders felt this measure only focussed on smaller customers and wanted it extended to larger customers, for whom timeliness rather speed of the connection is key.
16	**Provide a same day connections' response for customers by introducing online self-assessment tools for individual domestic low carbon technology applications.**	New	★ **New commitment**	Enable customers to receive a rapid response to their connection applications for potentially high volume connection types	Stakeholders felt that to meet net zero volumes of low carbon technology connections will need to increase dramatically. Rather than just improve timings incrementally, for these high-volume applications WPD should develop new services to provide information in a matter of minutes
17	**Engage with 130 local authorities and local enterprise partnerships every year to understand their requirements for strategic investment resulting in more accurate WPD forecasts, and assist them to develop their own local area energy plans.**	Meetings on ad hoc basis	↗ **Increased ambition**	Ensure the local energy requirements in each of our regions are fully understood and feed into our long-term strategic planning in a timely and effective way	A high proportion (74%) of stakeholders favoured much greater ambition, with the greatest proportion (53%) favouring annual contact with local authorities.
18	**Improve cross border working practices between WPD, Independent Distribution Network Operators, National Grid Transmission and the Energy System Operator to ensure our customers obtain the most cost effective connection option.**	New	✓ **Clearer outcome**	Ensure that customers are able to obtain efficient and effective response to their connection requirements regardless of where multiple parties are involved, including where customers choose to proceed with a competitive connections provider	96% support for this commitment. No notable alternatives requested.
19	**Offer connection customers greater choice in the type of connection they receive by increasing the range of flexible connection offers to three.**	Two types	↗ **Increased ambition**	More customer groups and a greater number of connection applications can benefit from flexible solutions	The majority of stakeholders favoured this ambition level (48%).

20	**Maximise the efficiency of the existing network and keep costs to customers low by lowering the threshold for connection offers with a reinforcement requirement to receive options of flexible alternatives (schemes with reinforcement costs >£75k per MW and works will take more than 12 months to complete).**	New	↗ **Increased ambition**	More customers can choose between a conventional reinforcement solution, or a cheaper and quicker flexible solution.	A high proportion (61%) of stakeholders favoured much greater ambition, with the greatest proportion (49%) favouring this new proposed commitment. Of those requesting alternatives (9%) most stated that the existing commitment wasn't clear and the purpose of action should be made clearer

Please note: where options for the level of ambition within our commitments were offered, there were five choices. Where support for a single option is significantly above 20% therefore, this represents a significant consensus.

1.4 Social contract

	Core commitment	Current RIIO-ED1 performance	Change since first draft Business Plan (following stakeholder feedback)	Positive impact for customers	Stakeholder feedback in response to our first draft Business Plan consultation*
21	**Deliver transparency and enable stakeholders to scrutinise our performance by publishing annual reports in a simple, easy to understand format, (including WPD's total expenditure, the impact on customer bills and regulatory returns).**	New	✓ **Clearer outcome**	Provide customers with transparent information to enable them to understand our performance and financial returns and hold us to account for our delivery	97% support for this commitment. Some suggestions for additional social commitments – these will be included in WPD's separate annually published Social Contract
22	**Annually publish an updated WPD Social Contract, reporting the positive outcomes delivered for customers and as a minimum, maintain our prime Environmental, Social and Governance (ESG) rating.**	'Prime' status (Actual rating B)	✓ **Clearer outcome**	Independent scrutiny of WPD's environmental, social and corporate governance initiatives to provide stakeholders with a view of WPD's performance relative to wider UK companies and to identify improvements	95% support for this commitment. Some felt that the purpose of the assessment could be clearer about what it measures
23	**Support local people in our communities via an annual £1m 'Community Matters' fund, funded entirely by shareholders at no cost to customers.**	New	↗ **Increased ambition**	Act as a socially responsible business that will support the needs of the local communities we serve – delivering key corporate social responsibility initiatives to help people in vulnerable situations	The greatest proportion (44%) supported this ambition level. 46% of surveyed end-user customers agreed. Some stakeholders expressed reservations about whether it was appropriate that customers' money should be given to activities of this nature.
24	**Deliver 1,000 volunteer days per year for WPD staff to support local community initiatives associated with vulnerability and environmental initiatives, with annual reporting in WPD's Social Contract of the positive impacts achieved.**	New	◆ **No change**	Expand the impact, scope and reach of community and charity initiatives across WPD's regions, to deliver for the wider social good of people living in WPD's service territory	A very high proportion (63%) of stakeholders supported this ambition level (versus 32% wanting WPD to go further). The greatest proportion (49%) favouring this new proposed commitment.

Please note: where options for the level of ambition within our commitments were offered, there were five choices. Where support for a single option is significantly above 20% therefore, this represents a significant consensus.

2. Maintaining a safe and resilient network

2.1 Network resilience

	Core commitment	Current RIIO-ED1 performance	Change since first draft Business Plan (following stakeholder feedback)	Positive impact for customers	Stakeholder feedback in response to our first draft Business Plan consultation*
25	**Deliver improved network reliability where on average power cuts are better than one interruption every two years lasting 24 minutes.**	On average customer experience one power cut every two years, lasting 24 minutes	✓ **Clearer outcome**	Customers receive a highly reliable supply of electricity, delivering our lowest ever power cut levels.	92% support for this commitment. Stakeholders challenged WPD to quantify the improvements that will be offered
26	**Restore 87% of HV supplies within one hour.**	>85%	↗ **Increased ambition**	Minimising the disruption and inconvenience to customers, by restoring power as quickly as possible	The greatest proportion (52%) supported a less ambitious target of 86%. However, a sizeable proportion (42%) wanted to see improvement, and a majority of 55% of surveyed end-user customers agreed wanted to be more ambitious
27	**Improve service for 8,260 worst served customers by undertaking 70 schemes (removing all 6,870 customers defined as worst served by the RIIO-ED1 definition) and carry out further improvements.**	48 schemes	↗ **Increased ambition**	Significantly improved supply reliability for customers who have experienced a poorer service (higher volumes of power cuts) than the average. Improvements will result in less inconvenience and disruption for customers.	A very high proportion (67%) of stakeholders requested greater levels of ambition with the greatest proportion (57%) favouring this new proposed commitment. An even higher volume of end-user customers (64%) agreed. Stakeholders felt the impact on overall worst served customer levels could be made clearer
28	**Invest £190 million per annum to improve the overall health of the network and report annually to stakeholders on the impact of our investments.**	£202 million per annum	◆ **No change**	Reducing the risk of unplanned power cuts by improving the reliability of our network by replacing equipment in the poorest condition.	The greatest proportion (52%) supported this ambition level. The importance of reporting on the outcomes was emphasised, once a measure has been agreed with Ofgem
29	**We will undertake 110 flood defence schemes to mitigate the risk that our sites become inoperable due to flooding and engage key stakeholders to reduce the need for new assets in flood risk areas.**	Flood defences at 72 substations	↗ **Increased ambition**	Improve the resilience of the network to severe flooding, therefore reducing the risk of power cuts and disruption to customers.	Whilst 43% of stakeholders favoured undertaking '95 schemes', a higher proportion of stakeholders (47%) voted for WPD to go further. However, there was no consensus on the precise level. WPD has picked the mid-point option of 110 schemes, as more customers wanted to see a lesser commitment than those supporting the maximum level of ambition (125 schemes).

Please note: where options for the level of ambition within our commitments were offered, there were five choices. Where support for a single option is significantly above 20% therefore, this represents a significant consensus.

2.2 Business IT Security and Cyber Resilience

	Core commitment	Current RIIO-ED1 performance	Change since first draft Business Plan (following stakeholder feedback)	Positive impact for customers	Stakeholder feedback in response to our first draft Business Plan consultation*
30	**Reduce the risk of data loss or network interruption from a cyber-attack by continually assessing emerging threats in order to enhance our cyber security systems.**	As per commitment (Additional expenditure in RIIO-ED2 is proposed to respond to increasing threats)	◆ **No change**	Personal customer data will be protected and removing the risk of power cuts as a result of cyber-attacks.	96% support for this commitment. No notable alternatives requested.
31	**Enhance the resilience of our IT network security through increased levels of threat monitoring, prevention, detection and alerting systems, including upgrading our disaster recovery capability to ensure continuity of our operations.**	As per commitment (Additional expenditure in RIIO-ED2 is proposed to respond to increasing threats)	◆ **No change**	We minimise the risk that we will not be able to operate the network and provide our typical service to customers because of disruption to our IT systems.	96% support for this commitment. No notable alternatives requested.

Please note: where options for the level of ambition within our commitments were offered, there were five choices. Where support for a single option is significantly above 20% therefore, this represents a significant consensus.

2.3 Safety

	Core commitment	Current RIIO-ED1 performance	Change since first draft Business Plan (following stakeholder feedback)	Positive impact for customers	Stakeholder feedback in response to our first draft Business Plan consultation*
32	**Deliver safety action plans informed by two Safety Climate Surveys with all our staff and contractors during RIIO-ED2.**	New	↗ **Increased ambition**	WPD will have a safe and healthy workforce to enable us to maintain our services for customers.	94% support for this commitment. But several stakeholders asked for greater ambition than one survey every five years
33	**Send electrical safety education packs to every primary school in WPD's region in RIIO-ED2 and educate at least 80,000 children per year via direct learning to keep them safe.**	62,500 per year	↗ **Increased ambition**	Keep children safe around our electricity equipment and reducing the risk that they could come to harm.	58% of stakeholders wanted to see further ambition, with a very high proportion of 49% supporting the maximum level of ambition (80,000 children a year). Many stakeholders stated that this number needed to be placed in context and that WPD should be offering to support all primary age children
34	**Reduce the risk of injury or harm to children by delivering 780 schemes (43% of total locations) to underground, insulate or divert overhead lines that cross school playing areas, targeting the highest risk sites first**	New	✓ **Clearer outcome**	Reduce the risk of harm to the general public, in particular younger children.	The greatest proportion (57%) supported this ambition level. This was lower amongst end-user customers at 42%. Stakeholders wanted to see this commitment placed in context of the total sites to be addressed, with assurance that the highest risk schemes will be addressed first.

Please note: where options for the level of ambition within our commitments were offered, there were five choices. Where support for a single option is significantly above 20% therefore, this represents a significant consensus.

2.4 Workforce resilience

	Core commitment	Current RIIO-ED1 performance	Change since first draft Business Plan (following stakeholder feedback)	Positive impact for customers	Stakeholder feedback in response to our first draft Business Plan consultation*
35	**Demonstrate exceptional and embedded employment practices by achieving gold accreditation with Investors in People by the end of RIIO-ED2.**	New	↗ **Increased ambition**	Customers receive excellent service as a result of a motivated, highly-skilled and knowledgeable workforce.	The largest proportion (48%) agreed with WPD's proposed commitment (silver accreditation). However, a significant proportion wanted WPD to be more ambitious in this area (44%) and an even greater number of end-user customers agreed (60%), with 40% wanting to see the maximum level of ambition.
36	**Achieve year-on-year improvements to the levels of diversity within the business and publish an annually updated Diversity and Inclusion Action Plan.**	New	↗ **Increased ambition**	Improve the quality and tailoring of our services by having a workforce that reflects the diversity of the communities we serve.	97% supported this commitment, but stakeholders wanted to see that it translated to year-on-year improvements in WPD's diversity metrics

Please note: where options for the level of ambition within our commitments were offered, there were five choices. Where support for a single option is significantly above 20% therefore, this represents a significant consensus.

3. Delivering an environmentally sustainable network

3.1 Environment and sustainability

	Core commitment	Current RIIO-ED1 performance	Change since first draft Business Plan (following stakeholder feedback)	Positive impact for customers	Stakeholder feedback in response to our first draft Business Plan consultation*
37	**Achieve net zero in our internal business carbon footprint by 2028, following a verified science based target to limit the climate impact to of our activities (excluding network losses).**	New	↗ **Increased ambition**	Accelerate a reduction in carbon emissions to minimise our impact on climate change.	A very high proportion (80%) of stakeholders wanted to see further ambition, with 52% supporting the maximum level of ambition (net zero by 2028). 61% of surveyed end-user customers agreed.
38	**89% of commercial van fleet to be non-carbon vehicles by 2028, lowering annual transport emissions by 10,050 tCO2e (tonnes of carbon dioxide equivalent).**	New	↗ **Increased ambition**	Accelerate a reduction in the carbon impact of our transport fleet in the areas where our customers live and work.	While 40% of stakeholders favoured the lower ambition (replacing 79% of the fleet) 55% wanted to see greater ambition of some kind. However, there was no consensus on the precise level. WPD has picked the mid-point option of '89% of commercial van fleet', as of the two higher ambition options, more customers wanted to see a lower commitment than those supporting the maximum level of ambition ('100% of van fleet').
39	**Install renewable local generation at all suitable offices and depots with a capability to save 3000 MWh per year.**	New	✓ **Clearer outcome**	Ensure the delivery of our operations and services for customers is carried out in an environmentally responsible way, with all WPD sites run on clean, green energy.	95% supported this commitment, with no notable suggestions for alternatives. However stakeholders wanted the impact of these installations to be better

					quantified to ensure this is a meaningful action and not 'greenwash'.
40	**Reduce leaks from fluid filled cables by 50% by 2028 and replace 90km of the worst leaking circuits with non-oil alternatives; putting WPD on target to remove all oil-filled cables by 2060.**	55% reduction to 20,213 litres lost per year	↗ **Increased ambition**	Significantly reduce the risk of harm to the local ecology and protect habitats and specifies in the regions we operate in.	43% of stakeholders supported a 50% reduction and 46% supported greater ambition to replace 90km of the poorest performing cables. Stakeholders commended the focus on leakage reduction, but some cited the need to work towards removing oil from the system entirely
41	**Deliver a 20% reduction in SF_6 losses from RIIO-ED1 and collaborate with industry partners to develop technological alternatives to reduce overall volumes of SF_6 on the system.**	Leakage rate of 0.2% of the total SF_6 on WPD's system	↗ **Increased ambition**	Improve WPD's carbon footprint by reducing the risk of leaks from environmentally harmful gases from WPD's equipment.	The majority of stakeholders wanted to see greater ambition, with 44% supporting the maximum level of ambition (20% reduction). 10% wanted to suggest an alternative commitment – which was relatively high compared to other commitments. When probed, most stakeholders just sought greater clarity to understand the scale of the problem. WPD was encouraged to work with industry partners to develop ways to eliminate the need for SF_6 in the future.
42	**Achieve zero waste to landfill by 2028 (excluding hazardous waste) and deliver an overall 30% reduction in tonnage waste produced (per £ total business expenditure).**	10-20%	↗ **Increased ambition**	Ensure our services for customers are delivered in an environmentally responsible way, reducing the carbon impact of our operations.	62% of stakeholders wanted to see greater ambition in relation to waste reduction with 49% favouring a 30% reduction and 69% favouring zero waste to landfill. 52% of surveyed end-user customers agreed.
43	**Remove up to 50km of overhead lines in Areas of Outstanding Natural Beauty.**	29km	↗ **Increased ambition**	Improve the visual amenity of the landscape in beauty spots across our operating region.	Stakeholders were not in agreement on this topic. 39% favoured targeting 40km of undergrounding, yet 33% wanted the maximum level of ambition. Of the 8% suggesting alternatives, whilst the suggestions were non-specific they all emphasised the importance of doing more. Amongst end-user customers there was clearer consensus, with 70% wanting to see maximum ambition. We have therefore proposed an increase in the scope of this commitment

Please note: where options for the level of ambition within our commitments were offered, there were five choices. Where support for a single option is significantly above 20% therefore, this represents a significant consensus.

3.2 A Smart and Flexible Network

	Core commitment	Current RIIO-ED1 performance	Change since first draft Business Plan (following stakeholder feedback)	Positive impact for customers	Stakeholder feedback in response to our first draft Business Plan consultation*
44	**Create and implement simple, fair and transparent rules and processes for procuring flexibility services and introduce a customer satisfaction monitor to measure the effectiveness of our actions.**	New	◆ **No change**	Expand the roll out of flexibility services by making it as easy as possible to provide these services. This will help to maximise the efficiency of the existing network, avoiding the cost to customers of carrying out conventional network reinforcement.	94% support for this commitment. No notable alternatives requested.
45	**Encourage the development of flexibility markets by producing and sharing forecasts of flexibility requirements in order to undertake a flexibility tender every 6 months.**	Annual	✓ **Clearer outcome**	Provide advanced sight and greater certainty of WPD's flexibility requirements so that providers can better plan ahead and make longer-term investments to be able to provide these services	93% support for this commitment. Of the 7% suggesting an alternative, most wanted the outcome to be clearer, with no notable specific alternatives raised
46	**Maximise the efficiency of the existing network and keep costs to customers low by adopting a 'flexibility first' policy for all load related reinforcement decisions, with conventional reinforcement used only where flexibility is not viable.**	New	✓ **Clearer outcome**	Choosing the most effective option to provide required capacity will minimise network costs for all customers.	95% support for this commitment. Of the 5% suggesting an alternative, most wanted the outcome to be clearer, with no notable specific alternatives raised
47	**Ensure capacity availability to enable net zero to be achieved across our regions sooner than 2050 (some areas as soon as 2030), in line with the ambitions of stakeholders in each region**	New	★ **New commitment**	Support the UK's net zero aspirations and the government's ten point plan by ensuring the electricity network is capable of achieving this well ahead of the government's overall target of 2050 for those local authority regions that plan to do so.	Stakeholders requested a separation between WPD's own achievement of net zero (based on our business carbon footprint) and the actions we will take to enable local regions to achieve net zero overall, by dates much sooner than the government target of 2050. There was acknowledgement that local authorities are going at different paces and not all will be ready by 2030, but WPD needs to be able to provide sufficient capacity for those that do. Almost all stakeholders felt that 2050 was much too late and WPD had a key role to drive earlier achievement.
48	**Ensure WPD is able to connect up to 1.5 million electric vehicles and 600,000 heat pumps. Make it as easy as possible for customers to connect LCTs, such that WPD connects 6% more than the national average in the UK (prorated by number of customers).**	New	↗ **Increased ambition**	Customers can easily connect low carbon technologies without delays due to a lack of available network capacity.	A very high proportion of stakeholders (72%) wanted to see greater ambition, with 62% favouring WPD connecting '6% higher than the national average'. Stakeholders felt that high volumes of LCTs are essential in RIIO-ED2 if the UK is to successfully transition to net zero as early as possible. A quality, simple service is therefore essential to encourage adoption of LCTs

49	**Improve the accessibility and usefulness of data, enabling it to be tailored to individual customer needs and in the format of their choosing by making 60% of WPD's network data available via an interactive API (Application Programming Interface).**	0% of network data via an API	✓ **Clearer outcome**	Easier automatic access to network data, with the ability to tailor data requests to the customer's specific requirements and in a format of their choosing.	43% of stakeholders supported this level of ambition.
50	**Annually update the Long Term Development Statement and a Network Development Plan to ensure future investments are identified to facilitate decarbonisation across local areas.**	Annual	✓ **Clearer outcome**	Provide advanced sight and greater certainty of WPD's network capacity so that customers planning new connections can better plan ahead and make longer-term investments.	95% support for this commitment. No notable alternatives requested.
51	**Deliver low carbon planning that aligns closely with the energy plans of local regions by engaging with stakeholders and the Electricity System Operator to update WPD's Distribution Future Energy Scenarios for all four licence areas every 12 months.**	Annual	↗ **Increased ambition**	By creating more accurate, detailed scenarios with customer input we can deliver an efficient and economic network ready for the future needs of our customers.	52% of stakeholders supported this level of ambition.
52	**Hold 90 Local Energy Surgeries per year (three in each WPD operating region) for local authorities, supporting them to develop their local area energy plans.**	>10 per year	↗ **Increased ambition**	Helping local authorities and developers to create local energy plans that are achievable and help to deliver a network ready for the future.	65% of stakeholders wanted to see greater ambition, with 49% supporting this commitment level (90 surgeries per year).
53	**Undertake three whole system collaboration schemes with other DNOs and the ESO to enable our customers to benefit from lower electricity network and system costs by ensuring transmission and distribution solutions are considered, assessed and selected for implementation based on total electricity system costs regardless of where the solution sits.**	New	↗ **Increased ambition**	Looking across the wider energy system to provide capacity for the future needs of our customers in the most efficient way.	While the most supported individual option was to deliver two collaboration schemes (39%), the majority of respondents did want to see greater ambition (51%). However, there was no consensus on the precise level. WPD has picked the mid-point option of 'three schemes', as of the two higher ambition options, more customers wanted to see a lower commitment than those supporting the maximum level of ambition.

Please note: where options for the level of ambition within our commitments were offered, there were five choices. Where support for a single option is significantly above 20% therefore, this represents a significant consensus.

3.3 Innovation

Core commitment		Current RIIO-ED1 performance	Change since first draft Business Plan (following stakeholder feedback)	Positive impact for customers	Stakeholder feedback in response to our first draft Business Plan consultation*
54	**For each innovation project, we will undertake a cost benefit assessment and carbon analysis. We will ensure roll out into business practice to improve efficiency and effectiveness of assets, operations and customer service.**	New	✓ **Clearer outcome**	Successful innovation is quickly rolled out across the business to improve day-to-day operations to improve WPD's efficiency and overall quality of service for customers.	95% support for this commitment. Of the 10% requesting alternatives, the importance of achieving net zero well ahead of the government's target of 2050 were re-stated. In particular stakeholders stated that decisions regarding innovation projects should not be based solely on cost benefits, but also the consideration of the environmental and carbon reductions they could achieve.

55	**We will deliver service improvements to drive business innovative efficiencies to assist our customers reduce overall energy costs.**	New	★ **New commitment**	Helping customers to decarbonise their lives and reduce household total energy costs.	Stakeholders accepted that in general there may be a need for costs to increase in order to deliver on the UK's net zero aspirations. However, across several commitments stakeholders sought clarity on how the actions we take will improve the efficiency of our operations. They therefore wanted assurances that our first priority will always be to pursue efficiencies and innovative approaches to achieve more for less cost, and therefore any increases in customer bills would only be necessary as a last resort.

Please note: where options for the level of ambition within our commitments were offered, there were five choices. Where support for a single option is significantly above 20% therefore, this represents a significant consensus.

3.4 Community energy

	Core commitment	Current RIIO-ED1 performance	Change since first draft Business Plan (following stakeholder feedback)	Positive impact for customers	Stakeholder feedback in response to our first draft Business Plan consultation*
56	**Hold 60 Community Energy Surgeries for local Community Energy groups per year and provide a dedicated contact from WPD that stakeholders can work with to develop schemes and provide support through the connections process.**	10 per year	↗ **Increased ambition**	Community groups with less knowledge and expertise of the connections' process receive tailored support to develop their schemes and connect to the network. This will increase their confidence and understanding of our processes, so that they find it easier to gain access to our network.	While the most supported individual option was to deliver 30 events per year (41%), a greater proportion of respondents did want to see greater ambition (55%). However, there was no consensus on the precise level. WPD has picked the mid-point option of '60 events a year', as of the two higher ambition options, more customers wanted to see a lower commitment than those supporting the maximum level of ambition.
57	**Our local Community Energy Representatives will work collaboratively with community and local energy stakeholders to develop tailored connection and flexibility offers.**	New	↗ **Increased ambition**	WPD's support for community groups will extend beyond just helping them to connect to the network, by working in collaboration to help WPD to develop innovative, tailored solutions that benefit these types of connecting customer.	97% support for action in this area. Stakeholder feedback specifically from community energy groups and their representatives highlighted they can face reinforcement costs that make their projects unviable, because of the additional time and lack of ability to move projects to where there is available capacity. They therefore suggested that WPD should commit to working collaboratively with community and local energy stakeholders to develop tailored connection and flexibility offers that recognise the business case of the generation asset.

58	**Facilitate access to funding streams by providing support to community energy groups when making submissions to our calls for ideas.**	New	★ **New commitment**	Support community energy schemes with viable and ambitious low carbon schemes to secure funding to make them a reality	Community energy stakeholders requested that WPD offer seed funding to newly emerging community energy organisations to help them set up and help engage the hardest to reach customers, as this would accelerate a just energy transition. While regulatory rules preclude this and dictate that WPD must act as a neutral market facilitator, we can seek to act on this feedback by proactively supporting community energy stakeholders to access funding streams.

Please note: where options for the level of ambition within our commitments were offered, there were five choices. Where support for a single option is significantly above 20% therefore, this represents a significant consensus.

Key:

◆ **No change**

★ **New commitment**

↗ **Increased ambition**

✓ **Clearer outcome**

Meeting the needs of customers and network users

Delivering the service that our customers expect

4.19. Our vision to be world class in power delivery drives our key goal of delivering consistently excellent customer service – 'First Time, Every Time' - which is the central thread running through the heart of our operation and is firmly embedded in our culture. Our continued excellent performance in the RIIO-ED1 customer satisfaction measures – with average satisfaction above 8.9 out of 10 - demonstrates this commitment. This is also supported by the views of our stakeholders and independent assessment.

> ***The independent auditor said***
> *"Staff are empowered to contribute to the improvement of operations and procedures and it was clear from discussions and observations during the visit that staff feel their contributions to service delivery are highly valued. Staff are proud to be part of an organisation with such an outstanding reputation for customer service."*

4.20. During RIIO-ED2, our focus will be to maintain customer service excellence in a highly dynamic operating environment with rapidly changing and increasing customer expectations.

4.21. We understand the importance of being transparent and we welcome and encourage our customers and stakeholders to hold us to account and measure us against our peers and the wider industry. It is equally important that WPD continues to improve, adapt and refine its customer service provision by using feedback from customers and measuring its performance against those customer expectations and our peers.

4.22. We have a proven track record of doing this. Over the last five years, we have seen a significant shift in consumer expectations, driven in part by experiences in other sectors (e.g. the impact of online shopping and delivery services leading to a desire from customers for a more instantaneous service that they can track at every stage). In our sector, we have seen this translate into an expectation for more timely updates and information across all service areas, more proactive contact and a wider range of channels to suit the range of communications preferences of our customers. We have successfully adapted to this change. While the Institute of Customer Service reports that customer services across the UK is at its lowest level since 2015, as companies try to keep pace with growing customer expectations, WPD has shown significant adaptability. Our average customer satisfaction score – which has been number one in the industry since 2013 - has not only been maintained but has continued to increase every year.

4.23. As we look ahead to RIIO-ED2, WPD will need to continue to innovate and work hard to improve our service delivery, simply to maintain these exceptionally high current levels of service and ensure there is no regression (as seen across the wider UK). For example, we expect customer expectations to continue to increase: the shift towards a net zero future, which stakeholders expect WPD to achieve way ahead of the government's 2050 target, will result in huge volumes of low carbon technologies connecting to WPD's network at a local level. This could see up to 2,000 applications a week from domestic connections for heat pumps and electric vehicles. As such, we will need to develop the knowledge and expertise of our customer service teams, as well as to create a range of self-service tools to enable the rapid turnaround of applications and enquiries.

4.24. The transition to a smart, flexible, low carbon network will bring significant change and uncertainty and an even greater need for excellent customer service. The new services and interactions we will introduce during the transition must deliver the same excellent experience for customers. That is why we need to measure this effectively, allowing us to identify opportunities for improvement and assuring our customers of our unwavering commitment to provide the highest levels of service.

4.25. More generally, as we adapt the network to become a smarter, more dynamic energy system, it is essential that no customers are left behind in this transition, particularly those in vulnerable situations. As a result, we must develop new capabilities to deliver bespoke advice, support and service offerings to enable customers to participate in smart energy services, including flexibility

markets. Our commitment in RIIO-ED2 to improve customer satisfaction further and to maintain an average rating of 90% or higher, across all key service areas (including separate reporting for key new delivery areas including low carbon technology connections) should be recognised as highly ambitious.

4.26. Our stakeholders have consistently asked us to be a leading voice, representing their views at industry level, with the regulator and the government. To be most effective, we must be able to do this from a position of leadership and trust, delivering industry-leading customer service and demonstrating our customers can trust us to do the right thing.

4.27. During RIIO-ED1, we have recorded the highest average customer satisfaction of all the DNOs in Ofgem's Broad Measure of Customer Satisfaction (BMCS).

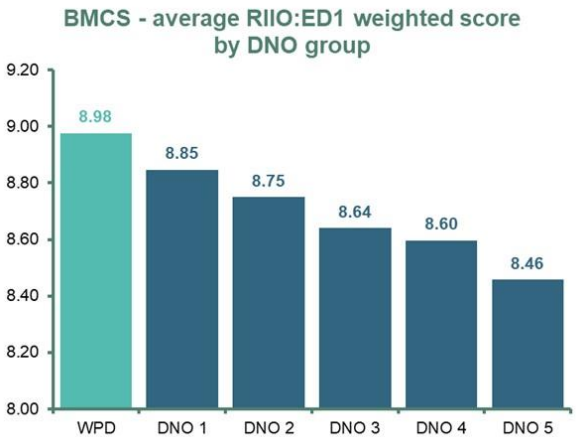

Figure 4.3 Broad Measure of Customer Satisfaction

4.28. We have delivered consistent, exceptional customer satisfaction performance throughout RIIO-ED1. In Ofgem's Broad Measure of Customer Satisfaction, WPD's overall customer satisfaction for the last five years is 8.98/10 (or 89.8%). In a separate index, the Institute of Customer Service (ICS) reports that their top rated member companies in the UK for overall customer satisfaction are John Lewis (85.3% or 8.5/10), Nationwide (84.4% or 8.4/10) and First Direct (84.2% or 8.4/10).

4.29. Independent accreditation provides both a useful assessment and an opportunity to identify further improvements. We have been certified by the Customer Service Excellence standard since 1992 (it was previously known as the Charter Mark). Each year, an independent assessor carries out a rigorous audit including a two day visit and assesses our performance against set criteria. Each area is awarded one of four ratings: 'Compliance Plus' (UK-wide best practice); 'Compliance'; 'Partial Compliance'; or 'Non-Compliance'. In 2020, we achieved 45 out of 57 'Compliance Plus' ratings (the top UK performer out of 600 companies), with no instances of non-compliance.

Our customer service outputs for RIIO-ED2

What our stakeholders said about customer service

Stakeholder Top Priorities	
1	Customer service during power cuts is very important and remains a core priority for stakeholders.
2	Timely, clear communication is considered vital for customers, especially during power cuts.
3	Stakeholders want WPD to offer a wide range of communication channels to suit the preferences of different customers. WPD must ensure it maintains the same quality of performance regardless of the method of contact a customer chooses.
4	Improving information provided during planned power cuts, as well as unplanned incidents, is also very important to stakeholders.

Figure 4.4 Stakeholder top priorities for customer service

Customer satisfaction

4.30. We will improve our average customer satisfaction to 9 out of 10 or higher across all key services – delivering leading performance in Ofgem's Broad Measure of Customer Satisfaction (BMCS). We have consistently delivered industry-leading performance in Ofgem's BMCS

survey and will continue to do so by refining and improving activities in response to survey feedback and our stakeholder engagement programme.

4.31. In order to achieve this overall satisfaction level it will be essential to closely monitor changes in customer expectations and demonstrate adaptability in our service provision throughout RIIO-ED2. For example, there may be long term impacts of the Covid-19 pandemic that may change customer expectations with regards to the timing of planned works activities (in light of an enduring increase in homeworking), whilst entirely new services may emerge as a result of the transition to a smart energy future. In all cases, the outcome of achieving a minimum of 90% customer satisfaction will ensure that WPD continues to deliver an exceptional overall customer experience; responding quickly to any such changes in our operating environment by making quick and effective alterations to our policies and processes.

Core Commitment 1	**Maintain a 90% customer satisfaction score across all key services areas with separate reporting for emerging technology customers.**

4.32. As increasing numbers of electric vehicles and heat pumps are connecting to our network, we must ensure that we maintain service levels in this area, facilitating the transition to net zero. We will achieve this by measuring customers' satisfaction with the advice and services we provide to those looking to install low carbon technologies.

Customer Service Excellence (CSE) Standard and British Standard for Inclusive Service Provision

4.33. The CSE standard focuses on the quality and breadth of WPD's customer service policies, processes and procedures, including our approach to stakeholder engagement and the outputs and customer service improvements it leads to. Through independent evaluation of our performance, the standard drives continuous improvement and encourages the development of new, inclusive services to suit the individual needs of customers.

4.34. We will achieve full compliance with the CSE Standard and undergo rigorous external assessment and benchmarking every year to evaluate our performance in relation to accessibility, customer service and stakeholder engagement. This is crucial to ensure we continue to improve and provide the best possible service for customers.

4.35. The CSE Standard provides a level of independent scrutiny and perspective that goes beyond simple validation. This challenging feedback is fundamental to the process of identifying service improvements and innovations.

4.36. In addition, the British Standard Institute's accreditation for Inclusive Service Provision (BS18477) assesses WPD's ability to recognise and respond to the dynamic nature of vulnerability and deliver inclusive, accessible services for all. At WPD, we want to be the best, not just within our industry but when benchmarked across UK companies, so this scrutiny and challenge is imperative. An annual review of all our new processes and procedures is undertaken. This not only provides independent assurance of the quality of WPD's services, but it drives improvement via expert feedback based on the assessor's view of companies across the UK. We will therefore continue to provide a wide range of inclusive customer contact channels and accessibility tools, and maintain full compliance with the British Standard for Inclusive Service Provision every year.

Core Commitment 2	**Achieve full compliance with the Customer Service Excellence Standard and British Standard for Inclusive Service.**

Telephone response

4.37. To provide good customer service, it is essential that we enable customers to talk to us and get the response they need. That is why we have highly trained customer service advisers in our own Contact Centres, ensuring customers can talk to us in person. Stakeholders tell us that being able to speak to a call-taker in person is still a high priority and that failure to get through can be very frustrating. Our in-house telephony platform prevents any calls from being 'dead ended', and means that customers who choose to speak to an adviser have their call answered in an average time of under four seconds. We will continue to operate regionally based, in-house Contact Centres with good staffing levels to provide a high quality service and fast response. We have a strong track record of answering calls quickly and will continue to uphold this.

4.38. When experiencing exceptionally high call volumes, we increase the number of advisers available by using trained staff from across the company to maintain service levels and quality of response. Trained advisers are also able to take calls at home, in the event of bad weather. Our home working capability ensures we can increase the number of advisers quickly and at short notice.

4.39. Abandoned calls arise when customers decide to hang up before they speak to an adviser. This typically occurs when customers are being kept on hold for a long time. Our policy of answering calls quickly results in less than 1% of calls being abandoned.

Core Commitment 3	**Answer calls within an average of four seconds and maintain an abandoned call rate of less than 1%, within our UK-based, in-region Contact Centres.**

Social media response

4.40. Increasingly, customers choose to use alternative means of communication, including social media. We have responded by developing new channels of communication, which share the same ethos as our telephone response, providing the same quality of service and quick response times.

4.41. We will continue to expand the use of social media as a means of contact and customer interaction, ensuring that response times and service quality are of an exceptional standard. Based at our in-house Contact Centres, our dedicated team of social media advisers enables customers to talk to us around the clock, using the platform of their choice. These now include Twitter, Facebook, WPD's smart device app, WPD Power Cut Reporter app, text message, website, info email, WhatsApp and Webchat. We respond to all social media enquiries in an average time of less than five minutes, and to Webchat within 45 seconds.

4.42. We will continue to identify where improvements can be made to maintain our response times as well as providing ongoing training for our staff and using the latest technology to issue automated messaging during power cuts.

Core Commitment 4	**Respond to social media enquiries within five minutes and Webchat enquiries in less than a minute.**

Communications during power cuts

4.43. Customer feedback highlights the importance of regular and accurate information during power cuts. That is why we will continue to provide restoration times and progress updates on every planned and unplanned outage using a range of communication channels. We will provide customers with information on every outage, contacting them proactively using their preferred method of communication whether that is call back, text message, WhatsApp or WPD's smart device apps.

4.44. We will also provide accurate information on all network outages using our online power cut map and the WPD smart device apps, enabling customers to access information for themselves as well as setting up and receiving bespoke alerts. We will use feedback from customers on each of these service channels to develop further improvements.

Core Commitment 5	**Create an online viewer to provide greater insight on the planned work activity and interruptions on our network.**

Rapid resolution of customer complaints

4.45. Although we strive to deliver excellent customer service at all times, there are occasions when we will fall short of what our customers expect. In these instances, it is very important that we act swiftly to resolve the matter to the customer's satisfaction and that we are able to learn from these instances to avoid any future repetition.

4.46. Our track record during RIIO-ED1 has been strong in this area, outperforming our RIIO-ED1 target for resolving complaints in one day. To maintain this performance, and build on an achievement that is so important to our stakeholders, we must continue to focus on this area. That is why we're committed to going further than the Ofgem standards and continuing to deliver industry-leading performance for our customers.

4.47. We are committed to ensuring that our staff contact the person making the complaint at the earliest opportunity to fully understand the nature of the issue and to seek to resolve it to the customer's satisfaction as quickly as possible. We will commit to resolving 99% of customer complaints within 25 days which is six days fewer than the standard expected from Ofgem.

4.48. In our first draft Business Plan consultation, 94% of stakeholders supported this commitment and the target level of 90% of complaints resolved within one day. While commending our existing performance, stakeholders requested a stretching target for 99% of complaints to be resolved, to be achieved around one working week earlier than the Ofgem target of 31 days.

Core Commitment 6	**Resolve at least 90% of complaints within one day and resolve 99% of complaints within 25 days.**

Guaranteed Standards of Performance awareness

4.49. Guaranteed Standards of Performance (GSOPs) set out the minimum service standards that DNOs must meet under Ofgem's regulatory framework. Where a standard is not met, a payment must be made to the customer. GSOPs cover the provision of connections, supply interruptions and response to problems including voltage complaints.

4.50. Where we are aware of a failure, a payment will be made without the need for a customer to make a claim. However, stakeholders are not always aware of the framework of GSOPs or how and when they may apply to the services they receive. Because of this, we are committed to increasing awareness and knowledge of GSOPs.

Customer vulnerability

4.51. Customer vulnerability presents itself in many different ways and means that some people are more dependent on essential services for support. Examples of vulnerable customers might include a young person with autism living independently for the first time, a lone parent with very young children or someone with a critical medical dependency on electricity.

4.52. We currently support around 1.5 million vulnerable customers a year through proactive power cut information and advice, fuel poverty guidance and by identifying hard-to-reach customers who are encouraged to join the Priority Services Register for the first time. Our stakeholders consistently tell us that providing support for customers in vulnerable situations should be a key priority for us.

4.53. Vulnerable customers often face additional challenges including difficulties with the costs of household utility bills. In RIIO-ED1, our stakeholders made it clear that we should use our interactions with customers to identify and provide help and support to those struggling with fuel poverty. As a result, we have significantly expanded the support given to those dealing with fuel poverty and, by working with trusted partners, have been able to deliver significant savings of £27 million for over 70,000 customers so far during RIIO-ED1.

4.54. Vulnerable customers are also at risk of missing out on benefits associated with the shift to a smart energy system, which is necessary to achieve net zero. We are committed to ensuring the energy transition is just and fair, and that no customer is left behind.

4.55. Our established customer vulnerability strategy has been key to delivering successful outcomes for customers. Our aim is always to deliver tangible actions, outputs and benefits for customers. The core strategy has been updated and refined each year in partnership with our stakeholders and is subjected to rigorous external assessment and scrutiny each year. This has led to significant additions to the strategy, including a greater emphasis on addressing fuel poverty and protecting the interests of vulnerable customers during the smart energy transition.

4.56. The clarity of our strategy ensures that it is understood by everyone at WPD. As a result, the strategy is becoming more deeply embedded in all our operations and means that all staff have an awareness of the work we can do to support the vulnerable. This extends from field teams working on the network, to staff handling customer calls and innovation engineers delivering schemes for a low carbon future.

4.57. Most importantly, the strategy must remain effective and fit for purpose. This drives us to deliver excellent outcomes for customers, identifying and responding quickly to changes in their expectations and requirements.

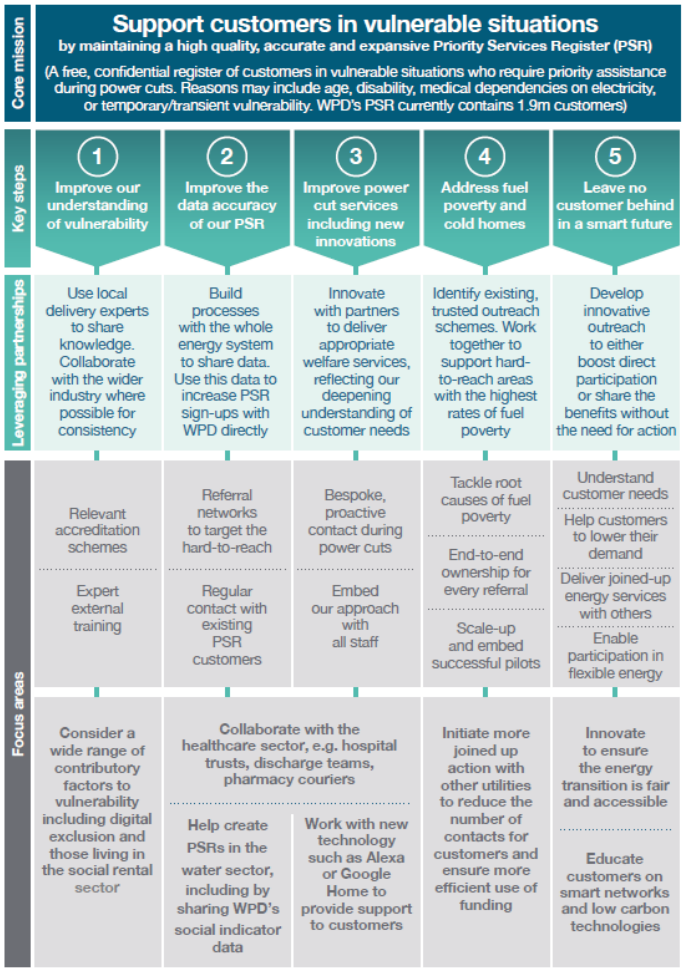

Figure 4.5 Supporting customers in vulnerable situations

Our customer vulnerability commitments for RIIO-ED2

What our stakeholders said about the customer vulnerability and fuel poverty

Stakeholder Top Priorities	
1	Make sure no one is left behind in the transition to a smart network, especially customers in vulnerable circumstances and in fuel poverty
2	Develop and continue to expand partnerships with carers and charities including Citizens Advice
3	Facilitate better data sharing and work towards creating a centralised PSR
4	Educate customers and raise awareness of the PSR, using a range of methods, to increase the number of people signing up
5	Work with Ofgem to allow data to be safely shared with other utilities
6	Provide funding and increase the support given to referral networks
7	Continue to identify vulnerability by working with partners including local authorities, disability forums and health and social care providers

Figure 4.6 Stakeholder top priorities for customer vulnerability

Maintain a Priority Services Register (PSR)

4.58. The PSR is crucial to our work to support vulnerable customers during power cuts. It is also the basis for our initiatives to help increase customers' resilience to power cuts and address any problems they may have with energy affordability.

4.59. The effectiveness of the PSR and its role in helping us to look after our vulnerable customers depends on its accuracy. Our dedicated PSR data cleanse teams are trained to give specialist advice to PSR customers when contacting them to update their records. They proactively contact one million customers in vulnerable situations each year.

4.60. We will also use targeted social media campaigns, working with local agencies, including those in the health sector, to broaden awareness and increase understanding of the PSR among the vulnerable and those who support them.

4.61. Stakeholders responding to our first draft Business Plan consultation have placed a significant priority on WPD carrying out our PSR data cleanse via a high proportion of direct, in-person telephone conversations (rather than via letters or text messages). They see this as vital to enabling a bespoke conversation to tailor advice to the individual needs of each customer, moving beyond an exercise simply to update records by using the opportunity to deliver specialist support. By conducting direct calls, this provides an opportunity to explore wider associated factors with customers, including support they may require in relation to fuel poverty and, in light of the shift towards net zero, to support their active participation in smart energy services. In RIIO-ED1, around 30% of WPD's contact with PSR customers is an attempt to make direct telephone contact. In our first draft Business Plan consultation, 83% of stakeholders wanted to see this volume increase.

Core Commitment 7	**Proactively contact over 2 million Priority Services Register customers once every two years (with 60% via direct telephone call) to remind them of the services we provide and update their records.**

‘One stop shop’ for Priority Services customers

4.62. We will develop cross-referrals with partner agencies to ensure customers only need to register with one agency to benefit from the services of multiple agencies. Thanks to a network of over 150 partner agencies and other utilities, we will be able to increase data sharing and achieve a ‘one stop shop’ service for vulnerable customers wishing to join the PSR while ensuring all General Data Protection Regulations requirements are met.

4.63. In our latest consultation, stakeholders strongly supported this action, but suggested that it should be extended beyond utility companies to also include telecommunication providers.

Core Commitment 8	**Achieve a 'one stop shop' service so that customers only have to join the Priority Services Register once to be registered automatically with their energy supplier, water company and gas distributor. We will engage to extend this to telecommunication companies where possible.**

4.64. Our consumer vulnerability data mapping enables us to see where potentially high volumes of vulnerability align with gaps in our PSR take-up. As part of our strategy, we will reach out to trusted local agencies which can help to extend our support to these areas, ensuring more comprehensive coverage.

4.65. To provide bespoke support for customers and increase the reach of our programme, we must locate the hardest to reach and most in need, establishing effective, trusted contact through a single point and continually improving the accuracy of the data we hold.

4.66. Stakeholders place a significant importance on WPD’s work with partnership agencies to identify those in need of support. In the first draft Business Plan consultation. When feeding back on an initial proposal to identify 30,000 new customers for the PSR each year, the majority of stakeholders felt WPD should go further, with 38% requesting that WPD identify a further 50,000 ‘hard-to-reach’ vulnerable customers each year and encourage them to join our PSR. An even higher proportion of end-user customers (57%) supported this level.

4.67. Covid-19 was seen as a factor in increasing the number of people likely to need support. In addition, stakeholders wanted WPD to be clearer on the impact the identification of new customers for PSR would have on the total people requiring support but not currently registered.

Core Commitment 9	**Ensure a minimum of 40% of total customers eligible for the Priority Services Register (PSR) are registered (by identifying 50,000 hard-to-reach customers each year to join the PSR).**

Customer Vulnerability Action Plan

4.68. While we have already developed a Customer Vulnerability Strategy highlighting our commitment to vulnerable customers, we have been challenged by stakeholders to go further when it comes to identifying vulnerability. In response to this, we will work with expert stakeholders, including our Customer Collaboration Panel and referral partners, to refresh our definitions and understanding of ‘vulnerability’ each year and co-create an ambitious annual action plan to develop new, innovative outreach initiatives for the vulnerable and fuel poor.

4.69. We will also hold annual consumer vulnerability workshops to engage these expert stakeholders and work with them to develop our understanding of vulnerability, share best practice and understand the priorities which need to be addressed. We will also use this engagement to collaborate on the annual update of our Customer Vulnerability Strategy.

Customer resilience (to power cuts)

4.70. Vulnerable customers often need extra support during a power cut. That is why we are committed to developing innovation trials to understand how the opportunities presented by new technologies, including smart networks and low carbon technologies, can be used to provide increased resilience for customers in vulnerable situations.

4.71. We will also provide advice on what to do in a power cut, including promotion of the105 power cut phone number. We will measure referrals to the PSR arising from these initiatives.

4.72. We plan to work with expert stakeholders to develop resilience planning specifically targeted at premises including care homes, refuges and shelters providing care for the vulnerable.

Partnerships, outreach services and fuel poverty

4.73. Our stakeholders have made it clear that we should continue to use the partnership hub model to deliver customer outreach schemes. They have challenged us to increase the number of partners we work with, broadening the scope of our support interventions, particularly when enabling customers to access opportunities presented by smart low carbon initiatives.

4.74. Our work to support those in fuel poverty through a network of referral partnership schemes has already helped 70,000 customers to save £27 million so far in RIIO-ED1. Stakeholders have asked us to continue to offer this service in the communities we serve. To increase the impact of our support services, stakeholders have asked us to prioritise the identification of fuel poverty, helping us to understand more about the circumstances which can lead to customers struggling with their bills. By doing this, we will be able to identify customers who may be affected, refining the scope of support and our ability to target those in greatest need.

4.75. In RIIO-ED2, we are committed to supporting more than 113,000 fuel poor customers to save £60m. We'll do this by developing a range of tools to increase our understanding of fuel poverty and to identify customers impacted, enabling us to target our outreach services most effectively. This will include engagement with our partners and other expert stakeholders to share best practice and increase understanding of circumstances leading to fuel poverty and the support which can be provided. Our annual consumer vulnerability workshops will provide the platform to collaborate with stakeholders and co-create the areas of our consumer vulnerability strategy dealing with fuel poverty. We will also update our data mapping to improve the granularity and detail of fuel poverty indicators to support the effective targeting of outreach services.

Core Commitment 10	**Support over 113,000 fuel poor customers to save £60 million on their energy bills over RIIO-ED2.**

Protect the interests of vulnerable customers in the switch to a smarter network

4.76. We are committed to delivering a fair and just transition to a smart network and net zero carbon economy. Our stakeholders are very supportive of our robust and ambitious plan which ensures those who are vulnerable or in fuel poverty are not left behind and are able to access the opportunities to reduce costs.

4.77. We are committed to identifying how vulnerable customers can participate in a smart low carbon future and remove any barriers to entry. We will use a consumer classification model to recalibrate our existing partner outreach schemes to provide more holistic support to the vulnerable and fuel poor, particularly in relation to the smart energy transition.

4.78. Once we have developed the range of capabilities to support customers in vulnerable situations during the smart energy transition, stakeholders want us to roll this out to as many customers as possible. We will utilise our contact with PSR customers every 24 months, of which 60% will be attempted over the telephone. This will give offer customers the opportunity to develop a smart

energy plan tailored to their circumstances and to be referred to a range of expert partner agencies delivering enduring support to enable them to participate in smart services, including flexibility markets. In our first draft Business Plan consultation, 97% of stakeholders supported the development of a model to understand the needs and capabilities of customers in vulnerable situations, and 47% backed the idea of supporting the maximum number of customers (resulting in an increased target from 20% to 60% of WPD's PSR to be offered this service).

Core Commitment 11	**Develop a model to identify the capabilities of vulnerable customers to participate in a smart, low carbon future and offer 60% of PSR customers specific support and education.**

4.79. We are committed to providing education and support for consumers and stakeholders to encourage everyone to embrace the opportunities offered by the smart energy transition and low carbon economy.

4.80. We will ensure all WPD innovation schemes take into account the possible effects on vulnerable customers. We also want to design innovation schemes which will enable communities and the fuel poor to benefit from the use of smart systems and low carbon technology.

Core Commitment 12	**Take a leading role in a coordinated approach with a range of industry participants (including funding for collaborations with community energy stakeholders) to share best practice and co-deliver schemes to ensure vulnerable customers are not left behind by the smart energy transition.**

Connecting to our network

4.81. As a licensed distribution network operator, one key area of responsibility is to provide new and augmented connections to the electricity network. Each year we build the electrical infrastructure and end connections to feed approximately 40,000 new premises, across four distribution service areas.

4.82. Our network must support a wide range of connection types including predominantly demand premises in the form of housing developments and retail and industrial units and also generation premises that export energy by harnessing various forms of energy including solar, wind and hydro.

4.83. We also modify and upgrade existing connections to cater for customers' ongoing needs, whether they need an increase in supply capacity, perhaps to cater for new machinery or equipment, or want to make a change to the operational characteristics by installing generation capability at a demand site.

4.84. Regardless of the type of connection, all our customers want to be able to connect to the network in accordance with their timescales and operational requirements. In order to do this, the customer must have sufficient and appropriate information to help them understand and assess the connection options open to them.

4.85. We will continue to deliver the excellent customer service that customers seeking electricity connections have come to expect. This means a fast and efficient connections service from a customer's initial application, through to the final connection and energisation. Customers also want more information before their application, as well as regular contact throughout the process and feedback following connection. These are areas that we are already working on and will continue to focus on in RIIO-ED2.

4.86. The connection of new customers sometimes requires network reinforcement which may involve significant cost and delays. We have introduced alternative connection solutions (including Active Network Management) which enables connections to be made more quickly and for a lower cost, and where the customer agrees to the possibility of some form of curtailment when the network is operating at full capacity. Customers need to know what alternatives may be available to enable them to make an informed choice.

4.87. The continued roll out of competition in connections has seen an increase in the number of services provided by third parties over RIIO-ED1. There are now 13 Independent Distribution Network Operators (IDNOs) across Great Britain that own and operate distribution networks within our area. These IDNOs generally use Independent Connection Providers (ICPs) to build the network before taking ownership of it. The ICPs can now determine the point of connection to our network using information made available through online tools. With the relevant accreditations, they can also approve their own designs and undertake work to make the connection to our network.

4.88. IDNOs and ICPs are increasing their market share which demonstrates that competition is effective and that there is a choice for customers. It is important that we continue to work with both types of organisations to ensure that the initial customer for the connection (usually the developer) and the end user receive the best outcome in terms of customer service and value.

4.89. During RIIO-ED1, we are committed to improving customer service on a number of fronts. Our overarching strategic intent is to:

- Provide a faster and more efficient connections service
- Improve communications with customers
- Enhance engagement with major customers
- Facilitate the competitive market

4.90. We have achieved a high standard for customer service with a connections customer satisfaction score averaging 8.99 out of 10. We aim for zero Guaranteed Standards of Performance connections failures and we have had only seven failures so far during RIIO-ED1.

4.91. We have worked hard to make improvements to how we communicate with our customers, whether by enabling face-to-face discussions, or through the provision of online facilities to help the customer track progress of their scheme. We know that communication is key to delivering connections in a timely and efficient manner.

4.92. Our programme of stakeholder engagement plays a vital part in ensuring we remain in step with our customers' needs and that we make continual improvements to connections services. The Incentive on Connections Engagement (ICE) has proven invaluable in stimulating conversations with our connections stakeholders and driving improvements and, since its inception in 2015, we have delivered on numerous commitments. Although ICE is now superseded by the Connections Strategy process, we will continue to employ our engagement approach as it has a proven track record for delivering results.

4.93. The work we have undertaken so far throughout RIIO-ED1 serves as the foundation for RIIO-ED2. We don't believe a major transformation is necessary however we must continue to build on our overarching strategic intent, evolve our processes, make efficiencies and ensure we react now to meet the needs of our customers for 2023 – 2028 and beyond.

4.94. To ensure we have correctly identified customer priorities we have undertaken an expansive course of stakeholder engagement. This has included both wider engagement at a higher level and liaison with a number of expert groups. Our focus has been to 'co-create' our connections strategy and not just implement a plan as a result of what we think our stakeholders want. The result has been to create a number of core commitments that will help us deliver against Ofgem's connection principles and baseline expectations.

Our connections service commitments for RIIO-ED2

What our stakeholders said about the connections

Stakeholder Top Priorities	
1	Invest ahead of need and undertake forecasting for EV connections to ensure sufficient capacity, e.g. new apartment blocks
2	Increase the speed of the connections process
3	Offer more flexible connections (particularly at 11kV)
4	Ensure that information about the connections process is clear and simple for customers without technical backgrounds, especially for heat pumps
5	Hold a series of connections workshops at a local level for customers, using local case studies
6	Develop clear information / guides for small developers, planning consultants and customers to support them through the application process

Figure 4.7 Stakeholder top priorities for connections

Connections to support net zero

4.95. We have a critical role to play in ensuring our network can support the growth of low carbon technologies (LCTs) throughout the RIIO-ED2 period and beyond. This new period sees a shift in focus from low carbon generation connection towards the growth of LCT products including electric vehicles, battery storage and heat pumps. Net zero is a legally binding target for the UK and our work to connect LCT demands to complement the generation already connected is central to the achievement of that target.

4.96. The government has supported net zero growth through The Carbon Plan and more recently the Ten Point Plan and the Energy White Paper. The themes remain consistent through this support, the UK will achieve its carbon targets by decarbonising heating and transport. Decarbonisation is achieved through the electrification of products supported by low carbon electricity generation.

4.97. Our role in this area is simple, we need to ensure our network can connect LCTs and generation with speed and efficiency. We will use our experiences in RIIO-ED1 and our innovation projects to achieve this.

4.98. During the RIIO-ED1 period, we transformed our network to accept low carbon generation. A mixture of flexible connection offers and a modelling approach based more on energy volumes than maximum demands helped us connect over 21GW of generation on a network conventionally designed for 14GW of demand.

4.99. In RIIO-ED2, we will see the focus shift from large scale renewable generation connections and towards high volumes of smaller LCT connections. Where we already seen connection activity in generation at capacities around 5,000kW, the shift will be towards the volume connection of electric vehicles and heat pumps with capacities in multiples of 7kW. While the concept of connections and customers service is the same, the volumes will require a redesign to our business model to support the change.

4.100. Government figures forecast targets of 600,000 heat pump connections per year in the UK by the end of RIIO-ED2. At a similar time, all new cars will be electrified, leading to around 1,000,000 new EV connections per year. With WPD operating in around a third of the UK, we could see over 400,000 new connections per year, or 1,600 for each working day. These levels trigger an automated approach to provide a quality service to our customers.

4.101. An automated approach flows through to how flexibility might be realised on our domestic networks. While we will operate and schedule larger demands and generation on our higher voltage networks, the low voltage network cannot be micro-managed by us in the same way. We see flexibility being delivered through supplier tariff signals and aggregation offers. We do not expect to interact directly with our individual domestic customers.

4.102. We have already experienced automated Eco Homes in work completed in South Wales. We expect this area to grow with new players in the home energy management arena. Management of whole housing estates as pseudo power plants is also an area where we expect growth, with benefits for the connected customers and the network operator alike.

4.103. We will use the innovation tools that we developed in RIIO-ED1 to support this change. Flexibility is now embedded in our system operation plans as a result of innovation. Research in Electric Nation has showed us how we can connect more EVs to existing network. Business as usual innovation has changed the way we provide customers with a service, now standardised on a three phase solution to provide capacity for the future.

Our overall ambition

4.104. We recognise that, during RIIO-ED2, we will be operating in a rapidly changing energy market with a focus on achieving net zero carbon emissions. We will ensure that our customers have access to quick, simple and affordable electricity connections which will support electric vehicles, heat pumps and other emerging technologies.

4.105. We will ensure that our electricity infrastructure can sustain the growth in demand, whatever the take-up. We will do this by using a range of flexible services, conventional reinforcement and other innovative solutions.

4.106. Excellent customer service is key to a positive relationship with our connections customers. We will continue to engage with our stakeholders, build on our long standing relationship with them to understand their priorities and create further initiatives to improve our customer service.

4.107. We remain committed to competition in connections in RIIO-ED2 and will continue to innovate where there is potential to improve the process.

4.108. In RIIO-ED2, we will also further improve our end-to-end connections service as follows:

- Continue to explore innovative ways of connecting low carbon technologies and build on initiatives, to introduce large capacity, rapid electric vehicles charge points at strategically important locations including motorway service areas
- Enhance our online service to provide a wider range of online quotations
- Ensure that customers have a single point of contact at both the quotation and the connection stage to provide updates and advice
- Achieve a minimum 9 out of 10 average customer satisfaction score for connections activities
- Produce our Connections Strategy which will define our overall plan for delivering the high quality connections service that our customers deserve
- Improve our ability to provide quotations and connections in a timely manner and in line with customers' expectations
- Improve clarity concerning the availability of flexible connections and promote access to deliver more efficient network utilisation
- Develop tailored processes for meeting different customer groups' needs

Providing excellent customer service

4.109. Our customers expect excellent customer service in the field of connections provision and it is imperative that we set ourselves high standards to meet those expectations. We are continually striving to ensure that we deliver exemplary service from application through to connection and energisation.

4.110. Providing excellent customer service requires that customers who want a connection, or advice relating to the potential to make a connection, find the process as straightforward as possible. Availability and clarity of information is key to mitigating any concerns customers may have.

4.111. Stakeholders have told us that the connections information that we provide should be tailored to meet the individual customers' needs. We will ensure that appropriate and easily understandable information is made available through various means so that customers can make informed decisions and have clarity of process.

4.112. Our goal is to ensure that customers have all the information they need both at pre-application and application stages so that they know exactly what to expect and what is required on their part.

4.113. We will extend our commitment to provide excellent and improved service, not just at application stage, but across all aspects of the connections process including quotations and completed works.

Core Commitment 13	**Improve availability of information so that customers wishing to connect can easily comprehend the process and achieve customer satisfaction of 90% or higher with the 'ease of process'.**
Core Commitment 14	**Achieve an average customer satisfaction of 90% or higher for all connection types (including major connections and low carbon technology connections).**

Providing quicker and more efficient connections

4.114. The need to provide quick and efficient connections at an affordable price remains a high priority for our stakeholders. Customers want to receive a quick and timely service for quotations and completed connection works.

4.115. Measuring performance against Time to Quote (TTQ) and Time to Connect (TTQ) is a business as usual activity. However the expected proliferation of low carbon technologies (LCTs) will place an added emphasis on us to ensure our network is ready to connect LCTs with speed and efficiency. Government forecasts mean we could expect to see over 400,000 new connections per year in this sector alone.

4.116. We will continue to explore the viability of a different approach to the delivery of quotations, particularly in relation to larger, more complex connections. Stakeholders have told us that the speed of a quote is not always the most important thing, if this means that accuracy is compromised.

4.117. It is important that we are ready for this increase in activity and put systems in place that will accommodate such high volumes. This will require a redesign to our business model to support the change that not only ensures that we can respond to customer demand but also provide an automated functionality to allow customers to access an online self-assessment tool and receive a same-day response.

Core Commitment 15	**Improve our performance against Time to Quote and Time to Connect for LCTs by 1% from RIIO-ED1 level (small schemes) and deliver 90% satisfaction with the timeliness of connections for larger schemes.**

***NEW* Core Commitment 16**	**Provide a same day connections' response for customers by introducing online self-assessment tools for individual domestic low carbon technology applications.**

Engaging with customers to understand their future energy needs

4.118. During RIIO-ED2, we will continue with our strategy of stakeholder engagement to ensure we are delivering the service that connections customers want and that we are responsive to any change in customers' needs.

4.119. We will continue to hold our annual connections conference to engage with our connections customers on specific issues relating to new connections activities and to assess that we are on track to deliver against our commitments.

4.120. We will continue to interact with our stakeholders through well-established channels including workshops, seminars and expert panels, in line with our strong belief that face-to face discussion is the best method of communication. However, we will also embrace other platforms, including webinars, Zoom and MS Teams, which allow for virtual contact without the need for travel time or hosting costs.

4.121. An important part of our engagement strategy is to work with different user types including, not only connections' customers, but also regulatory bodies and local authorities. Working with these partners helps us to develop a range of credible distribution future energy scenarios and identify strategic investment options. We will hold discussions with all of our 130 local authorities and local enterprise partnerships to ensure we understand their requirements for strategic investment to support the green recovery and achieve net zero. This will also allow us to provide them with capacity information and further advice to help develop their local area energy plans

Core Commitment 17	**Engage with 130 local authorities and local enterprise partnerships every year to understand their requirements for strategic investment resulting in more accurate WPD forecasts, and assist them to develop their own local area energy plans.**

Ensuring effective customer outcomes through collaboration

4.122. We have fully embraced the concept of competition in the connections market place and are fully committed to removing any barriers to competition in RIIO-ED2. Although we believe the competitive market is very well established, we will continue to innovate where there is potential to improve the process.

4.123. Although we provide an excellent and cost effective connections service, we believe that customers should be free to choose an alternative provider including an IDNO and ICP to install and operate their electricity networks. We will ensure that we give transparent and timely responses to enquiries from these companies to allow them to connect to our network.

4.124. We will continue to work with our industry partners including the National Grid's Electricity System Operator (ESO) and Electricity Transmissions (NGET), as well as other DNOs, to ensure a whole systems approach to providing larger connections. This means we can ensure that customers are able to obtain efficient and effective responses to their connection requirements and advise customers of a more cost effective connection option offered by another network, if we believe this exists.

Core Commitment 18	**Improve cross boundary working practices between WPD, Independent Distribution Network Operators, National Grid Transmission and the Energy System Operator to ensure our customers obtain the most cost effective connection option.**

Increasing customer choice

4.125. We will continue to invest in the network but also prioritise non-network solutions through the use of flexibility. This will save the customers the time and expense associated with conventional network reinforcement schemes.

4.126. The advent of a smart grid and introduction of flexible connection solutions (including Active Network Management) means it is no longer sufficient to only give a customer a conventional connection offer that may include network reinforcement, invariably involving significant cost and delays. From the outset, customers need to know there are alternatives available to them. The alternatives need to be clearly explained so they can make an informed choice.

4.127. We will explore the potential to offer more forms of flexible connection, i.e. not just through active network management or 'timed' connections but also using flexibility through energy efficiency, working with developers to create solutions that optimise levels of network utilisation, thus reducing costs.

4.128. Previously, customers wishing to connect larger generation with high network reinforcement costs have been the focus of optional flexible connections. Because we recognise that flexibility has wider applications, we will widen the scope and lower the threshold for offering alternatives, allowing more customers to choose between a conventional reinforcement solution, or a cheaper and quicker flexible solution.

Core Commitment 19	**Offer connection customers greater choice in the type of connection they receive by increasing the range of flexible connection offers to three.**

Core Commitment 20	**Maximise the efficiency of the existing network and keep costs to customers low by lowering the threshold for connection offers with a reinforcement requirement to receive options of flexible alternatives (schemes with reinforcement costs >£75k per MW and works that will take more than 12 months to complete).**

Catering for our major connections customers

4.129. We recognise that our major connections customers, including housing developers or distributed generators, have additional needs compared to smaller customers, because of the complexity of their schemes. These stakeholders have told us they require additional support and more interactive communication to steer them through the connection process. For this reason, we will ensure that these customers have a single point of contact in our planning team at the quotation stage and with one of our technicians at the connection stage.

4.130. We will continue to hold local connections surgeries which allow major customers to book an appointment with our local planning team to discuss planned connections.

4.131. Our Customer Connection Steering Group (CCSG) remains an important part of our customer engagement and will continue to be in place for RIIO-ED2. The group meets three times a year and is hosted by our directors and senior managers. The CCSG provides feedback on proposed initiatives and a strategic steer, ensuring that we address the priorities identified by our connection customers.

4.132. We will develop a Connections Strategy to meet and exceed Ofgem's connection principles and baseline expectations which will outline our plans to enable connections stakeholders to make informed decisions about their connection requirements. Our ambition is to deliver value for customers, carry out timely and economical connections and to provide excellent customer service.

WPD's Social Contract

4.133. As the largest DNO in the UK, it is vital we connect with the local communities we serve, building and maintaining trust in our service and the way it is delivered.

4.134. That is why we are producing our very first Social Contract which includes additional actions to be delivered as part of our Business Plan and highlights our commitment to making a positive social impact.

4.135. We began consulting with stakeholders to co-create this Social Contract in February 2019 and have engaged extensively with expert bodies, including Citizens Advice and Sustainability First. Their joint feedback challenged us to demonstrate our commitment to customers and the communities we serve. We are determined to make sure customers know what they get for their money and that we are serious about our social and environmental responsibilities.

What is a social contract?

4.136. WPD's Social Contract will allow us to be held to account by our stakeholders.

4.137. Our stakeholders want us to provide a reliable electricity supply at a reasonable price – but they are also taking a greater interest in where their money is going and want to see us contribute to society and protect the environment. That is why we're making clear commitments to do this, going beyond the basic requirements of regulation and legislation.

4.138. As part of RIIO-ED2, stakeholders called on us to deliver a social contract that differs from traditional corporate social responsibility commitments. They identified key aspects to be included, with measurable targets wherever possible, and placed significant importance on external reviews and transparent reporting as important ways of demonstrating delivery.

Our social contract core commitments for RIIO-ED2

What our stakeholders said about the social contract

Stakeholder Top Priorities	
1	Deliver excellent service (at a fair price)
2	Get the basics right (with ongoing feedback from customers)
3	Display excellent corporate behaviours (and governance)
4	Meet sustainability and climate change challenges
5	Build links and a clear understanding of the communities it serves

Figure 4.8 Stakeholder top priorities for the social contract

How our social contract was built

4.139. As well as taking part in co-creation workshops with stakeholders, we have been a key contributor to the 'Fair to the Future' project, led by Sustainability First. This scheme aims to define a 'sustainable licence to operate' and has heavily influenced the development of WPD's Social Contact. We aim to go beyond the minimum standards needed for licence compliance and to demonstrate our commitment to key focus areas identified by our stakeholders. This includes engaging extensively with stakeholders to understand, address and meet their changing needs.

4.140. As a result, the objective structure of WPD's Social Contract is to:

- Provide transparent reporting (with clarity on returns and profits)
- Demonstrate WPD is a diverse and responsible employer
- Evidence the legitimacy of our operations for the future

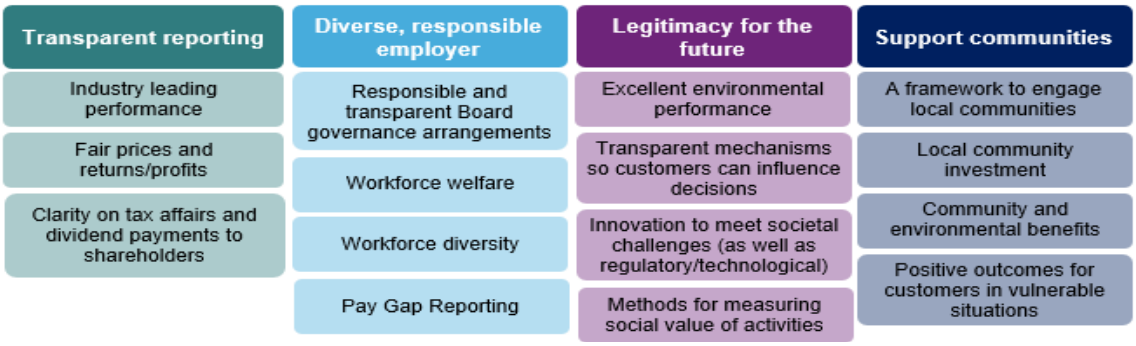

Figure 4.9 Our social contract key focus areas

- Play an active role regionally, and support vulnerable customers.

4.141. Co-creation with stakeholders resulted in the identification of 15 key focus areas to achieve these four overarching objectives:

Our social contract core commitments for RIIO-ED2

Provide transparent reporting (with clarity on returns and profits)

4.142. WPD is currently B rated by ISS for its Environmental, Social and Governance (ESG) performance giving it Prime status, which is the highest ranking of any electricity Network Operator sector organisation in the UK rated by ISS.

4.143. In RIIO-ED2, we will:

- Publish annual accounts in a simple, easy to understand format, setting out our total expenditure, the impact on customer bills and actual regulatory returns.
- Gain external audit and assurance of our annual accounts, including oversight from WPD's RIIO-ED2 Business Plan Delivery Challenge Group
- We will gain independent, annual ESG assessment and target a minimum of an ISS 'B' rating every year or an equivalent rating by an alternative recognised agency.

Figure 4.10 Environmental, Social and Governance diagram

4.144. ESG criteria which has been set by the ISS, consist of standards for company operations that can be used by socially conscious investors to screen potential investments, and by wider stakeholders as assurance of a company's ethical approach. The ESG Corporate Rating covers more than 5,000 international and national companies.

- The environmental criteria are useful to assess WPD's performance on environmental issues.
- The social criteria consider how WPD manages relationships with customers, employees, suppliers and the wider communities in which it operates.
- The governance aspects deal with WPD's leadership, executive pay, audits, internal controls and shareholder rights.

Core Commitment 21	**Deliver transparency and enable stakeholders to scrutinise our performance by publishing annual reports in a simple, easy to understand format (including WPD's total expenditure, the impact on customer bills and regulatory returns).**

Core Commitment 22	**Annually publish an updated WPD Social Contract, reporting the positive outcomes delivered for customers and as a minimum, maintain our prime Environmental, Social and Governance (ESG) rating.**

Demonstrate WPD is a diverse, responsible employer

4.145. In RIIO-ED2, we will:

- Produce a Diversity & Inclusion Plan which states our aims and performance in this area.

Evidence the legitimacy of our operations for the future

4.146. In RIIO-ED2, we will:

- Ensure full compliance with the Wates Corporate Governance Principles for Large Private Companies.
- Adhere to six principles covering 1) purpose and leadership; 2) board composition; 3) director responsibilities; 4) opportunity and risk; 5) remuneration; and 6) stakeholder relationships and engagement.
- Regularly update the Western Power Group Constitution and Authorities and articles of association, subjecting them to external scrutiny and review.
- Train all WPD's directors and non-executive directors annually.
- Invite the CEG Chair periodically to attend company board meetings to provide independent oversight.

Play an active role regionally and support vulnerable customers

4.147. In RIIO-ED2, we will:

- Achieve the Social Value Quality Mark – a stamp of approval for businesses committed to achieving positive social impact through their work.
- Conduct annual stakeholder engagement events to seek feedback on WPD's RIIO-ED2 delivery performance, identify areas of emerging stakeholder interest and concern and track changes in customer expectations.
- Conduct annual social value research to capture the full extent of social value created by our initiatives and identify opportunities to increase efficiency and deliver even stronger benefits and outcomes for customers.
- Work in collaboration with the other DNOs and Gas Distribution Networks to continue to apply common definitions and methodologies to measure, record and report social value in a consistent way, enabling customers and stakeholders to make meaningful comparisons.

4.148. We will also play an active role regionally and support vulnerable customers. We will:

- Support 300,000 people in our communities through our annual £1m 'Community Matters' fund to help vulnerable customers across our region.
  - In response to our first draft Business Plan consultation, the greatest proportion (44%) supported this ambition level and 46% of surveyed end-user customers agreed. Some stakeholders expressed reservations about whether it was appropriate that customers' money should be given to activities of this nature, which has led us to rescope the commitment so that it will be funded entirely by shareholders and therefore at no cost to customers.
- Establish a staff volunteering scheme encouraging staff to volunteer at local community projects. We will allocate 1,000 staff volunteering days every year during RIIO-ED2.

Core Commitment 23	**Support local people in our communities via an annual £1m 'Community Matters' fund, funded entirely by shareholders at no cost to customers.**

Core Commitment 24	**Deliver 1000 volunteer days per year for WPD staff to support local community initiatives associated with vulnerability and environmental initiatives, with annual reporting in WPD's Social Contract of the positive impacts achieved.**

Maintaining a safe and resilient network

General network performance

4.149. In RIIO-ED1, we placed great emphasis on improving network performance and are committed to continuing this focus in RIIO-ED2. It is more important than ever at a time when home working has become much more widespread and there is growth in the use of electricity as the source of energy for heating homes and powering vehicles.

4.150. Our network is made up of a huge number of interconnected overhead lines, underground cables and substations. Many of these assets were installed during the 1950s and 1960s and some even earlier. We have a rolling programme of work to replace those assets in the poorest condition which will continue in RIIO-ED2.

4.151. Our stakeholders continue to place network reliability as a top priority. Power cuts cause inconvenience to businesses, services (including hospitals) and domestic life. These inconveniences have become amplified during the recent Covid lockdowns. That is why we are committed to making sure our network is reliable and that faults are resolved quickly.

4.152. Faults can be prevented through routine activities including inspection, maintenance, defect repairs and vegetation management. During severe weather, the network must withstand more extreme conditions which is why we carry out more extensive measures including resilience tree clearance to prevent damage from falling trees, and flood protection to reduce the impact of flooding on consumer supplies.

4.153. While network reliability is important, safety remains our top priority. We carry out regular activities to ensure the network is safe for our staff and the public. Our inspection programmes identify defects with potential safety implications allowing these to be resolved quickly. We also carry out improvement work including upgrading security at substations and – as part of our proposed RIIO-ED2 programme – we will be reducing the risk of overhead lines adjacent to schools and play areas.

WPD's reliability performance RIIO-ED1

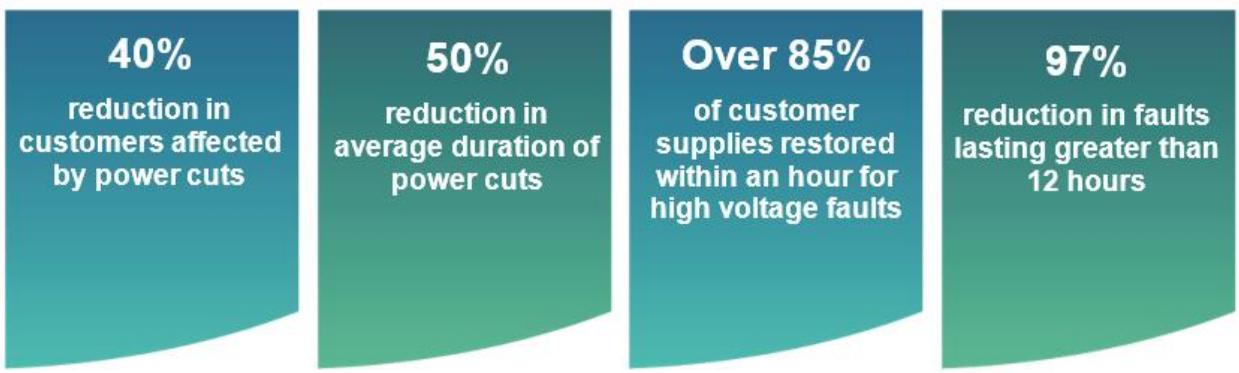

Figure 4.11 Highlights of our reliability performance during RIIO-ED1

Our network performance commitments for RIIO-ED2

What our stakeholders said about the network performance

Stakeholder Top Priorities	
1	Create accurate forecasting models and ensure that assets can respond to future (higher) demand
2	Continue maintenance and replacement programme for ageing assets (ensure sufficient resources to do so)
3	Maintain quality of supply in light of asset health and the growth in demand
4	Invest in the network to make it more resilient for worst-served customers
5	Maintain the health of 'at risk' assets and link your scenario planning to this
6	Communicate more focused, location specific scenario planning and make this information accessible
7	Use long-term climate scenarios (1:100 years is no longer fit for purpose) and work with housing developers and utilities to mitigate risk
8	Explore innovative ideas for flood defence and invest in these
9	Underground cables where appropriate

Figure 4.12 Stakeholder top priorities for Network Performance

Reducing the number of faults

4.154. If we carry out no interventions as the network ages and deteriorates, the number of faults will increase. We therefore carry out investment targeted at preventing faults from happening.

4.155. During RIIO-ED2 we will undertake a range of activities aimed at ensuring we provide a reliable supply to our customers. These activities include:

- Inspecting, maintaining and repairing our assets to keep them operating
- Replacing or refurbishing deteriorating assets
- Removing defective poles from the network within a year of being identified as defective, to ensure timely removal of those poles that would be susceptible to failure
- Completing tree clearance programmes to reduce the likelihood of branches and windborne debris affecting our overhead lines
- Adopting highly accurate measurement techniques to identify the need for tree clearance more effectively
- Providing adequate network capacity (either through traditional solutions or new flexibility services) to prevent damage to assets from overloading

Core Commitment 25	**Deliver improved network reliability where on average power cuts are better than one interruption every two years lasting 24 minutes.**

Target tree clearance

4.156. We have invested in Light Detection and Ranging (LiDAR) equipment for our helicopter fleet. LiDAR uses lasers to measure distance, providing an accurate measurement between overhead line conductors and vegetation. This data is being used to provide better information about tree infestation, including both distance to conductors and infestation levels along the overhead span.

4.157. During RIIO-ED1, we are changing our contractual arrangements for tree clearance. These previously relied upon the contractors to manage clearance requirements. Under the new arrangements and through the use of LiDAR, we can instruct the contractors to clear specific spans, prioritising those in greatest need.

4.158. This approach is expected to make overall routine and tree clearance on the HV and EHV networks more efficient and effective. This improved management of clearance will lead to a reduction in tree-related faults. As a result, progressive improvements of 1% a year have been applied to HV and EHV overhead fault rates.

4.159. In RIIO-ED2, we are also committed to completing our resilience tree programme which involves a more rigorous tree clearance close to our EHV overhead lines.

Reducing the number of customers interrupted by a fault

4.160. As well as taking steps to reduce the number of faults, we have been installing remotely controlled devices and automation technology to reduce the number of customers affected when a fault occurs.

4.161. The installation of additional remotely controlled devices allows electricity supplies to be quickly rerouted without the need to send a person to site. These switching operations can be initiated by staff in our control centre or triggered automatically by computer algorithms.

4.162. The development of automatic switching algorithms allows switching actions to take place without the intervention of a control engineer. The algorithms use information from fault passage sensors to identify which section of the network contains the fault and then communicate with remotely controlled devices to restore supplies to the maximum number of customers possible.

4.163. Additional equipment to protect the network, including circuit breakers and intelligent fuses, enables circuits to be subdivided into smaller zones reducing the number of customers affected by a fault.

4.164. During RIIO-ED1, we have targeted protection zones with more than 1,500 customers. In RIIO-ED2, we propose to address protection zones with more than 1,000 customers. In most cases, this will involve adding an extra remotely controllable device into those zones to increase the number of customers that can be restored automatically.

Getting the lights back on

4.165. We are committed to restoring supplies quickly and promote a culture which prioritises customers and the need to get them back on supply. A clear management focus on speedy restoration of electricity supplies in the event of a fault, whether it affects a single customer or thousands of customers, has led to significant improvements in restoration times.

4.166. Our internal 'Target 60' initiative measures the percentage of customers restored within one hour when a high voltage (HV) fault occurs. During RIIO-ED1, we pledged to achieve a Target 60 performance above 85% and have been successful in achieving this.

4.167. For RIIO-ED2, we will aim to improve on our performance by striving to restore supplies linked to a HV fault for 87% of customers (who are not automatically restored) within one hour.

Core Commitment 26	**Restore 87% of HV supplies within one hour.**

12 Hour Guaranteed Standard

4.168. While our aim is always to restore power as quickly as possible, we occasionally deal with more complex faults where quick restoration is not possible. However, we will do everything that is safe and practical to get the power back on within a maximum of 12 hours.

4.169. During RIIO-ED1, we have significantly reduced the number of interruptions lasting over 12 hours. As a result, we have reduced the number of customers off supply for more than 12 hours from 10,748 in 2012/13 to only 270 in 2019/20.

4.170. This has been achieved through management focus, technology, resource availability, fast response and, where necessary, deployment of mobile generation to provide temporary supplies.

4.171. We will continue working to minimise the number of customers off supply for 12 hours.

Reducing the number of worst served customers

4.172. A small proportion of customers experience high numbers of faults. These customers are generally located on the end of long rural circuits or on remote parts of the network, with limited alternative networks available to provide supplies when faults occur.

4.173. In RIIO-ED1, worst served customers are defined as those who experience 12 or more, 11kV or higher interruptions over a three year period, with a minimum of three in each year. For RIIO-ED2 Ofgem has revised the definition to be based upon having a minimum of two in each year, which has increased the number of customers that are defined as worst served.

4.174. Using the revised RIIO-ED2 defintiion there were approximately 12,500 worst served customers across the four WPD licence areas in 2019/20.

Number of Worst Served Customers (19/20) – RIIO-ED2 Definition				
West Midlands	**East Midlands**	**South Wales**	**South West**	**WPD Total**
5317	1228	1639	4303	12487

Figure 4.13 Worst Served Customer numbers for year 2019/20 based on RIIO-ED2 definition

4.175. The worst served customers suffer higher numbers of faults for a variety of reasons. By addressing some of the causes of these faults or reducing their impact, the overall network performance can be improved. This may be through the reconfiguration of the network, the replacement of poor condition overhead lines, the undergrounding of overhead lines, the refurbishment of circuit components or the installation of additional switching points and protection zones.

4.176. While most of the solutions address the underlying cause of the faults, some call for additional protection devices to reduce the impact of faults, particularly where protection is applied to spurs which prevent faults affecting the rest of the circuit.

4.177. The solutions adopted to improve our service to these worst served customers will be determined following analysis of each of the affected circuits.

4.178. In RIIO-ED2, we are committed to delivering a minimum of 70 schemes across our area to improve supply reliability for our worst served customers with a particular focus on vulnerable customers.

Core Commitment 27	**Improve service for 8,260 worst served customers by undertaking 70 schemes (removing all 6,870 customers defined as worst served by the RIIO-ED1 definition) and carry out further improvements.**

Replacement of assets to enhance network performance

4.179. We have a rolling programme of asset replacement to prevent the deterioration of the network over time. The replacement of assets, including transformers, overhead lines and cables, is prioritised according to the condition of the asset and the risk to the network if it fails.

4.180. Network Asset Risk Metrics (NARMs) are used to calculate the future risk associated with an asset and to prioritise those assets which need to be changed. NARMs are applied to approximately two thirds of the asset replacement programme and inform the scale of asset replacement activity in RIIO-ED2. Other techniques are also used to forecast requirements including survivor (age based) modelling; bespoke programmes addressing specific issues, including availability of spares, and historical trending where previous volumes of activity are used as a reasonable indicator of future needs. In some cases, we use data from a number of sources to determine the forecast levels of activity.

4.181. The asset replacement activity in RIIO-ED2 will maintain the overall health of the assets (as measured by the risk metrics). The benefits of this activity will broadly offset the degradation of the wider network.

Core Commitment 28	**Invest £190m per annum to improve the overall health of the network and report annually to stakeholders on the impact of our investments.**

Climate change resilience

4.182. During RIIO-ED2, we will use the information from our Climate Resilience Strategy to ensure we consider the risks and impacts of climate change to our network.

4.183. We will continue to improve our understanding of the environmental effects of climate change. This includes the impact of rising levels of temperature, sea level rise and the changes in the pattern of rainfall.

4.184. We will continue to assess risks and impacts to our network associated with climate change, for example, engineering challenges.

Resilience to severe weather

4.185. Storm conditions can have a detrimental effect on power supplies. During severe weather, broken poles on our overhead network can make it very difficult to get the power back on as well as tying up resources while repairs are carried out. That is why we have continued with our pole replacement programme to identify deteriorating poles and ensure these are removed quickly from the network.

4.186. Extreme weather can also cause severe flooding which poses a risk to our assets and impairs our ability to keep the lights on. To mitigate this, we have proactively installed flood defences at a number of substations which are at greater risk of flooding.

4.187. We have also carried out resilience tree clearance on strategic EHV circuits to prevent trees falling onto lines during high winds. We have also applied enhanced equipment specifications, installing lightning diverters to limit the impact of lightning strikes on overhead lines.

4.188. In RIIO-ED2, we will:

- Continue to replace defective poles within 12 months of identifying them.
- Seek to complete resilience tree clearance on the EHV network.
- Install further flood defences at 110 sites to reflect updated data from the Environment Agency.

Core Commitment 29	**We will undertake 110 flood defence schemes to mitigate the risk that our sites become inoperable due to flooding and engage key stakeholders to reduce the need for new assets in flood risk areas.**

Network safety programme

4.189. Stakeholders expect us to operate a safe network. We ensure that inspection programmes are completed on time and respond quickly to safety-related defects. We identify safety issues though routine inspection of our sites and assets. Our inspection processes are designed to identify defects related to safety or performance. Safety defects are rectified using a risk based timescale and we track the completion of these defects to ensure that the risks are removed from the network. As these processes are effective and well-established, we have no plans to change them.

4.190. In RIIO-ED1, we have enhanced the security measures at all primary substations, installing electric fences in higher risk areas. We do not anticipate significant levels of expenditure on substation security during RIIO-ED2.

Cyber security resilience

4.191. The much publicised ‘WannaCry’ ransomware cyber-attack in 2017, and introduction of the European Union’s Directive on security of Network and Information Systems (NIS) in 2018, led WPD to place a greater emphasis on cyber security. WPD set-up a dedicated cyber security team in 2019 initially focusing on the areas recommended in the National Cyber Security Centre ‘10 steps to cyber security’, before working to become NIS compliant. This team now provides a variety of security controls and services throughout the business.

4.192. Our stakeholders have an increased interest in cyber security and an awareness of the important role it plays in ensuring the continuity of electricity supplies. Stakeholders particularly asked for assurances that we would:

- Take the appropriate mitigating and corrective actions to identified network vulnerabilities
- Create and maintain well tested incident recovery plans

- Collaborate and work with third party experts, including those in government, to identify threats

4.193. Continuing to deliver cyber secure, reliable and resilient business systems is a key part of the RIIO-ED2 Business Plan.

4.194. The network and information systems and technologies used to operate the electricity network are categorised as either business Information Technology (IT) systems or Operational Technology (OT). IT systems are traditional computer and telecommunications systems and applications. Expenditure in this area ranges from purchasing new PCs to maintaining IT equipment and communications equipment. OT is technology that communicates and interfaces with business systems and physical assets and includes systems including our communications system which allows us to interact remotely with sensors and monitors on the physical distribution network.

Protecting our systems

4.195. As reliance on systems and technology has increased, so unfortunately has the volume and sophistication of cyber-attacks from exploiters including nation states, organised crime and hackers. In turn, this has increased the risk of a possible future security breach to the electricity distribution network via its systems. It is now more essential than ever that we protect our IT systems and data from the threat of cyber-attacks which could cause significant network disruption together with associated financial and reputational damage. Detailed plans and processes are also required to be able to respond and recover in the event of a cyber-attack.

Figure 4.14 Cyber Security Principles

4.196. To protect customers from the threats posed by cyber-attacks, the Network and Information Systems (NIS) directive came into force in 2018. This directive and its recommended standards must be adhered to by operators of essential services and has resulted in a number of changes to the way we secure, maintain, support and operate our systems.

4.197. Our approach to cyber security in RIIO-ED1 was initially reactive, relying on traditional security products and services including anti-virus and physical firewalls. We also championed three core IT security principles to mitigate against many known security threats:

- No internet access from desktop PCs
- No cloud hosted systems
- No 'bring your own' devices

4.198. To meet the requirements of stakeholders and ensure that controls and processes are in place to mitigate the risk of any future possible cyber-attack, we have adopted the NIS directive as our benchmark standard along with cyber security principles for all our IT and OT systems not just for those associated with supporting critical national infrastructure.

4.199. To ensure NIS compliance and to manage the evolving IT cyber security risks, we plan to extend the size and scope of the existing Cyber Security team before the end of RIIO-ED1 to include dedicated OT cyber security resource.

Our cyber security IT resilience core commitments for RIIO-ED2

What our stakeholders said about the cyber resilience

Stakeholder Top Priorities	
1	Understand where your network may be vulnerable and work to put up barriers that will prevent access
2	Ensure all systems, procedures and processes are up to date
3	Keep up to date on emerging threats and hacking techniques
4	Increase your focus on network security to increase your resilience
5	Create, maintain, and test your incident recovery plans
6	Collaborate and work with third party experts, including those in Government to identify threats
7	Share best practice with your partners and collaborate with other networks

Figure 4.15 Stakeholder top priorities for cyber resilience.

4.200. Initiatives planned for RIIO-ED2 include:

- Further developing our cyber security risk model as the threat landscape changes
- Supporting the business from a security perspective in the trial and development of new technologies, system integration and digitalisation
- Working with third parties including the National Cyber Security Centre, to ensure our systems remain security compliant
- Ensuring all systems are kept up to date with the latest operating system versions and security patches
- Embedding cyber security principles and controls into the supply chain
- Continuing to raise awareness and the profile of cyber security within the business
- Upgrading our disaster recovery capability

Core Commitment 30	**Reduce the risk of data loss or network interruption from a cyber-attack by continually assessing emerging threats in order to enhance our cyber security systems.**

Our cyber security OT resilience core commitments for RIIO-ED2

4.201. Delivering cyber secure, reliable and resilient Operational Technology (OT) is a key requirement of the RIIO-ED2 business plan as networks become increasingly more digitised, interconnected and at risk of a cyber-attack.

4.202. Our establishment of a Distribution System Operator function calls for the development of more efficient and smarter networks to manage power flows across the distribution network.

4.203. As a result of the changing use of the electricity network, traditional boundaries between IT, OT and customer-owned devices are also changing to become more interconnected. This has led to an increase in the number of end-points (PCs, smart meters, Remote Terminal Units) that we have to maintain and secure.

4.204. Our approach to cyber security in RIIO-ED1 has been primarily focused on IT. Investment to date in OT cyber security controls has been proportionate as the OT cyber security attack risk and threat level has been perceived to be relatively low.

4.205. Publicised OT cyber-attacks, including the 2016 Crashoverride attack against several Ukrainian power companies, raised the profile, understanding and the risk and threat level of OT cyber

security attacks. This played a part in the implementation of the NIS directive, which has seen us placing a greater emphasis on OT cyber security.

4.206. The work carried out so far by the newly established cyber security team has initially focused on IT security but is now being expanded to include more OT-focused activities. A number of the initiatives planned or already in progress are set to be completed before the end of RIIO-ED1. The cyber security team is also working alongside Distribution System Operator function, the core IT team and the telecoms team to deliver a standardised common approach to cyber security within WPD, as all of these functions need to work together in the most secure environment possible.

Core Commitment 31	**Enhance the resilience of our IT network security through increased levels of threat monitoring, prevention, detection and alerting systems, including upgrading our disaster recovery capability to ensure continuity of our operations.**

4.207. As well as factoring in cost, resilience and reliability, when implementing new technology delivery platforms, it is also critical to consider security and risk appetite. We use a model which rates risk, based on a set of cyber security benchmarks and the importance of the system. Cyber security controls including logging and monitoring are then applied accordingly, based on the risk rating.

4.208. The detailed forecast for the RIIO-ED2 OT cyber resilience plan has been built on:

- Identifying NIS long-term goals/requirements
- Understanding IT cyber security best practice and how this is applied in the OT environment
- Working with PricewaterhouseCoopers (PwC) to understand the vulnerabilities and risks specific to WPD's OT infrastructure and developing risk targeted future work/investment roadmaps
- Understanding what tools and technologies are required for our Distribution System Operator activities
- Identifying critical national infrastructure-related telecoms components and ensuring they are fit for purpose
- Incorporating new initiatives to improve business functionality and effectiveness
- Identifying opportunities for making efficiency savings
- Working with the National Cyber Security Centre and other third party security specialists to establish best practice

Workplace and public safety

4.209. The safety of our employees, contractors and the general public is of paramount importance. Our aim is that no harm is caused to anyone who is either involved with, or affected by, our activities or apparatus.

4.210. During RIIO-ED1, we have worked hard to maintain a safety performance which remains among the best in the industry and which has led the company to significantly outperform national workforce safety statistics. The 2019/2020 average incident rate for workplace injuries across all industries is 2,160 per 100,000 workers while, at WPD, the rolling 12 month average incident rate is 732 per 100,000 employees.

Our safety core commitments for RIIO-ED2

What our stakeholders said about health & safety

Stakeholder Top Priorities	
1	Ensure the mental health needs of the workforce are being met, and supported by promoting a healthy work-life balance
2	Ensure that managers commit to leading by example
3	Reach out to schools to inform children about the safety hazards that surround WPD assets
4	Undertake bi-annual or annual meetings with stakeholders to share best practice
5	Ensure contactors comply with similar health and safety standards to WPD
6	Undertake 'wellbeing at work' assessments
7	Further support the development of champions in mental health
8	Maintain regular staff training for staff on driving new vehicles, and when logging key information on site visits

Figure 4.16 Stakeholder top priorities for Safety and Health

4.211. During RIIO-ED2, we will build on the improvements already made in RIIO-ED1 to:

- Reduce further the health and safety risks associated with our activities:
- Continue to comply fully with all health and safety legislation.
- Build on the programme of health and safety interaction developed during RIIO-ED1, including training programmes, Health and Safety conferences and independent audits.
- Continue to provide information to members of the public, including children, making sure they have the knowledge they need to keep themselves safe around the electricity network.

Maintaining a safe, healthy and motivated workforce

4.212. For our staff, the main focus area will be to build upon the strong safety culture which was acknowledged in their feedback to our independent Safety Climate Survey in 2019. We will continue to look for opportunities to enhance this established safety culture.

4.213. The hazards associated with an electricity network require strict controls to minimise the risks to those who work on it. The use of bespoke equipment designed and built to strict standards must be complemented by appropriate information and training. We have an in-house training team that delivers craft training, operational training and specialist training for those working on the network. We are also developing new training schemes to address the safety challenges linked to the adoption of Distribution System Operator techniques and practices.

4.214. We are constantly looking at ways to improve the effectiveness of this training and will review the content of all our bespoke training courses during RIIO-ED2 to ensure these cover all the elements needed to keep staff safe.

4.215. During RIIO-ED2, we plan to retain our place as a leading safety performer by reducing our average Accident Frequency Rate (AFR) by an additional 10%, on our RIIO-ED1 performance.

4.216. Following the success of our first Safety Climate Survey in 2019, we will conduct two surveys and follow this up with discussion workshops across the business. Trade Union safety representatives will provide enhanced feedback and review the results of the survey and any comments received.

Core Commitment 32	**Deliver safety action plans informed by two Safety Climate Surveys with all our staff and contractors during RIIO-ED2.**

Improving communication of health and safety related information to staff and contractors

4.217. We actively participate in and lead many national working groups and initiatives related to health and safety. We will continue to co-operate with our peers to influence and promote improved practices across the whole industry through initiatives including the Electricity Networks Association's Powering Improvement and the Health & Safety Executive's Helping GB Work Well programmes.

4.218. Throughout RIIO-ED2, we will continue to deliver conferences to staff and contractors to promote and share safe working practices and lessons learned from recent events. We will invite independent experts to provide advice and information, linking to our own safety action plan.

4.219. We will continue to work with our contractors to ensure that safety remains a key priority and that their safety performance is monitored by appropriate site safety visits and contractor audits. We will share learning from safety issues at regular review meetings to influence improvements in safety performance.

4.220. We have a comprehensive library of documents that are shared with staff and contractors to highlight the hazards associated with working on or near the distribution network, as well as measures to control the risks associated with these hazards. During RIIO-ED2, we will review all of our health and safety documents and ensure the advice and instruction they provide is both clear and effective.

4.221. Effective communication is important to ensure that staff and contractors understand health and safety related information. During RIIO-ED2, we will continue to review the way in which we communicate health and safety information to ensure we deliver effective, engaging material for both staff and contractor organisations using the most appropriate means of communication.

Safety of the general public

4.222. We know that members of the public may become exposed to the dangers of electricity because they are not fully aware of the hazards involved and that this can lead to serious injury or death. We provide information and education to minimise the risks.

4.223. In RIIO-ED1, we have:

- Distributed 540,000 safety leaflets to date
- Educated over 375,000 children about electrical safety
- Installed enhanced security at over 700 substation sites

4.224. Our stakeholders have told us that our priorities for RIIO-ED2 should be to:

- Maintain a focus on health and safety
- Consider the safety impact of new and emerging technologies before they are connected to the networks.
- Ensure that we continue to raise awareness of the dangers of electricity to the general public
- Ensure our assets remain fit for purpose.

Provision of information to members of the public

4.225. We believe that, by providing information and education about the hazards associated with electrical apparatus, we can reduce the number of incidents and the number of people who suffer injury from electricity. Throughout RIIO-ED2, we will continue to provide leaflets and information to members of the public and landowners. We plan to deliver safety related information to over a million customers by distributing safety literature and making greater use of social media to reach an even wider audience.

4.226. During RIIO-ED2, we will continue to collaborate at a national level to remind people in other industries and businesses of the dangers of working close to electrical networks. Safety information will be provided in the form of videos, social media messaging, posters and media campaigns as well as in safety leaflets. We will also issue advice to groups or organisations whose members may be at greater risk as a result of carrying out activities close to our equipment.

4.227. Our education programme provides information and education to children and young people, to alert them to the dangers of electrical equipment. We will build on the achievements of RIIO-ED1 by extending our programme to reach a further 80,000 primary school age children per year during RIIO-ED2. This will be achieved through school visits, sessions at our five permanent Safety Centres, Crucial Crew events alongside other emergency services, and our presence at popular, family exhibitions and shows.

Core Commitment 33	**Send electrical safety education packs to every primary school in WPD's region in RIIO-ED2 and educate at least 80,000 children per year via direct learning to keep them safe.**

Removal of hazards from school playing areas

4.228. Our programmes of inspection, maintenance and refurbishment keep overhead lines in good condition and our work on overhead line clearances ensures that overhead lines are of a sufficient height above ground. This means that there is generally a low risk of failure and exposure to hazards.

4.229. However, we recognise that storms can cause damage to overhead lines and that children may not be aware of the hazards. For this reason, we are proposing a new area of work, which involves undergrounding, insulating or diverting overhead lines that cross school play areas.

4.230. We are proposing a new area of work, which involves undergrounding or diverting overhead lines crossing school play areas. This follows an incident in the West Midlands where an oak tree caused an overhead line to fall onto an unoccupied playground. Our proposals will help us to remove risks of this kind and improve the safety of children and staff at schools. We have surveyed all the schools in our region and ranked them according to risk; we plan to carry out work at all schools and other play areas where the risks are deemed to be medium or higher.

Core Commitment 34	**Reduce the risk of injury or harm to children by delivering 780 schemes (43% of total locations) to underground, insulate or divert overhead lines that cross school playing areas, targeting the highest risk sites first.**

Compliance with health and safety law

4.231. We will install, inspect and maintain our assets in line with best practice and to ensure they comply with all health and safety regulations, continue to operate safely and do not expose anybody to avoidable danger.

4.232. We will continue to work with the Health and Safety Executive to prevent accidents and promote safe working practices, both for our own staff and the contractors who work with us.

Workforce resilience

4.233. We believe that our success as a company is due to the talents and commitment of our staff. At WPD, we work collaboratively with Trade Unions to create a working environment where staff are empowered to develop, progress and flourish.

4.234. Our operational workforce consists of geographically-based teams responsible for all activities in that area, complemented by a range of support staff. We operate a flat management structure which means there are only three management layers between a team manager and a director. This structure makes decision-making and problem solving much quicker and empowers employees to act within an agreed framework of authority.

4.235. A typical licence area consists of a Network Services Manager (NSM) overseeing network operations, and six to eight Distribution Managers (DMs) responsible for between four and eight Team Managers (TMs). The TMs look after day to day activities including maintaining existing assets, planning and delivering network improvements, responding to faults and providing new connections. Their teams are made up of craftspeople and operators, technicians, planners, engineers and specialists, and team support staff.

4.236. The team structure is supported by corporate functions including employee relations, finance, information technology, communications, and payroll and pensions, among others. The team ethos is based on minimal layers of management with local issues being resolved locally.

4.237. At the start of RIIO-ED1, our total workforce was 6,467 employees and this has remained almost unchanged. The average age of staff members is 41.5 years. During this period, our staff turnover rate has averaged 4.26% a year which is slightly higher than in previous years due to a higher proportion of natural wastage during RIIO-ED1.

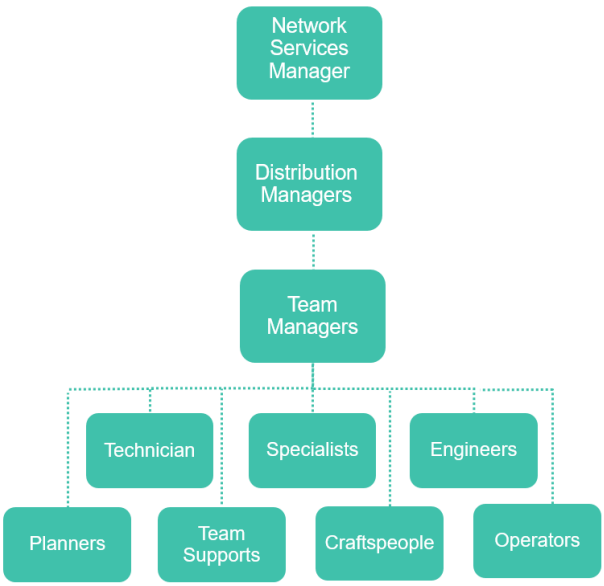

Figure 4.17 Network Services' team structure

Some highlights in RIIO-ED1 include:

- Our ratio of male/female staff has changed due to an increase of 150 female employees across many roles.
- While 2019 statistics from Women in Science and Engineering indicate that the percentage of women in the Science, Technology, Engineering and Mathematics (STEM) workforce has dropped, we are bucking this trend by recording a steady increase.
- We have also increased staff from ethnic communities, adding a further 22 employees from ethnic minority groups.
- Our apprenticeship and trainee intakes over the period amounted to 713 employees including 78 internal trainees.

Our workforce resilience core commitments for RIIO-ED2

What our stakeholders said about the workforce resilience

Stakeholder Priorities	
1	Provide flexible working packages and other incentives that suit the whole working demographic including sabbaticals, time off in lieu, and flexible retirement plans
2	Create an age-inclusive environment that accommodates different working practices between generations
3	Provide emotional support to build trust amongst staff
4	Provide clear, whole-career, and personalised development pathways for staff that enable progression through WPD
5	Equip managers with skills to empower other staff and implement personal development programmes
6	Develop a flexible, resilient workforce prepared for new roles and ways of working in the future
7	Improve outreach to schools
8	Evaluate how WPD reaches out to younger people ready for employment

Figure 4.18 Stakeholder top priorities for Workforce Resilience

4.238. As we move into RIIO-ED2, we will continue to build on our existing principles:

- Our people are our company
- We will be recognised by the actions of our people
- Our people exhibit our behaviours and values

4.239. We will continually review and identify opportunities to manage and motivate our loyal, valued and resilient workforce to deliver results and meet future challenges.

4.240. Many of these challenges – including the changing energy markets and carrying out Distribution System Operator's functions - will call for new and additional skills among our workforce. We will ensure we have these skills both by recruiting externally, and by training and upskilling our existing employees.

4.241. We have developed two priority areas as part of our Workforce Resilience Strategy.

Priority 1: Promote WPD as a stand out employer in the UK

4.242. We recognise that we will need to develop the existing talent in our workforce, as well as attracting new skills and talent from across the UK to WPD, in order to deliver our commitments in the changing electricity sector.

4.243. We will promote WPD wherever we can to increase our attractiveness as an employer and establish WPD as 'a great place to work'. This message will be incorporated into our wider activities, including our work in schools and colleges, at community events, and as part of our careers programme. We must also ensure that our culture and business style remain attractive to new and existing employees from all communities.

4.244. We are mindful that mental health is a huge concern in work places across the UK. We have initiated training in mental health awareness for both managers and Trade Union representatives, along with a mental health policy and procedural guidance to support this training.

4.245. We have trained more than 300 middle and senior managers in mental health awareness to act as mental health first aiders, along with 11 Trade Union representatives. We plan to train more Trade Union representatives as well as employees who have a desire to support mental health in the workplace.

4.246. We will achieve the Investors in People award, gaining at least gold accreditation which will put WPD in the top 18% of all UK companies. This will provide independent verification of our employment practices and show potential employees that they will be joining an employee-focused company which will benefit their career.

Core Commitment 35	**Demonstrate exceptional and embedded employment practices by achieving gold accreditation with Investors in People by the end of RIIO-ED2.**

Priority 2: Improve and increase the diversity of our workforce

4.247. We want to create a workplace in which employees from a diverse range of cultures and backgrounds feel 'at home'.

4.248. During 2020, our CEO launched WPD's 'Respect Charter', confirming our commitment to working together and outlining our aim to:

- Be professional and act with integrity
- Promote and champion fairness and inclusion for all
- Respect and value differences
- Treat everyone with courtesy and respect

4.249. WPD also signed up to the Dying to Work Charter, in collaboration with the Trades Union Congress and GMB Union, which details how we will support, protect and guide employees following a terminal illness diagnosis.

4.250. During RIIO-ED2, we are committed to continue to be an inclusive, respectful and diverse employer that rewards performance, enables professional development and encourages employee engagement, and where everyone is treated fairly and with respect and dignity.

4.251. Our proposed actions for diversity and inclusion will help us work towards accreditation at a national standard.

Core Commitment 36	**Achieve year-on-year improvements to the levels of diversity within the business and publish an annually updated Diversity and Inclusion Action Plan.**

Figure 4.19 Workforce Resilience Strategy

Other workforce resilience priorities in RIIO-ED2

- We are committed to promoting wellness in the workplace
- We are committed to reviewing working arrangements to allow for more flexible and agile working, which will attract a more diverse workforce
- We will continue to provide competitive employment packages, benefits and career opportunities that attract candidates from diverse communities, using salary and benefits benchmarking within the sector
- Our target for staff absence is that it should be below an average of four days per employee a year

Workforce resilience plan for RIIO-ED2

4.252. We forecast that our staff numbers will increase by 99 during RIIO-ED2. This will enable us to respond to the increased uptake of low carbon technologies which will call for increased network reinforcement and a growing emphasis on data to meet the expectations of our stakeholders.

4.253. We will need to further embrace the ‘digital culture’ in RIIO-ED2.That means we will need to recruit a range of positions to support our data architecture. We will also need trained staff to engage directly with local authorities on their net zero carbon ambitions and community energy initiatives.

Delivering decarbonisation and an environmentally sustainable network

Our environmental strategy

4.254. We are committed to environmental sustainability and actively support the government's 2050 net zero target. We believe in minimising our impact on the environment and are striving to reduce our own business carbon footprint (BCF).

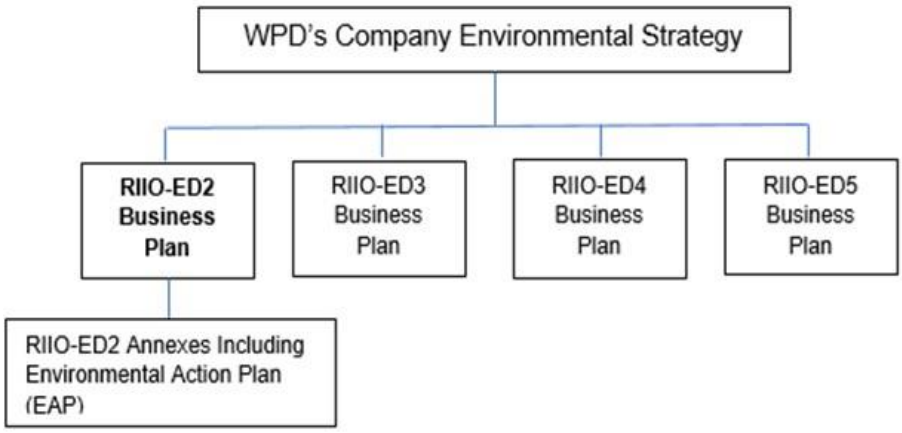

Figure 4.20 Environmental Strategy structure

4.255. We strongly believe that, as an energy company, we should act as a role model by reducing our BCF and inspire others to follow our lead. We have a social obligation to respect and protect the environment in which we operate. This is a view that is firmly supported by our stakeholders.

4.256. During RIIO-ED1, we moved towards a more proactive, performance-driven approach, managing the impact of our business activities on the environment. So far, we have achieved the following environmental business plan outputs:

- 12% reduction of our business carbon footprint
- 78% reduction of the tonnage of waste being sent to landfill
- Reduction of 55% in fluid leaked from fluid filled cables
- Reduction of SF_6 gas leaks outperforming our 17% reduction RIIO-ED1 target
- Replacement of 29km of overhead lines in National Parks and Areas of Outstanding Natural Beauty so far, meaning we are on track to achieve our target of 55km by the end of RIIO-ED1

4.257. For RIIO-ED2, WPD's Environmental Strategy details our commitment to becoming a net zero carbon organisation and to ensuring that environmental responsibility remains a key part of all of our activities into RIIO-ED2 and beyond.

4.258. In addition to WPD's Environmental Strategy, we are producing our Climate Change Strategy.

Our environmental core commitments for RIIO-ED2

What our stakeholders said about the environment

Stakeholder Top Priorities	
1	Set a target for zero carbon emissions from your fleet, for example, by 2030
2	Replace smaller vehicles with EVs and larger vehicles with biogas or hydrogen
3	Monitor all transport associated with your business, using telematics, to reduce the number of miles travelled
4	Eliminate the use of SF_6 and carry out research to find alternatives
5	Use science-based targets to improve biodiversity, aiming for a net gain
6	Put in an ambitious tree replacement programme and promote this good work
7	Ensure buildings are powered by renewable energy
8	Reduce the use of single use plastics

Figure 4.21 Stakeholder top priorities for the environment

Developing our Environmental Action Plan

4.259. Our RIIO-ED2 Environmental Action Plan (EAP) sets out our ambitions to meet our stakeholders' net zero expectations, by reducing our environmental impact.

4.260. The EAP also outlines our goal to decarbonise our business operations and significantly reduce our own business carbon footprint (BCF) by committing to the science based target (SBT) Initiative and contains further details on our planned environmental actions.

Becoming a net zero carbon organisation

4.261. We are committed to becoming a net zero carbon organisation ahead of the UK government's 2050 target. We will set science based targets to monitor and ensure our progress towards this goal. To meet this target, we will:

- **Reduce our Operational Business Carbon Footprint (BCF).** Our annual BCF takes into account the associated carbon emissions from a number of our business activities including the emissions from our operational transport fleet, the energy used in our buildings and electricity substations, releases of SF_6 (sulphur hexafluoride) – a greenhouse gas used as an insulator by manufacturers of electrical switchgear - and the impact of journeys taken by those on company business. Throughout RIIO-ED2, we will broaden the scope of our annual BCF to include carbon emissions linked to waste management and additional indirect emissions. By reducing our BCF (not including network losses), we will remain on track to be a net zero carbon business before 2028.

- **Set Science Based Targets:** We will engage with the science based targets (SBT) initiative to ensure that our SBTs are valid and effective. We will not only limit the impact on global carbon emissions and achieve a SBT but will also reach net zero (including network losses) by 2028, 22 years ahead of the UK government's target date. A carbon emissions target is defined as science-based if it is in line with reductions needed to keep the global temperature increase below 2°C above pre-industrial temperatures

- **Measure embodied carbon.** Embodied carbon is the carbon footprint of a material or a product. It takes into account how much greenhouse gas is released throughout the supply chain and is often measured over the entire life cycle of a product or service. During RIIO-ED2, we will work collaboratively to measure the embodied carbon associated with our major projects as well as a number of our key operational activities.

- **Reduce our network losses.** Alongside our own operational BCF, we also report the carbon emissions associated with our network losses. These must be accounted for in any SBTs to which we commit.

4.262. We are committed to ensuring our activities do not have a harmful impact on the environment in which we operate - a standpoint shared by our stakeholders. In RIIO-ED2, we will reduce waste, support biodiversity, reduce leaks from network equipment, share best practice and work collaboratively with other DNOs and organisations

4.263. We recognise the importance of significantly reducing our BCF. For this reason, we will deliver the following actions by the end of RIIO-ED2 to reduce our BCF to become net zero by 2028.

Core Commitment 37	**Achieve net zero in our internal business carbon footprint by 2028, following a verified science based target to limit the climate impact of our activities (excluding network losses).**

4.264. To becoming a net zero carbon organisation by 2028, we will:

- Install Low Carbon Technology (LCT) generation at all suitable depots and offices to produce electricity to meet operational demand
- Purchase all building energy from a renewable source and account for this in our reported BCF
- Reduce energy use in our buildings
- Ensure that all new WPD buildings achieve an 'Excellent' BREEAM rating
- Replace a minimum of 89% of our existing operational fleet with electric vehicles by 2028
- Cut carbon emissions from our operational fleet by 50%
- Install electric vehicle charging infrastructure at all our operational sites
- Include only non-carbon technology cars in our company car scheme by 2025
- Reduce business travel by encouraging more remote working and virtual meetings
- Increased use of small scale battery powered generation, where appropriate reducing reliance on diesel generation, helping to reduce our carbon footprint when restoring customer supply.

Core Commitment 38	**89% of commercial van fleet to be non-carbon vehicles by 2028, lowering annual transport emissions by 10,050 tCO2e (tonnes of carbon dioxide equivalent).**

Core Commitment 39	**Install renewable local generation at all suitable offices and depots with a capability to save 3000 MWh per year.**

Being environmentally responsible

Protect the local and regional environment from the release of harmful substances

4.265. We take the environmental impact of substances used on our network very seriously and make every effort to prevent releases into the environment. Stakeholders asked us to set a target for RIIO-ED2 to further reduce leaks and to monitor their environmental impact. During RIIO-ED2, we will:

- Proactively inject all fluid filled cables that have significant leaks on our network with perfluorocarbon trace a benign chemical that allows quick location and repair of leaks
- Boost our effectiveness when dealing with fluid filled cable leaks by improving response and taking intervention action at an earlier stage
- Introduce the use of compounds that can seal leaks on fluid filled cables to further reduce loss of oil to the environment, reducing the impact of our assets and reducing the costs associated with leaks.
- Reduce fluid filled cable network leaks by 50% compared to RIIO-ED1
- Replace 90km of the poorest performing 132kV and Extra High Voltage fluid filled cables on our network
- Adopt any new technologies, where appropriate, to support the ongoing proactive management of our fluid filled cable
- Continue with non SF_6 switchgear installation (where suitable alternatives are identified at all voltage levels)
- Harness innovation to help manufacturers increase the speed of development and deployment for SF_6 free assets. The quicker we move to SF_6 free assets, the quicker we will reduce the potential impact of our operation on the environment.
- Focus on replacing our poorest performing switchgear which is prone to leakage
- Remove all polychlorinated biphenyls (PCBs) contaminated equipment from our network by 2025. PCBs are now known to be highly toxic industrial compounds which during legacy manufacturing processes have led to contamination of some pre-1989 transformers and a small range of other equipment.

Core Commitment 40	**Reduce leaks from fluid filled cables by 50% by 2028 and replace 90km of the worst leaking circuits with non-oil alternatives; putting WPD on track to remove all oil-filled cables by 2060.**

Core Commitment 41	**Deliver a 20% reduction in SF_6 losses from RIIO-ED1 and collaborate with industry partners to develop technological alternatives to reduce overall volumes of SF_6 on the system.**

Protect the local and regional environment from damage by our activities

4.266. During RIIO-ED2, we will ensure that our activities have minimal negative impact on protected flora and fauna species. We will also commit to working with Wildlife Trusts on the selection and implementation of a suitable tool to enable us to assess the impact of new projects with a view to enhancing biodiversity.

4.267. By the end of RIIO-ED2, all major new infrastructure projects and new connections will have a biodiversity enhancement plan. This will be based on a natural capital assessment of the elements of the landscape that will be directly or indirectly impacted as a result of the work we will be doing.

4.268. These assessments will target species and habitats identified as being 'at risk' by Wildlife Trusts, conservation groups and legislation.

4.269. Over the course of RIIO-ED2, this will lead to:

- A cleaner environment
- Less disruption from cable repairs and clean-up operations
- Reduced carbon emissions
- Improvements to biodiversity
- A healthier, more stable and sustainable ecosystem

4.270. We will liaise with Natural England & Natural Resource Wales regarding our work at Sites of Special Scientific Interest (SSSIs) to ensure we do not adversely affect our country's protected natural assets.

4.271. Collaborate with Natural England by implementing a 'generic assent' approval process for low impact works within English SSSIs. This will reduce administrative burdens and therefore costs for both Natural England, WPD and our customers.

Monitor our use of resources and reduce waste

4.272. Throughout RIIO-ED1, we have significantly reduced the amount of waste sent to landfill. During RIIO-ED2, we will continue to improve our management of waste and resources. We will work with our suppliers through the procurement tender process to reduce the environmental impact of the products and services we use. We will do this by eliminating unnecessary packaging materials, obtaining recyclable packaging and introducing manufacturer 'take back' schemes, as well as working with manufacturers to increase the durability of packaging materials.

4.273. We will also investigate opportunities to turn waste materials into a resource for third parties. By the end of RIIO-ED2, no WPD waste will be routinely sent to landfill for disposal excluding hazardous waste. At the same time, we will reduce the tonnage of waste per £1m of annual expenditure by 30%.

4.274. We currently produce 3.2 tonnes of waste per £1m annual turnover (2019/20 figures). By the end of RIIO-ED2, we will reduce this by 0.96 tonnes (30%) to 2.24 tonnes of waste per £1m of annual turnover. We'll achieve this by avoiding waste production and by reducing it, where it cannot be avoided altogether.

4.275. We will also focus on stakeholders' requests for us to move away from single use plastics and to use more reusable and recyclable products. We will work with our manufacturers and suppliers to source more goods made from recycled plastics, and eliminate plastic packaging and non-recyclable plastics in favour of more suitable materials.

Figure 4.22 Waste hierarchy

4.276. Benefits to the customer will include:

- Reduced societal burden from waste
- Reduced use of raw materials
- Reduced carbon emissions
- Sustainability, reducing environmental impact from operations

Core Commitment 42	**Achieve zero waste to landfill by 2028 (excluding hazardous waste) and deliver an overall 30% reduction in tonnage waste produced (per £ total business expenditure).**

Removing targeted overhead lines in National Parks and Areas of Outstanding Natural Beauty (AONBs)

4.277. We have always been committed to working with the organisations responsible for National Parks and AONBS. For RIIO-ED2, we will aim to remove 8km of overhead lines every year and have set ourselves a target of 40km in total.

Core Commitment 43	**Remove up to 50km of overhead lines in Areas of Outstanding Natural Beauty.**

Losses

4.278. We are committed to reducing losses associated with our network and we have published a Losses Strategy which is available on our website at https://www.westernpower.co.uk/smarter-networks/losses

4.279. There are two types of losses:

- **Technical Loss:** The amount of energy that enters an electricity network is greater than the amount that is delivered to customers. The principal reason for this is that an electricity network uses energy in the process of delivering power.

- **Non-technical Loss**: Other reasons for electricity losses are where a connection has been made to the distribution network without authority (known as theft in conveyance), where metering equipment has been deliberately by-passed (known as illegal abstraction) or where a connection has not been properly registered and no supplier is assigned. The energy used in these circumstances is not metered and does not feature in volumes registered by suppliers. As a result, it is shown as a loss on our network.

4.280. In RIIO-ED2, we are committed to building to delivering further reductions in a number of areas by:

- Continuing to invest in the most efficient and low loss transformers in line with the EU Eco Design Regulations. Losses from these are 40% lower than with traditional transformers
- Installing cables with larger cross sectional areas, as standard - we will use 300mm^2 low voltage cable, replacing the use of 185mm^2 (larger cable cross section areas allows easier power flow from one end to the other and therefore reduce losses)
- Discontinuing the use of smaller transformer sizes on our overhead line networks and removing 25kVA single phase and 50kVA three phase units from our traditional range. Larger transformers mean that losses are reduced as a result of lower energy loss in the transformer core.

4.281. In RIIO-ED2, we will continue to work in collaboration with electricity suppliers and other authorities to further reduce electricity theft and illegal abstraction.

A smart and flexible network

4.282. The full details of our activities to ensure that WPD operates a smart and flexible network are covered in Chapter 5, 'Delivering a Smart and Flexible Network'. However, we have summarised our core commitments in this section.

What our stakeholders said about a smart and flexible network

Stakeholder Top Priorities	
1	Flexibility is viewed by stakeholders as a key part of the provision of network capacity as load grows on the network
2	Information should be clear and enable domestic, commercial and community customers to understand how they can participate in providing flexibility services. WPD must, therefore, work to facilitate network flexibility and educate end-customers.
3	In order to best support our customers' planning and unlock innovative approaches to decarbonisation, stakeholders want us to provide clear, simple and easy access to high quality data.
4	Stakeholders believe that sharing data could facilitate and encourage collaboration, resulting in more efficient outcomes for customers.
5	Collaboration with other utilities and companies within the energy industry is viewed as hugely important by stakeholders in order to arrive at the most effective and efficient solutions.
6	Stakeholders expect WPD's collaboration with others, particularly with local authorities, will help to identify areas of growth can be accurately identified.
7	By acting as a facilitator to bring together the many parties involved in emerging energy service markets, stakeholders believe WPD could make customer participation in flexibility services easier and cheaper.

Figure 4.23 Stakeholder top priorities for a smart and flexible network

Our smart and flexible network core commitments for RIIO-ED2

Procuring flexible services

4.283. We have established processes for procuring and using flexible services as an alternative to conventional network reinforcement.

4.284. We have established a registration process for participation in the market and procurement cycles that provide multiple opportunities for flexibility providers to tender their services. There is a weekly process to identify when flexibility services will be required, using an automated platform for dispatching flexibility and transparent published rules about payments for the services provided.

4.285. While we have been at the forefront of developments across the industry, we want to build on these during RIIO-ED2 to make sure they are seen as simple, fair and transparent.

4.286. To ensure that the processes that we have implemented are working correctly and giving flexibility provider the opportunity to engage with the market, we will introduce a customer satisfaction survey to identify opportunities for further improvements.

Core Commitment 44	**Create and implement simple, fair and transparent rules and processes for procuring flexibility services and introduce a customer satisfaction monitor to measure the effectiveness of our actions.**

Signposting and forecasting flexibility requirements

4.287. WPD has established two stages of notification for future network constraints: signposting provides a longer term (five year) indication of network constraints using a range of future energy scenarios while forecasting is a shorter-term (up to two year) view of requirements based upon greater certainty of requirements.

4.288. The forecasting process links with the procurement process which has tender rounds every six months. This means that there are at least three opportunities for flexibility providers to consider whether they can provide services for the specified network need.

4.289. Having established these processes, they will be continued into RIIO-ED2 to ensure that there is the greatest opportunity to identify flexibility providers to offset the need for conventional reinforcements.

Core Commitment 45	**Encourage the development of flexibility markets by producing and sharing forecasts of flexibility requirements in order to undertake a flexibility tender every 6 months.**

Neutral market facilitation

4.290. WPD recognises that the development of a neutral market for provision of flexibility is important for participants to be confident that they will be treated fairly.

4.291. Our approach to being a neutral market facilitator is to be open and transparent about the rules of engagement and decisions that are made.

4.292. We are transparent about the needs of the network in the data we publish about network constraints, as well as being transparent about pricing structures, contractual arrangements and the way in which we dispatch flexibility. We have also established a separate process to ensure our decision making is as independent as possible.

4.293. While we believe that we act in a neutral way, we want to ensure that market participants share our confidence. That is why we propose to work with third parties to establish an approach for carrying out external scrutiny of the way we operate the flexibility market.

Assessing alternatives to conventional reinforcement

4.294. WPD has adopted a ‘flexibility first’ approach to resolving network constraints.

4.295. Where constraints are identified, we use the signposting and forecasting processes to give flexibility providers clear picture of requirements. These processes are carried out before conventional reinforcement would need to start and therefore help to identify whether there is sufficient flexibility available to resolve a network constraint.

4.296. This approach ensures that we consider a flexible alternative for every network constraint.

4.297. We propose to continue with this approach, refining the process and identifying more ways of encouraging third parties to consider providing flexibility services.

Core Commitment 46	**Maximise the efficiency of the existing network and keep costs to customers low by adopting a ‘flexibility first’ policy for all load related reinforcement decisions, with conventional reinforcement used only where flexibility is not viable.**

Enabling Low Carbon Technologies to connect

4.298. Decarbonisation of transport, heating and electricity production will lead to more electric vehicles, heat pumps and distributed generation. Many of these low carbon technologies will be connected at lower voltages, making it necessary to ensure that there is sufficient capacity for the LCTs to connect.

4.299. WPD will be proactive in identifying parts of the network that are heavily loaded and providing more capacity. We will use smart meter data, increased amounts of network monitoring and enhanced analysis to identify where network reinforcement is required. We will also look at ways in which the LCTs loads can be managed to make greatest use of existing network capacity, which may involve steps including controlling when electric vehicles are charged.

4.300. Together these proactive actions will enable more LCTs to connect.

***New* Core Commitment 47**	**Ensure capacity availability to enable net zero to be achieved across our regions sooner than 2050 (some areas as soon as 2030), in line with the ambitions of stakeholders in each region.**

Core Commitment 48	**Ensure WPD is able to connect up to 1.5 million electric vehicles and 600,000 heat pumps. Make it as easy as possible for our customers to connect LCTs, such that WPD connects 6% more than the national average in the UK (prorated by our number of customers).**

Sharing network data

4.301. As networks become smarter, and more data is collected and processed, there are greater opportunities for third parties to make use of the data for their own purposes or to develop new ways of managing the networks.

4.302. The Energy Data Task Force has promoted the concept of presumed open data. WPD has been developing ways of making more network data available to third parties and the Energy Data Hub on our website currently allows various data sets to be accessed.

4.303. We propose to continue to expand the range of data available as well as developing the systems for accessing this information. We are looking at ways of cataloguing and organising the data to enable users to define their own specific requirements and extract user specific datasets. We anticipate that this access will be made through Application Programming Interfaces.

Core Commitment 49	**Improve the accessibility and usefulness of data, enabling it to be tailored to individual customer needs and in the format of their choosing by making 60% of WPD's network data available via an interactive API (Application Programming Interface).**

Understanding data needs of stakeholders

4.304. WPD has a strong track record of engaging with stakeholders to ensure that the services we provide meet their needs.

4.305. As we expand the data available and the processes for accessing the data, we must ensure we are meeting the needs of stakeholders. We therefore propose to introduce a satisfaction survey to support our engagement interaction and provide some quantitative analysis of the service we are providing. This will enable us to identify areas of opportunity and focus on specific improvements that will benefit the greatest number of users.

Producing and using Distribution Future Energy Scenarios (DFES)

4.306. Since 2015, WPD has been producing and publishing Distribution Future Energy Scenarios (DFES) documents, which forecast the volumes and regional distribution of low carbon technology uptake in our region. DFES are key to our continual assessment of the distribution network, helping us to identify and forecast network constraints.

4.307. These constraints are used with flexibility procurement markets and decision processes to determine what actions will be taken on the network. These will feed into a Distribution Network Option Analysis process which will determine the most cost effective approach to providing capacity on the network.

4.308. This analysis will inform the plans included in our Long Term Development Statement and Network Development Plan to be published during RIIO-ED2.

4.309. We are committed to updating the DFES each year so that we can use the latest information to inform our plans.

Core Commitment 50	**Annually update the Long Term Development Statement and a Network Development Plan to ensure future investments are identified to facilitate decarbonisation across local areas.**

DFES stakeholder input

4.310. As part of the DFES process, we speak to local authorities about their ambitions for local developments and net zero related aspirations. Engaging with local authorities provides a two-way communication channel. It enables WPD to understand the local plans and factor these into knowledge about network constraints and it allows the local authorities to understand some of the consequences of their proposals and to refine their own Local Area Energy Plans.

4.311. Interaction with the Electricity System Operator allows WPD to provide an input into the national Future Energy Scenarios (FES), by providing more detailed information about local developments. It also allows a greater understanding of the assumptions behind the FES.

4.312. Together these approaches to engagement allow the DFES to be refined and more representative of likely future network needs. We therefore propose to engage regularly with stakeholders to help to improve the DFES analysis.

Core Commitment 51	**Deliver low carbon planning that aligns closely with the energy plans of local regions by engaging with stakeholders and the Electricity System Operator to update WPD's Distribution Future Energy Scenarios for all four licence areas every 12 months.**

Local Authority Surgeries

4.313. Local authorities are required to develop Local Area Energy Plans (LAEPs) to identify the changes they need to make to achieve net zero targets. The varying experience and resources among the 130 local authorities in the WPD region means that different local authorities are progressing at different rates in the development of their LAEPs.

4.314. Some authorities need more help and interaction from us to understand where developments can take place, what constraints may arise from their proposals and how their strategies may impact the network.

4.315. To help them with their plans, we propose to hold dedicated surgeries where more detailed discussions can take.

Core Commitment 52	**Hold 90 Local Energy Surgeries per year (three in each WPD operating region) for local authorities, supporting them to develop their local area energy plans.**

Whole system collaboration

4.316. The changing use and operation of the network is impacting the whole electricity system and the move from gas to electricity leads to changes across energy sectors. This means that development of the network needs to be viewed in a wider context to ensure that the most efficient and effective solutions are adopted for customers.

4.317. WPD has worked with National Grid during RIIO-ED1 to carry out collaborative assessments of network requirements in the South West, which has led to greater utilisation of flexibility to manage constraints on both the distribution and transmission networks.

4.318. We anticipate that further whole system challenges will emerge during RIIO-ED2, some which may be initiated by transmission or other DNOs. We propose to work collaboratively to ensure that network issues are resolved by determining the best solution.

Core Commitment 53	**Undertake three whole system collaboration schemes with other DNOs and the ESO to enable our customers to benefit from lower electricity network and system costs by ensuring transmission and distribution solutions are considered, assessed and selected for implementation based on total electricity system costs regardless of where the solution sits.**

Innovation

What our stakeholders said about innovation

Stakeholder Top Priorities	
1	Stakeholders believe that WPD is well-placed to lead the way with innovation, helping to facilitate change across the industry
2	They were clear that WPD must act on stakeholder feedback and lobby for change in order to avoid the issues that have occurred in previous national projects e.g. the smart meter roll out.
3	While being an industry leader, WPD should strive to collaborate with both the wider energy industry and other industries altogether
4	Stakeholders want to see us support companies and individuals to develop innovative projects, and to work with major energy users to develop intelligent solutions to reduce current demand.
5	Stakeholders have suggested that innovation research and case studies are a great vehicle to communicate opportunities for collaboration with partners
6	WPD should prioritise publishing research and projects (both successes and failures) to foster a dialogue with potential partners

Figure 4.24 Stakeholder top priorities for innovation

Using innovation to benefit customers

4.319. WPD has been very active in carrying out innovation work for more than 10 years. This has led to the development of a number of new processes and ways of managing the network that are now incorporated into our business as usual activities. In many cases, a number of innovation projects have contributed to the evolution of these new processes.

4.320. We want to ensure that the innovation work we carry out is providing a benefit or enhancement. For this reason, we carry out a cost benefit assessment to identify the potential benefits of an innovation projects. This may be a bespoke benefit arising from the project or a benefit that contributes to a wider innovation challenge.

Core Commitment 54	**For each innovation project, we will undertake a cost benefit analysis and carbon assessment. We will ensure roll out into business practice to improve efficiency and effectiveness of assets, operations and customer service.**

Core Commitment 55	**We will deliver service improvements to drive business innovative efficiencies to assist our customers reduce overall energy costs.**

Innovation ideas portal

4.321. Because we recognise that we do not have all of the answers, we work with third parties on innovation projects. We also recognise that others outside WPD may have innovative ideas of their own which is why we issue ‘calls for ideas’ for future innovation projects. These calls are run at different times of the year and invite individuals or organisations to submit proposals for specific topics.

4.322. During RIIO-ED2, we will develop a new interactive ideas portal aimed at staff, third parties, communities and other stakeholders to encourage these groups to make suggestions for new projects. Where appropriate, we will make small grants to individuals or groups to help progress an idea through feasibility assessment and the creation of a high level project scope.

Community energy

4.323. Community energy is the delivery of community-led renewable energy, energy demand reduction and energy supply projects with the underlying objective of addressing climate change. These projects may be wholly owned and/or controlled by communities or through a partnership with commercial or public partners. Community projects deliver collective social, environmental and economic benefits to the local community, including fuel poverty alleviation, energy engagement and education, and community funds from renewable energy projects

What our stakeholders said about community energy

Stakeholder Top Priorities	
1	Stakeholders identified supporting community energy projects as one of the highest priorities for WPD in relation to driving innovation and new services
2	Community energy groups state they are often interested in developing low carbon technologies renewable connections but tend to be slow to react to opportunities around flexibility, which stakeholders felt WPD should try and influence
3	Stakeholders raised the importance of WPD providing education and support, as some groups may lack the knowledge and expertise in relation to the energy network
4	Stakeholders discussed the importance of community energy projects as a base for innovation extensively, especially as it was felt that this could benefit a lot of people and would also help to share knowledge and information
5	In particular stakeholders would like to see projects developed specifically to ensure community energy schemes benefit from Ofgem's Innovation funding mechanisms
6	As well as supporting the low carbon transition, stakeholders can see a role for community energy schemes to help address fuel poverty, with community energy champions able to advise their neighbours as they will be trusted and can build on the existing relationship

Figure 4.25 Stakeholder top priorities for community energy

Community Energy Surgeries

4.324. We have provided support to the communities and their representatives through accessible guides. Our 'Connecting Community Energy' guide contains useful information for local energy groups looking to develop their own renewable energy projects and connect to our network.

4.325. Some organisations prefer to discuss matters in more detail with our engineers which is why we will implement Community Energy Surgeries involving our local teams. These allow us to engage more closely with groups at the start of their journey and provide guidance on how best to connect to the network and operative efficiently and effectively.

Core Commitment 56	**Hold 60 Community Energy Surgeries for local Community Energy groups per year and provide a dedicated contact from WPD that stakeholders can work with to develop schemes and provide support through the connections' process.**

Innovation for community energy

4.326. To help community and local energy organisations develop new business models, and to help us understand how we might best manage a decarbonised and decentralised electricity system, we have partnered with communities on several network innovation projects.

4.327. We will continue to look for opportunities to work with community energy groups on new innovative ideas.

Core Commitment 57	**Our local Community Energy Representatives will work collaboratively with community and local energy stakeholders to develop tailored connection and flexibility offers.**
***New* Core Commitment 58**	**Facilitate access to funding streams by providing support to community energy groups when making submissions to our calls for ideas**

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Chapter 5

Delivering a smart and flexible electricity network

Chapter 5 Contents

5. Delivering a smart and flexible electricity network

Electricity systems to support net zero

5.1. We will have a critical role to play ensuring our network can support the growth of low carbon technologies (LCTs) throughout the RIIO-ED2 period and beyond. This new period looks set to see a shift in focus from the connection of low carbon generation towards the growth of LCT products including electric vehicles, battery storage and heat pumps. Net zero is a legally binding target for the UK and our work to connect LCTs to complement the generation already connected is central to the achievement of that target.

5.2. Government has supported net zero growth through The Carbon Plan and more recently the Ten Point Plan and the Energy White Paper. The consistent themes remain: that the UK will achieve its carbon targets by decarbonising heat and transport. Decarbonisation is achieved through the electrification of products supported by low carbon electricity generation.

5.3. Our role in this area is simple: we need to ensure our network can connect LCTs and generation with speed and efficiency. We will draw on our experiences in RIIO-ED1 and our innovation projects to fulfil this role.

5.4. During RIIO-ED1, we transformed our network to accept low carbon generation. A mixture of flexible connection offers and a modelling approach based more on energy volumes than maximum demands helped us connect over 21GW of generation on a network conventionally designed for 14GW of demand.

5.5. In RIIO-ED2, the focus will shift from large scale renewable generation connections towards high volumes of smaller LCT connections. Where we already see connection activity in generation at capacities around 5,000kW, the shift will be towards the mass connection of electric vehicles (EV) and heat pumps with capacities in multiples of 7kW. We will transform the business from one that delivers lower volumes of individual highly complex engineering solutions to one that delivers high volumes of less complex standardised engineering solutions.

5.6. Government figures forecast the connection of 600,000 heat pumps a year in the UK by the end of RIIO-ED2. At the same time, all new cars will be electrified, leading to around a million new EV connections per year. WPD covers around one third of the UK, which means we could see more than 400,000 new connections every year – that is the equivalent of 1,600 connections every working day. That level of demand will require an automated approach to ensure a consistent, quality service for our customers.

5.7. This automated approach could also be used to manage flexibility on our domestic networks. We operate and schedule larger flexible demands and generation on our higher voltage networks, but it will not always be efficient to micro-manage capacity in the same way on the low voltage network. Because of this, we anticipate flexibility also being delivered through supplier tariff signals and aggregation offers. Generally, we do not expect to be interacting directly with our individual domestic customers who wish to provide flexibility services.

5.8. To implement new solutions like these, we need to understand our network in more detail – and that means collecting and analysing more data. As maximum demand based modelling gives way to energy volume modelling, we will ensure that we are operating a smart network that uses digital technology, including monitoring equipment, communications networks and automated remote control. This will allow us to actively analyse the network status and optimise the running of the network.

5.9. Smart meters will provide our first step into real-time monitoring on our low voltage network. In the past, we have used templates and preset profiles to model the network but these can now be replaced by more accurate smart meter-derived load profiles, as the number of smart meters grows. Smart meters offer us a cost effective way of creating an initial view of our low voltage networks, with more comprehensive substation level monitoring being used at locations where smart meters predict high levels of network demand.

5.10. Presumed open data allows organisations which may not have previously participated in our sector to understand how they could create solutions to benefit customers and support net zero. We are leading the industry in data provision and will continue to do so. Our data selection rules ensure that the maximum level of data is shared for others to develop.

5.11. We already have experience of automated Eco Homes from work completed in South Wales. We expect this area to grow as new players join the home energy management arena. Management of whole housing estates as pseudo power plants is another area where we expect growth, with benefits both for connected customers and the network operator.

5.12. We will use the innovation tools we developed in RIIO-ED1 to support this change. Flexibility is now embedded in our system operation plans, as a result of innovation. Research from Electric Nation, the largest project of its type in the world, which WPD led, has shown how we can connect more EVs to an existing network. Business as usual innovation has changed the service we provide to customers.

5.13. Innovative solutions don't only come from our research, development and demonstration projects. They can also come from our employees in any part of the business. For example, we prototyped a solution that used 'superfast cables'" to deliver three-phase electricity to new homes in Wales. We then tested the solution for existing homes needing higher capacity for multiple LCTs. This led directly to WPD now being the only DNO to install three-phase low voltage connections into new homes as standard. Customers who require a higher capacity connection also receive our superfast solution.

5.14. During RIIO-ED2, we will continue to innovate and evolve to meet the changing demands of our customers. Our Innovation Team has an extensive catalogue of tools and systems ready to deploy as our customers' demands reflect their move towards net zero. We are already researching new alternatives and expect that, during RIIO-ED2, our focus will move to support high volume connection management and community-led network management solutions.

5.15. This chapter outlines the work we will be undertaking to meet these challenges and our commitment to do this in as cost effective a way as possible. We must ensure our network development encourages the connection of LCTs by responding to changes in volume, by making capacity available and by providing access to our network data to allow stakeholders to develop their own strategies for a net zero carbon outcome.

Net zero by 2050

UK government net zero aspiration

5.17. In June 2019, the UK parliament passed legislation requiring the government to cut the UK's net emissions of greenhouse gases to achieve a 100% reduction by 2050. This will make the UK a net zero emitter and makes the UK government the first G7 national government to set such a target into law. In November 2020, the UK Prime Minister launched a Ten Point Plan laying the foundations for a Green Industrial Revolution. This was followed in December 2020 by an Energy White Paper from the Department for Business, Energy and Industrial Strategy, setting out a long-term strategy for the UK's energy system.

5.18. As part of this, the government wants to increase the number of electric heat pump installations from the current level of 30,000 a year to 600,000 a year by the end of 2028. Citizens Advice research show that 3.7 million UK homes use 'non-mains gas' heating. While 2.3 million already use electricity as a heat source, there are another 1.4 million UK homes which are very likely to adopt heat pumps and add new demands to the electricity network. There will also be a ban on the sale of diesel and petrol cars and vans by 2030 and hybrid vehicles by 2035.

5.19. These changes will lead to a significant growth in the ownership of electric vehicles and heat pump heating systems across our region, calling for extra capacity to be made available on our network. This increased demand will add to existing network challenges posed by previous government incentives, which encourages a move away from centralised fossil fuel based electricity generation to more localised, renewable distributed generation

Welsh government net zero aspiration

5.20. The devolved Welsh government has a slightly less stringent target to achieve 95% reduction in greenhouse gases by 2050. However, it has declared its aspiration to achieve net zero in Wales by 2050.

5.21. The Welsh government 'Prosperity for all, a low carbon Wales' document looks at all aspects of decarbonisation. It specifically seeks a whole energy system approach to meet its targets. Drawing on energy industry scenarios, it plots the route to achieve decarbonisation, including a reduction in travel requirements and increased use of public transport as key targets. The Welsh government has a focus to reduce the emissions of taxis and buses by 2028.

Local Area Energy Plans (LAEPs)

5.22. Local authorities are preparing LAEPs which are designed to introduce local actions that will contribute to UK net zero targets. Many local authorities have declared climate emergencies and are working on plans to reduce carbon emissions. Local plans for low energy housing, transportation, zero carbon heat, and industrial and commercial developments will influence the demand for electricity and, as a result, the requirements for our network.

5.23. We will assist local authorities to establish their comprehensive LAEPs and then use these plans to inform our future energy scenarios. These in turn influence the amount of network expansion and reinforcement that is required to meet local energy demands.

Low carbon technologies – EVs and heat pumps

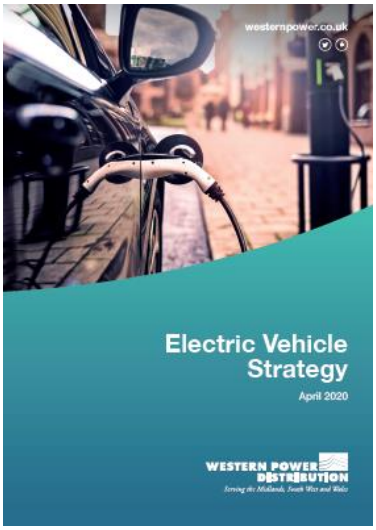
5.24. During RIIO-ED1, there has been a significant growth of distributed generation connected to our network. Energy storage is increasingly used alongside generation to store excess power and release it to the network at a later point in time.

5.25. During RIIO-ED2, we anticipate further growth in distributed generation and storage, but by far the most significant changes will be associated with electric vehicles (EVs) and heat pumps.

5.26. We created our Electric Vehicle Strategy as EV use grew, and our Heat Pump Strategy followed suit with the emergence of heat pumps as a commonplace solution on our networks. We will develop strategies for other technologies as they develop.

Electric Vehicles (EVs)

5.27. The number of EVs is growing and expected to keep growing, partly as a result of tax changes for company car drivers. In December 2020, it was announced that the sale of new petrol and diesel cars and vans would end by 2030 – earlier than previously planned. The adoption of EVs is also being accelerated by the creation of local government clean air zones and by the availability of a wider range of EVs from manufacturers.



5.28. Our Electric Vehicle Strategy is updated annually and describes the challenges we face to prepare our network for millions of electric vehicle drivers who will want to charge their EVs at a time and place that suits them. It also outlines the ways in which we plan to harness innovation and other solutions to meet these challenges. The strategy explains the rationale behind our innovation projects and initiatives, as well as how we are incorporating some solutions into our business as usual activities.

5.29. Our Electric Vehicle Strategy is available on our website at https://www.westernpower.co.uk/smarter-networks/electric-vehicles

Getting our network ready for EVs

5.30. Our customers' expectations are clear and simple. The infrastructure for EV charging requires high volumes of energy – and we need to be able to deliver that energy when and where it is needed. We will develop the infrastructure to charge vehicles at motorway service areas charging hubs, on-street and at people's homes.

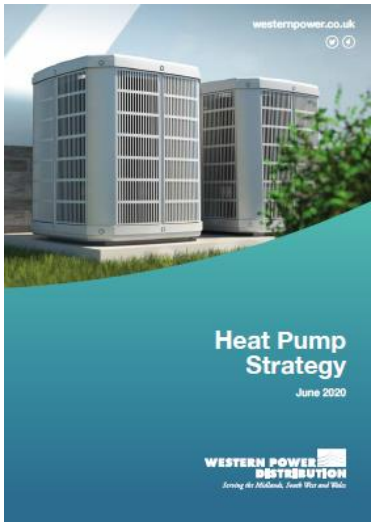
5.31. EV charging will increase demand on the network and require more capacity to be made available, particularly on the low voltage network. We expect that market-led solutions, including supplier price signals and aggregator offers, will incentivise charging to avoid peak network use hours and minimise the need for reinforcement.

5.32. EV batteries require energy for charging but also provide an opportunity to put power back into the network. We have been exploring the use of vehicle-to-grid technologies and are confident these will become part of the solution.

5.33. Motorway service areas are likely to see a significant change in electricity demands. As part of the UK government's Project Rapid, we are working with the government to model forecast demands at each service area. This expected demand is equivalent to the level of demand we would typically see in a small town. Our NIA Project Take Charge is working on creating a rapidly deployable pre-wired containerised substation to provide a solution for high capacity connections.

Heat pumps

5.34. Heat pumps are a key part of the UK's plans to achieve net zero by 2050 - that is because more than one third of the UK's carbon emissions come from heating. In its 2020 Energy White Paper, the government announced its intention to increase the number of heat pumps being installed by 20 times to 600,000 each year by the end of 2028.



5.35. In 2020, we became the first DNO to publish a bespoke yearly updated Heat Pump Strategy document. The strategy sets out how WPD will enable heat pump owners to connect to the network in a way that suits them, using innovation and other initiatives to make this happen.

5.36. It is available on our website at https://www.westernpower.co.uk/smarter-networks/heat-pumps

Getting our network ready for heat pumps

5.37. The biggest challenges when providing power for heat pumps will be linked to domestic properties, which may lead to service upgrades and capacity issues on the low voltage networks.

5.38. WPD are currently involved with Pobl and Sero on a new build estate of 235 homes in Tonyrefail in South Wales. These homes each have a complete suite of LCTs and are fully monitored by Sero, which will provide valuable information to us on new build homes fitted with heat pumps. We will use this project to understand the cumulative impact of heat pumps in volume.

5.39. In situations where LCT will be retrofitted to existing properties, it is likely this will result in a need for network reinforcement. We will also consider different ways of storing heat and energy and whether these can be incorporated as part of the network solution for providing capacity

Domestic level energy storage, Eco Homes and flexibility

5.40. As well as the ground-breaking Eco Homes project in South Wales, we are also collaborating on a redevelopment project at the Rugeley power station site which involves state-of-the-art home energy management systems. As more people become involved in home energy management, we expect this will be an emerging area for us to engage with. We will build our solutions as the technology develops.

5.41. This will benefit us as we expect that the growth of storage, energy managed homes and domestic flexibility will help us to manage the network rather than overstretch it. Where energy is being generated, stored and used in a way that provides efficiency to customers, it is likely that the customers' impact on our network will be reduced.

5.42. Agile tariffs and price signals will be key to help us manage demands away from peak times.

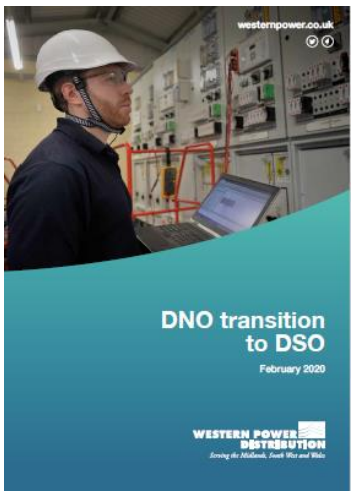
District heating and heat networks

5.43. We predict that heat networks will be relatively easy for us to accommodate on our networks, with the input energy required for these being provided at one central point rather than individual homes. Where heat networks include generation elements, this may also support our network.

5.44. We are monitoring plans for heat networks in the Cardiff Council area. We will monitor the demands of the heat network to understand how it will impact on the wider network. This will allow us to develop connection solutions for this technology.

Distribution System Operator (DSO)

5.45. A DSO must create an efficient and more flexible electricity network to meet future energy demands as well as co-ordinating transmission and distribution services at a local level with other network and system operators.



5.46. We recognise the vital importance of Distribution System Operation to drive network performance and efficiency and to ensure we can meet the future energy demands of all our customers.

5.47. As part of establishing a DSO capabilities, it is vital to understand the role of a DSO. These have been defined as functions under the cross industry, government and regulator Open Networks project. Many of these functions relate to delivering new connections, creating a smarter grid and sharing data openly. These functions will be embedded across existing WPD teams. Other functions are directly related to how we identify future network needs, how the capacity will be provided and the operation of our Flexible Power services. For the latter, we have created a Distribution System Operator department which is segregated from the DNO to ensure independence and to negate perceived conflicts of interest.

5.48. All these functions are a natural extension to the tasks we already perform. That is why we firmly believe we are best placed to execute the Distribution System Operator role through RIIO-ED2 and beyond.

5.49. As a result of this changing energy landscape, we have adapted our network - traditionally designed for 14GW of demand - so that it can now accept a total of 21GW of embedded generation. Although the majority of this capacity has been provided through flexible connections, we have contracted with 440MW of customer provided flexibility services as the most efficient method.

5.50. We were the first DNO to publish a costed DSO strategy in 2017; this has been updated to reflect changing requirements and industry developments. The latest version is available on our website at

5.51. https://www.westernpower.co.uk/smarter-networks/network-strategy/dso-strategy

Smarter and flexible networks in RIIO-ED2

5.52. Plans for network reinforcement during RIIO-ED2 will begin with ‘flexibility first’. Where flexibility is an option, the procurement of flexibility services through six monthly cycles will be led by our Distribution System Operation team. This will provide WPD with real insight into the scale and scope of its availability as an alternative to conventional reinforcement.

5.53. We will continue to embrace the evolving use of flexibility, publish more data to stimulate further market developments and operate the network in a way that continues to provide consumers with a reliable, affordable and efficient electricity supply.

5.54. In our network planning, we have continued to develop processes to identify network constraints, seeking market-based solutions and making investment decisions which allow us to embrace alternatives to conventional network reinforcement.

5.55. We have developed DSO functionality in all these areas and will continue to expand capability in these areas during RIIO-ED2. This will involve increasing data acquisition from the network, enhancing established processes, developing new systems and sharing more data.

Operating our network in RIIO-ED2

Changes to network operations

5.56. The changing role of the network operator requires new data and processes to help us analyse what is happening on the network. We also need more active ways of managing constraints, including systems for dispatching flexibility, as well as greater coordination with the Electricity System Operator. We are already dealing with an increasing quantity of data and will need to enhance existing systems or develop new ones to enable the efficient operation of the network to continue.

Flexible connection solutions

5.57. Our suite of flexible connections gives customers the option to have their connection completed at a lower cost and to a shorter timescale, with the acceptance that some form of curtailment may be required at times of high demand on the network.

5.58. Our flexible connections suite has developed options in two areas for customers seeking to connect to the network. A Timed Connection offers a very simple way of acting flexibly, without the need for communication or monitoring. Load Managed Connections make use of Active Network Management (ANM) technology to control generation or demand by using single or multiple constraints. These are particularly useful in areas of heavy network loading as an alternative to reinforcing the network.

Flexible Power solutions

5.59. Flexible Power solutions, known generically as flexibility services, are contractual arrangements where customers with controllable demand or generation can provide services to help us manage the capacity of the network. They are used as a lower cost alternative to reinforcing the network and are procured by our System Operator through flexibility markets.

5.60. We have been pioneering the use of flexibility solutions during RIIO-ED1 and will be using these increasingly throughout RIIO-ED2 as more demand connects to the network.

5.61. There are four types of flexibility services:

- Secure – used to proactively manage peak demand
- Dynamic – used to support the network in case of a coincident fault during network maintenance
- Restore – used to reduce the stress on the network during fault situations, with flexibility providers responding within 15 minutes
- Sustain – used to allow customers to change their energy profile to reduce costs

5.62. The existing IT platforms used to assess the requirements for flexibility, manage the dispatch and make payments for the flexibility provided will be scaled up to ensure that flexibility can be used to a greater extent in RIIO-ED2.

5.63. In RIIO-ED2, we will continue to develop the IT systems, processes and customer information visualisations, targeting investments in areas identified by stakeholders. This will include opening live information access to other platforms, improving the cyber resilience of the IT systems and scaling-up as operational volumes increase.

Enabling whole system solutions

Benefitting our customers by using whole system solutions

5.64. We are committed to considering all options when developing our network, to make sure we deliver the most cost efficient and economical solution. This means regular liaison with other energy organisations to ensure our customers get the most cost effective solution to their energy requirements.

5.65. As the energy system evolves, there may be opportunities for solutions to be delivered by other organisations, where this is the most economical solution for the customer. This will involve greater collaboration with others across the wider energy industry, as well as with other utilities. It may also mean greater interaction with customers' systems where these can provide a benefit.

Regional Development Programmes

5.66. The Regional Development Programmes (RDPs) were set up to provide detailed analysis of areas of the network where there were known transmission or distribution network issues accommodating large amounts of Distributed Energy Resource.

5.67. This analysis is designed to innovate and push the boundaries of current thinking with a 'design by doing' approach to resolving issues. By focusing on a specific case study where there is a pressing need to improve outcomes for customers, it is possible to make faster progress.

5.68. The most recent RDP was a joint study by the Electricity System Operator and WPD, focused on the South West. It concluded that an expected increase in renewables in the South West called for additional capacity for generation. It identified that flexibility was the most economical short-term solution and that generation 'turn down' products were needed to manage transmission constraints.

Other whole system activities

5.69. The Accelerated Loss of Mains Change project is being delivered by National Grid, DNOs and IDNOs to speed up compliance with new requirements in the Distribution Code on behalf of the Distribution Code Review Panel. The aim is to reduce the risk of inadvertent tripping and reduce system balancing issues

5.70. DNOs are required to make a request for a Statement of Works (SoW) to National Grid Electricity Transmission (NGET) when dealing with the potential impact of generation connections on the transmission system. An alternative approach has been developed with NGET. This has resulted in a new trial SoW process known as the 'Appendix G trial'.

5.71. We have been instrumental in trialling this new process and became the first DNO to have an Appendix G in place. The introduction of the Appendix G has reduced the time customers have to wait for the outcome of the process from around four months to six weeks.

RIIO-ED2 whole system actions

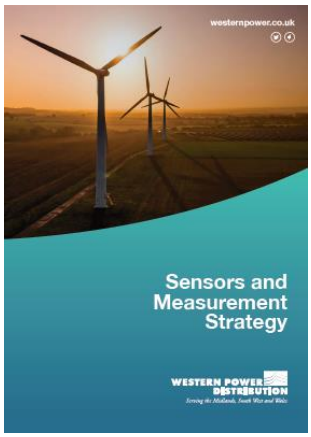
5.72. WPD will continue to explore whether there are activities that would benefit from whole system consideration. These may arise as a result of specific constraints on the network or from proactive coordination with other organisations.

5.73. We will work with IDNOs, Transmission Operators, Gas Networks and our neighbouring DNOs to ensure we provide the most efficient and effective outcomes for our customers.

Enhanced network monitoring

5.74. We understand the importance of operating a smart electricity network. This will enable us to release the capacity available in the network, allowing our customers to realise their net zero ambitions and helping us to operate the network in a cost effective and efficient way. To do this, we need sensors and measurement devices on our system to capture critical data and operate our network automatically.

Our Sensors and Measurement Strategy



5.75. In April 2020, we published a Sensors and Measurement Strategy, which identifies the monitoring requirements needed to develop smart networks, improve network design and enhance network security.

5.76. It is available on our website at https://www.westernpower.co.uk/downloads/110980

5.77. The successful operation of these new systems is dependent on good quality, reliable and timely data on the state of the network. To capture this, we need to carry out significant work to upgrade WPD's data acquisition capabilities.

5.78. To provide flexible connections, we must be able to control the associated load. When the network is highly loaded and unable to accept the generator's full output, this may involve curtailing export or using flexibility services to manage constraints. This means engaging with other connected customers who can operate flexibly and who can be contracted to alter their generation and/or consumption on instruction.

5.79. Whether we mitigate constraints using alternative connections, flexibility services, or a combination of both, the need for accurate, network wide, reliable real-time data allowing real-time analysis of the network remains crucial.

Improving network design

5.80. The growth of distributed generation and low carbon technologies also has an impact on the information we need for network design purposes. Historically, we needed little more than the maximum demand at a substation to ensure the adequacy of the network. Improvements are therefore needed in the way in which measurements are taken and recorded for planning and design activities.

5.81. That is why we are upgrading our measurement capability by adding more sensors at all voltage levels within the network. On our 11kV and higher networks, we will spend around £35m by the end of RIIO-ED2 to ensure that directional power flow is available at all primary substations, augmenting the maximum demand unidirectional data that currently exists.

Power quality impacting network security

5.82. By monitoring power quality on a continuous basis, we can develop a better understanding of the levels of harmonic distortion on the network. We can then act on this knowledge to prevent damage to network assets and to reduce the risk of faulty operation resulting in significant load loss events.

5.83. During RIIO-ED2, we will introduce or upgrade the power quality measurement at around 240 substations across the WPD network.

Enhanced network modelling – RIIO-ED2 projects

Enhanced Network Modelling – Our RIIO-ED2 Projects		
Project Title	**Background**	**Project Details**
Distributed Energy Resource SCADA Monitors	As more DER has connected to the network and the management of the network becomes more active there is a need for improved visibility of the operating regime of DER.	This project will continue a programme of retro-fitting telemetry to customer points of connection where significant distributed generation or other flexible DER are located.
Directional Power Flow at Primary Substations	The growth in generation connected to the distribution network is leading to different power flows, which in some cases can flow in the opposite direction to the way the network was designed.	In order to gain a better understanding of reverse power flow and power factors, power flow monitoring equipment is to be installed at all primary substations giving visibility of the 11kV network and higher voltages.
EHV Monitoring for Smart Systems	WPD has been rolling out various smart solutions during RIIO-ED1, including Active Network Management and Demand Side Flexibility. During RIIO-ED2, other smart grid solutions including System Voltage Optimisation will be applied more widely.	This project will proactively fit additional sensing and monitoring to sections of the network prioritised for expansion of smart solutions.
Power quality monitoring	With more low carbon technologies relying on inverters for connection to the network, power quality is becoming an increasingly important consideration. Excessive levels of harmonic distortion have detrimental effects on the network including increased thermal stresses on equipment.	The project will install monitoring for power quality on a continuous basis. The levels of harmonic distortion on the network can be better understood and acted upon in order to prevent damage to network assets or to prevent protection mal-operation resulting in significant load loss events
LV Network Monitoring	Domestic customers are increasingly adopting low carbon technologies including rooftop solar panels, electric vehicles, and heat pumps. Electric vehicles, in particular, have the potential to add very large levels of demand co-incident with existing periods of maximum demand. This level of demand growth will lead to a requirement for reinforcement of the LV network, but opportunities should be taken to verify the requirement and prioritise the work.	Monitoring at LV will provide greater visibility of the loads, allowing proactive measures to be taken in real time and providing a more accurate view of reinforcement requirements, deferring the requirement at some sites. It will also provide verification of modelled information, enabling improvements to the modelling assumptions.
Internet Protocol Substation	Original protection and SCADA were electro-mechanical systems and more recently these have been replaced by electronic versions, but often manufacturers have used their own bespoke software and communications standards. Modern systems have become standardised onto Internet Protocol (IP) communications.	This project will test this IP approach to protection and SCADA to establish the working practices and policies for wider deployment.

Figure 5.1 Our RIIO-ED2 Enhanced Network Modelling projects

Smart meters

5.84. We will take full advantage of the information provided by smart meters, as outlined in our Smart Meter Strategy. This includes using the alerts from smart meters to improve fault response, acting on voltage information to determine network issues and assessing load current to inform the need for network reinforcement, as well as using the data to refine planning assumptions.

5.85. Our Smart Meter Strategy is available on our website at https://www.westernpower.co.uk/smarter-networks

5.86. Historically, there has been very basic and limited information available about the low voltage (LV) network. The installation of smart meters marks a step change in the visibility of the operational status of the LV network.

5.87. Smart meter data allows us to see aggregated LV network demands in 30 minute blocks, enabling us to make informed decisions about available capacity, the ability to connect new load or generation and the need for reinforcement. The additional functionality and information available from smart metering will enable us to increase our understanding of the network, improve our service to customers and facilitate a smooth low carbon transition. The smart meter consumption data we receive is anonymous and has been agreed though a Data Privacy Plan approved by Ofgem.

Smart meter benefits for RIIO-ED2

5.88. Smart meter data has the potential to enhance existing business activities, including fault management, network planning and asset management.

5.89. For many of these applications, the benefits increase as the number of smart meters increases. This means that the benefits will vary across the network until the roll out is complete.

5.90. To take advantage of the benefits, we have established interfaces with national smart meter data repositories, established data storage systems and have created systems to interrogate and interpret data using existing WPD processes and systems.

5.91. The smart meter roll out is due to be completed in 2024. As part of this process, most of our customers expect to have a smart meter installed. During RIIO-ED1, we have developed some of the systems needed as a foundation to use the information effectively when it becomes available. During RIIO-ED2, we will create more systems to build on this foundation. For smart meter consumption data to be useful, we require a minimum density of smart meters to be in place on each section of the network. We expect the density of smart meters to increase quicker than LCT take-up and this will provide us with early insight into where network reinforcement will be needed.

Fault response

5.92. Smart meters can issue alerts to notify us of a loss of supply. We already utilise this information to indicate that a single property is without power when the notification comes in.

5.93. Additional functionality allows the energisation status of meters to be checked remotely, giving a clearer understanding of which customers are off supply and allowing us to determine the kind of fault that has occurred (blown fuse, open circuit fault, single premise). This level of visibility, which tells us how individual households and customers are affected, has not been available before.

5.94. We have already developed an automated system which handles these messages and checks the meter status before transferring the alert into our fault management systems. Once transferred, we use our established rules to check if an off supply alert is part of a known interruption or whether a new incident needs to be created.

5.95. When the fault is completed, it is possible to check that all supplies have been restored. This is particularly useful in storm scenarios where faults on the high voltage network can mask additional issues on the low voltage network. The ability to check the status reduces the possibility of teams leaving the area while customers are still off supply.

5.96. The roll out of smart meters is set to be completed during RIIO-ED2, which will enable us to deliver an even more efficient fault response for customers. When a smart meter informs us that the power is off, we can ascertain if it is a single meter indicating one property without supply or if there are multiple meters sending the same message, highlighting a wider problem. This will enable us to make a quicker and more appropriate response.

Network monitoring

5.97. Smart meters measure both voltage and current. This data can be used to identify loading issues on the network.

5.98. Voltage data is related to the network rather than the individual and therefore does not need to be anonymised. This allows the measurement of voltage along a feeder, helping to identify potential generation or demand issues on low voltage networks. High voltages at the end of a network can indicate high levels of embedded generation, whereas low voltages can indicate high levels of load. The voltage data can be supplemented with aggregated load data to show whether a particular feeder is highly loaded.

5.99. We can use this data as an early warning of potential issues on our network. It enables us to identify substations with predominantly high or low volts over a long period of time and fit these with substation level monitoring. This monitoring can then verify any issues and allow appropriate reinforcement actions to take place.

Network planning

5.100. Network planning at low voltage uses load profile templates to determine whether reinforcement is required. Smart meter data is being used to verify and refine these load profile assumptions. However, it is not possible to get an accurate picture unless there are enough smart meters on a feeder.

5.101. Our estimates show that 80% of customers on a feeder must have a smart meter, to give a reasonable representation of the whole feeder. To check this estimate is correct, we are comparing smart meter data with data for the whole feeder generated by substation monitoring equipment.

5.102. This will help us to refine the generic assumption used for planning, and open up the opportunity for bespoke analysis for each feeder.

Future applications

5.103. We recognise that the electrification of transport and heating, along with the adoption of distributed generation, will present a number of challenges to the operation of the LV network. Smart metering functionality has the potential to support future network operations, either through directing time of use tariffs that benefit the distribution network or using data about the status of the network to support load shifting, controlling vehicle charging or triggering vehicle-to-grid support.

5.104. However we believe that energy suppliers and energy service providers are best placed to deliver this control. Any direct control of customer load through a smart meter would be reserved for emergencies and only used as a last resort measure.

Telecoms infrastructure for the future

Background

5.105. WPD operates an extensive in-house telecoms network that delivers inter-office data communications, mobile voice communications and supervisor control and data acquisition (SCADA) between electricity assets and control centres.

5.106. This holistic approach is efficient, cyber secure and highly reliable compared to services offered by third party telecoms providers.

5.107. During RIIO-ED1, we have already started work to meet the demands of the future, while maintaining our excellent standards of reliability and resilience. During RIIO-ED2, we will improve our systems and offer the additional levels of coverage and granularity required to support the electricity network to achieve the UK's net zero transition.

Telecoms RIIO-ED2 challenges

5.108. RIIO-ED2 will provide a number of significant challenges, particularly in relation to the increase in number of electricity assets to be monitored: Other key challenges include:

- Providing geographical coverage to ensure additional electricity assets can be connected to the telecoms network
- Providing suitable bandwidth to ensure the extra data being collected does not cause congestion on the telecoms network
- Ensuring that the high availability of the telecoms network is maintained as the network grows, so that it remains resilient to all types of events especially during a power failure
- Providing cyber security controls on all parts of the telecoms network

Telecoms RIIO-ED2 deliverables

5.109. The deliverables cover the modernisation, enhancement, upgrade or replacement of existing systems and technologies, as well as the development or purchase of new systems and technologies.

Power flow monitoring

5.110. Due to the increasing complexity of our localised grid, including reverse power flow and varying power factors, power flow monitoring equipment will be installed at multiple and various voltage levels across the electricity network.

5.111. This expansion of data collection and communication requirements will require connection to WPD's telecoms infrastructure.

Communication for low voltage (LV) monitoring

5.112. Low voltage monitoring is becoming increasingly important as customers with low voltage connections invest in low carbon technologies (LCTs) including solar panels, electric vehicles and heat pumps, operating within a smart grid environment.

5.113. WPD's responsibility for its 7.9 million customers and 180,000 distribution substations means that monitoring at LV will increasingly be required to measure the network's response to these advancing technologies. To facilitate this data collection, additional communication devices will need to be installed and linked into the telecoms network.

Private Long Term Evolution (LTE) network

5.114. The existing radio telecoms system used for the control and monitoring of the electricity network is becoming restricted. This is due to its limitations in terms of the number of connected assets and the small amount of throughput data it can handle.

5.115. This limited capability is widely recognised and a modernised Private LTE radio system is currently under review by Ofcom, with BEIS and Ofgem oversight. All UK gas and electricity network operators agree that a Private LTE solution is urgently required to support net zero objectives. A Private LTE solution will have 100 times more capacity than the current radio system and will be quicker and more cost effective to deploy.

5.116. If regulatory consent is given, we propose to change WPD's radio based telecoms system to a Private LTE solution to enable improved, resilient and secure communication capability. It will overcome bandwidth constraints and be scalable for future network growth and data demands.

Replacing Remote Terminal Units (RTUs)

5.117. RTUs are microprocessor devices that are installed at substations to collect data from transducers fitted to substation equipment to enable the data to be communicated back to control systems. As electronic devices, RTUs have a relatively short life when compared to electrical equipment in substations.

5.118. During RIIO-ED2, we propose to modernise 2,000 substation RTUs, which have reached the end of life.

5.119. The replacement device will be a cyber-secure internet protocol (IP) enabled RTU providing enhanced two way data traffic that will increase system monitoring capability and allow remote administration of system upgrades. The IP enabled RTU will also be 'plug and play' ready for the next generation of IP enabled switchgear and protection relays.

Replacement of legacy digital hierarchy infrastructure

5.120. Legacy telecoms equipment including Plesiochronous Digital Hierarchy (PDH) and Synchronous Digital Hierarchy (SDH) telecoms apparatus, along with other vintage bespoke items, will not support the modern IP requirements of future electricity network systems.

5.121. WPD's proposed replacement of these devices will enable remote operations to continue but also manage the enhanced two-way data communicating to and from field based assets.

Public Switched Telephone Network (PSTN) switch off

5.122. PSTN is the current UK standard for phone line connections to all homes and businesses in the UK which do not use a fibre connection.

5.123. For WPD, approximately 1,400 third party telecoms connections will be affected and will need to be replaced with a suitable alternative. In WPD, PSTN connections are used for a variety of purposes including phone lines, alarm systems and CCTV systems at distribution substation sites.

5.124. WPD will migrate these affected and essential lines onto WPD's private network.

Fibre network expansion

5.125. WPD uses a combination of fibre optics and microwave for communications across our telecoms network. We will continue to use a combination of these but will increase the number of fibre optic installations, as these provide greater bandwidth.

5.126. WPD is proposing to expand the fibre optic network which is integrated with our electricity lines and cables. Disruption to customers and cost will be minimised by taking advantage of network outages and excavations for RIIO-ED2 planned overhead and underground asset replacement work.

5.127. This will enable new fibre connections to be made to electricity substations. This work will be an efficient approach to extend and connect more fibre as an alternative to radio communications. This approach also enables a reduction in procured services from third party telecoms operators.

Telecoms sites

5.128. The expansion of data acquisition and control will require the construction of additional telecoms sites to enable communications coverage where this does not currently exist.

5.129. Some existing sites will be refurbished to modernise the associated equipment delivering enhanced cyber security and greater resilience to major power disruption events.

Backhaul upgrades

5.130. WPD's backhaul network links our offices and substations and is our core telecommunications network. It uses a combination of microwave links and fibre that include internet protocol networks and firewalls.

5.131. Some devices on the network need to be upgraded because they are either no longer supported or require a cyber-security enhancement.

5.132. In other cases, extending the reach of the telecoms network will also require additional backhaul telecoms links to be installed.

Encouraging community energy projects

5.133. Community energy encompasses the delivery of community-led renewable energy, energy demand reduction and energy supply projects, designed to address climate change. These projects may be wholly owned and/or controlled by communities or partnerships with commercial or public partners. These projects deliver social, environmental and economic benefits to the local community. These include helping to alleviate fuel poverty, encouraging engagement with energy issues, and generating community funds from renewable energy projects.

5.134. Our community energy organisations tell us their determination to deliver community energy projects is motivated by social and environmental values, rather than profit. They want a fairer energy system that does not leave the vulnerable behind, and a network that enables new community-owned generation to connect.

5.135. We have implemented a Net Zero Communities Strategy which outlines our commitment to community energy and highlights the vital role of stakeholder engagement. During RIIO-ED2, we expect to dedicate community energy resources to support communities in their delivery of projects.

Community energy innovation activity

5.136. We have joined forces with communities on several network innovation projects. These partnerships are helping community and local energy organisations to develop new business models, and are enabling us to build a clearer understanding of the best way to manage a decarbonised and decentralised electricity system.

5.137. Our extensive innovation programme has consistently ensured the delivery of a wide range of community energy-focused projects. This is a summary of some of our key community-focused innovation projects:

Smart Energy Isles	The Smart Energy Islands was an EU-funded project on the Isles of Scilly, which built and operated a renewable energy microgrid to increase the amount of renewable generation on the islands. Our parallel, Smart Energy Isles project helped to increase the amount of renewable energy by enhancing an Active Network Management zone, so that generation can be better managed and allow local flexibility to offset generation curtailment.
SoLa Bristol	This project explored the impact of high densities of LCTs on our network and helped customers in Knowle West, Bristol, to manage their electricity load. Solar panels, energy storage, and DC circuits were trialled in homes to test their impacts and cost-effectiveness, with participants also trialling a time of use tariff.
Sunshine Tariff	A local community group (Wadebridge Community Energy network), known as WREN, recruited 61 participants to trial Demand Side Response in Cornwall, which encouraged people to shift their electricity use to sunnier times of day with a cheaper daytime energy supplier tariff, using renewable energy from local solar farms. The project aimed to resolve network capacity issues in the area to enable more community energy to connect.
Open LV	The Open LV project is providing local electricity substation data to communities to help them understand the network and plan low carbon projects. Seven community groups are involved, getting data from their local substations through a web application, to show local electricity use, generation, substation temperature, voltage level and carbon intensity of electricity
Cornwall Local Energy Market	This was an EU-funded project led by Centrica to create a local energy market and test flexible demand, generation and storage across homes and businesses. We contributed to this project through the Visibility Plugs and Sockets project, exploring the potential for DNOs to purchase flexibility through a third party. We wanted to reach different customers who might not engage through our own Flexible Power platform, to help them understand the kind of flexibility services we

	can buy from new customers, including domestic energy users. This project will improve our ability for domestic customers to provide flexibility services in the future.
Future Flex	This novel flexibility markets project aims to improve market design for smaller-scale and domestic customers, by better understanding the barriers in the process and increasing participation. This innovation project will make network flexibility services more accessible to homes and communities, including groups of households with smart EV chargers, domestic electricity storage or smart, hybrid heating.

Figure 5.2 Community focussed innovation projects

Engaging with community energy groups

5.138. Our track record in this area has been proven by significant community energy engagement and support since 2014, resulting in engagement with all 97 community energy groups across our four licence areas. This accounts for 43% of all community energy groups in the UK, and has facilitated the connection of 100MW of community-owned renewable electricity to our network.

5.139. Our approach to engagement is informed by feedback from community energy organisations, to ensure we are delivering the support communities want, and providing value for our customers. As a result, we have established a constructive, forward-looking and solutions-focused relationship with many community energy organisations. So far in RIIO-ED1, we have delivered 35 community events for more than 1,240 participants.

Delivering for community energy schemes in RIIO-ED2

Providing support

5.140. We will continue to provide support to communities and their representatives with the help of our accessible guides. Our 'Connecting Community Energy' guide assists any local energy group looking to develop its own renewable energy project and connect to our network. Supported by the Centre for Sustainable Energy, we developed our 'Community-Based Network Innovation' guide, which has supported our collaboration with community energy groups on several innovation projects with a total investment value of over £9m.

5.141. Some organisations prefer to discuss matters in more detail with our engineers. In response, we will implement Community Energy Surgeries in partnership with our local teams. These allow us to engage more closely with groups at the start of their journey and provide guidance on how best to connect to the network and operative efficiently and effectively.

5.142. We have seen an increase in the number of climate action groups and local authorities choosing to engage with us, because of climate emergency declarations. These new local energy stakeholders are working towards carbon reduction plans that will include new low carbon energy infrastructure. We want to support them alongside existing community energy organisations.

5.143. Community energy organisations face multiple barriers, including the lack of viable business models, a shortage of time and resources and the challenge of keeping up-to-date with the complex and fast-moving changes in our energy system. We recognise that we need to provide additional support to communities and local energy collaborators. For this reason, we will create a dedicated community energy support resource in each of our licence areas to act as a first point of contact.

5.144. This resource will provide a clear focal point to help communities develop and deliver their plans.

5.145. Community energy stakeholders have limited resources and may not be able to contribute to industry consultations which places them at a disadvantage. To address this, we will ensure their interests and requirements are represented in the responses we provide.

Innovation

5.146. Our innovation programme is designed to develop the solutions, skills and processes we need for a decarbonised and intelligent electricity distribution network that is affordable for all our customers. Innovation will be used to ensure everyone benefits from the energy transition and no one is left behind.

5.147. During RIIO-ED1, our innovation programme transformed our network and enabled us to provide customers with better service, faster and cheaper network connections and opportunities to offer flexibility services. All of this was achieved as a result of solutions designed, implemented and successfully trialled as part of our innovation projects. For example, we are now able to offer our customers flexible connections using active network management which means they can connect to our network in a way that is faster and cheaper than a conventional connection.

5.148. In RIIO-ED2, we plan to continue transforming our network to achieve net zero while keeping our service efficient and affordable for all our customers. Building on our successes in RIIO-ED1, we will widen our innovation programme to continue developing the solutions for a sustainable and intelligent network, as well as demonstrating new ways to support our vulnerable customers through the energy transition.

5.149. For RIIO-ED2, Ofgem is proposing to continue the Network Innovation Allowance (NIA), but will limit eligibility to projects linked to the energy transition and consumer vulnerability. The Network Innovation Competition (NIC) will be replaced with a Strategic Innovation Fund (SIF). We will be actively seeking to secure funds from both the NIA and SIF throughout RIIIO-ED2 to continue our extensive innovation programme.

5.150. In RIIO-ED2, we will focus on driving 'business as usual' innovation and accelerate innovation roll out to address the challenges we expect to face in this period. We will add dedicated resources within the innovation team to speed up innovation roll out, as the pace of LCT uptake increases.

WPD's Innovation Strategy

5.151. It is important for any business to create the space for innovation and research.

5.152. Each year, we publish an Innovation Strategy. We do this to reflect rapidly changing external factors including government policy, stakeholder priorities and to incorporate learning from the previous 12 months.

5.153. The strategy looks ahead to 2035, but provides more detail on shorter term priorities, requirements and proposed initiatives. Together with our Innovation Forward Plan, it gives details of the projects completed, ongoing and planned as part of the innovation programme.

5.154. Our Innovation Strategy is available on our website at https://www.westernpower.co.uk/innovation/innovation-strategy.

Innovation programme delivery

5.155. Our small innovation team is dedicated to working with our business experts, external partners and customers to identify problems, find solutions and trial them through our innovation projects. To date, we have delivered more than 120 projects investing over £80m in innovation.

5.156. Team members are drawn from inside our own business, including a combination of more experienced employees and graduates, trainees and from outside the organisation to bring in fresh ideas. They come from a range of backgrounds including active transmission networks, craft skills, data science, research science, project management and customer service.

5.157. Everything we do in our Innovation team is shaped by our three core values. These are:

Figure 5.3 Our Innovation core values

Our innovation commitments

5.158. Innovation has a crucial role to play in the decarbonisation of the energy system. We need to ensure that our electricity distribution network can meet the increasing demand from the electrification of heat and transport while also allowing the connection of more low carbon generation. We will continue to innovate to find novel ways of transforming our network efficiently and effectively and of operating it to meet these requirements.

5.159. We are committed to maintaining high standards of customer service, safety and reliability while keeping costs low for our customers. We will use innovation to achieve these aims and develop new technologies, commercial solutions and standards that will enable us to make the most of our existing network and assets.

Innovation in RIIO-ED2

Scope of innovation

5.160. We welcome the continuation of NIA funding and the introduction of the new Strategic Innovation Fund for RIIO-ED2, which will support future-facing strategic challenges. These innovation funds will be targeted at projects linked to the energy system transition, focusing on key strategic challenges. Projects will also be carried out to address consumer vulnerability.

5.161. To allow continuity, we will use RIIO-ED2 NIA funding and continue to contribute at least 10% of the costs of all projects. We will also seek project funding from national and international schemes. These include BEIS competitions, InnovateUK calls and initiatives connected to the Energy Systems Catapult.

5.162. During RIIO-ED2, we will develop a new interactive ‘ideas portal’ for staff, third parties, communities and other stakeholders to make their own suggestions for new projects. Where appropriate, we will make grants to individuals or groups to progress an idea through feasibility assessment and to create of a high level project scope.

Developing solutions and policy

5.163. All projects will include representatives from outside the innovation team to ensure that new solutions can be safely implemented on the WPD network and integrated into our current processes and systems. They will work alongside the project manager to develop policy, operating standards and practices to provide the framework for replication.

5.164. The approach to roll out will be developed as part of the project and detailed in project closedown reports. Where a new solution requires staff training, this will be identified, developed and trialled within the project.

Driving Business as Usual (BAU) innovation and innovation roll out

5.165. We will strategically focus on delivering BAU innovation and innovation roll out to accelerate cost efficiencies and the adoption of innovation.

5.166. Our innovation team will be supplemented with additional resources to support the delivery of this.

5.167. To encourage and celebrate BAU innovation, we will introduce internal performance metrics that reward implemented innovation.

RIIO-ED2 innovation themes

5.168. While the portfolio of innovation projects will be balanced as described earlier, there will be specific emphasis on the following themes during RIIO-ED2:

Decarbonisation	Investigation and trial of new ways of reducing our carbon footprint in various areas of our business.
Communities and vulnerability	Specific projects to support energy communities; Initiatives focused on consumer vulnerability, solutions to ensure communities and vulnerable groups can access new energy services and markets.
Behavioural analysis and probabilistic planning	Application of statistical research and analysis of consumer behaviours to inform WPD systems Transfer of techniques from other sectors including defence and retail.
Digitalisation	Use of analytics tools and application of data science; Opening of data; automation and artificial intelligence; Application of ICT to all parts of the grid; Secure, simple integration with customer end use / equipment; data collection and aggregation technologies including cyber security aspects. This work area will build on the work of the Energy Data Task Force and presumed open data.
E-mobility	Support the mass market adoption of electric cars and vans, using innovation to solve issues Further development of smart charging and V2G solutions (vehicle to grid technologies); Develop further connection solutions for charging infrastructure as new technologies develop Exploration of solutions for heavy freight; Inland and coastal shipping; technology tracking for batteries and charging
Low carbon heat	Projects developing and demonstrating innovative electric heat solutions; district heat; Industrial waste heat; Hybrid customer solutions;

	Mass-market scale up of heat pump adoption; Integration of heat flexibility and storage; Inter-seasonal storage and market integration
Distributed generation	Technology tracking and integration of renewable generation in to the network; Rooftop and ground deploy technologies; Integration with community and municipality local energy schemes.
High Voltage power electronics and battery storage	Falling prices of power electronic equipment will make use at DNO level more cost effective; Enhancement of EHV solutions and expansion to HV/LV networks; Technology tracking for battery storage especially grid scale solutions
Flexibility services and energy efficiency	Development of DSO flexibility products; Expansion to lower voltage networks; optimisation techniques across multiple markets; Introduction of distributed ledger and peer to peer trading; Relationship of markets with Energy Efficiency solutions

Figure 5.4 Our RIIO-ED2 Innovation themes

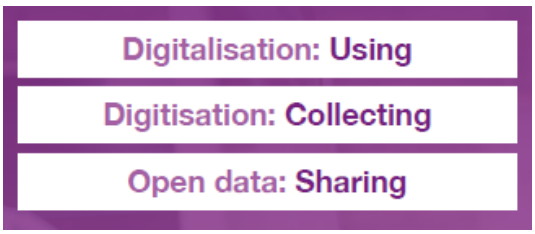
Making our network data available to our customers

Digitalisation Strategy

5.169. We have developed a Digitalisation Strategy and associated Digitalisation Action Plan which are central to our plans for a smarter energy system and increased sharing of data. They are available on our website at https://www.westernpower.co.uk/smarter-networks/digitalisation-and-data

5.170. To understand the scope of digitalisation, we must draw a distinction between digitalisation (using data), digitisation (collecting data) and open data (sharing data).

5.171. For us, the term digitalisation means using digital technologies to fundamentally change how we develop and operate the network to deliver an economic and efficient service for customers.



5.172. For Open Data, our starting point is that all data should be presumed open unless proven otherwise for privacy, security, commercial or confidentiality reasons.

5.173. Our core principles are, and will remain, improving data management, increasing network insight and operation and ensuring data is presumed open. These principles ensure value is driven to all parts of the energy industry and beyond, supporting the net zero transition.

Our digitalisation approach for RIIO-ED2

5.174. Our digitalisation activity is driven by our commitment to create a smarter energy system.

5.175. To deliver digitalisation and key data developments, we will focus on improved data management, increased network insight and operation, and delivering for stakeholders. This focus enables us to deliver the key recommendations of the Energy Data Taskforce report and beyond.

5.176. We have already demonstrated improvements in our data management processes through targeted project activity to understand our data sets, lineage, and business and third-party use. We recognise the need for a consistent approach to data management, delivering standardised and effective processes to share data with other network licensees and wider customers and stakeholders.

5.177. We continue to collaborate with all other network licensees through the Electricity Networks Association to establish common data descriptions, metadata standards and approaches to sharing data to ensure that a standardised and interoperable process is taken forwards. We have demonstrated leadership in this area as the first GB DNO to share its complete high voltage asset and connectivity data in Common Information Model format.

Data governance

5.178. Our data governance focusses on identifying appropriate data owners and processes and ensuring responsibility and transparency, to enable data quality to be managed and improved. It establishes rules and systems which help us maintain a consistent approach to data improvement and management, as well as providing a channel for feedback.

5.179. It is focused on creating a framework to ensure the confidentiality, quality and integrity of our data and our customers' data, which we recognise is essential to meet social and legal obligations, including regulatory compliance, data sharing and privacy policies. We use our data governance to significantly reduce risks associated with data. Data risks have the potential to impact business performance and may lead to fines from non-compliance with policies. Increasing oversight, ownership, visibility and management helps mitigate these risks. The framework also enables the integration and consolidation of information from multiple systems historically managed in silos throughout the business into a single source of truth, providing economies of scale and making it possible to tie information policy and process to business strategy, delivery and efficiency improvements.

Figure 5.5 Data governance

Improving data quality

5.180. To maximise the value of digitisation, we must continuously improve our data quality. As digitalisation grows, there is a need for more and better quality data. We have seen evidence of this in our developing flexibility activity, where accurate and reliable data has underpinned improved solutions.

5.181. We have already made significant changes to data collection by developing a range of iPad applications for use by field staff. To make long term improvements to data collection, we are increasingly replacing manual processes with automation supported by machine learning.

5.182. We are continuing to invest in automated processes to improve and monitor data quality. These will set clear agreements for suitability to enable clear monitoring and measurement of performance and improvements.

Providing accurate data from a single source

5.183. We store our data using a number of different legacy systems, with the same data stored multiple times (for example, asset records are held in the asset register and in the control systems). Storing data in multiple systems can lead to inconsistencies which is why our focus for RIIO-ED2 is to have a single source for our data.

5.184. We have already begun work to develop and implement our Integrated Network Model (INM), which connects directly to our three main systems: our enterprise asset management, network management and geospatial information systems. The INM identifies discrepancies in data between these systems and uses an automated process to create a single version of our network, assets and connectivity.

5.185. We will create a central data catalogue to provide regular and reliable single point access to trusted data in a timely and effective manner. This will enable decisions to be better informed and made more dynamically. It is also becoming increasingly important to have access to more granular data that we can share.

5.186. Our innovation programme has already developed new solutions to enhance the visibility of our network. These solutions, together with advanced control systems, are being rolled out to improve the effectiveness and efficiency of our network operation.

Use of external data and services

5.187. We will not only increase the volume of monitoring and data capture on our network, but will also make use of external datasets and services that can be used or combined with our data.

5.188. We already utilise datasets, including weather forecasts, to inform our operational decisions. We will be making greater use of smart meter data to inform our processes.

5.189. We recognise that external organisations can help to unlock value from our data, either by using advanced analytical techniques or integrating it with other datasets. By sharing more data with third parties, we have the opportunity to identify new improvements and will consider using these third party services to benefit our network and customers throughout RIIO-ED2.

Delivering for stakeholders

5.190. The focus of our digitalisation strategy and activity is on meeting the needs and expectations of our stakeholders, both internally and externally.

5.191. Ensuring our Digitalisation Strategy is focussed on the right areas requires significant and on-going engagement both inside and outside WPD to ensure our focus and priority areas meet current and future challenges as effectively and efficiently as possible.

5.192. Engagement is vital, whether this is to develop a data capture process from our field staff or implement a completely new system, including a data catalogue. We recognise the value or both formal and informal engagement and will continue to use both.

5.193. We know there are a wide range of customers and stakeholders who are keen to engage and can add real value to the solutions we develop for external, as well as internal, use. These solutions vary from supporting online automation of connection applications, through using our detailed data to support academic and research fields through to developing and delivering new energy market offerings.

5.194. We already engage extensively through our innovation, system operator and our dedicated stakeholder engagement team; our engagement for digitalisation and data work will be no different. In our ‘progress to date’, we detail a number of externally focussed digitalised developments, where these were driven either by direct stakeholder request and engagement or as part of a consultation process.

5.195. We understand that access to our data is vital to support the ongoing development of the electricity and wider energy system. Because data is used by a range of customers and stakeholders, we also recognise that it may need to be presented in different formats.

5.196. Our data triage process will ensure that all relevant data is assessed and given a data classification. This will be either open, public, shared or closed. Where data cannot be considered open, we will ensure a version of the dataset can be made available without losing critical value and insight from the data.

5.197. Our online Connected Data Portal is already home to numerous sets of network data and information. We recognise the varying needs of different data users which is why we are committed to sharing data in three main formats to make sure it is usable and valuable to the widest possible audience.

5.198. We are committed to making sure that our data is both discoverable and searchable. This means making it accessible outside WPD and ensuring that we continue to collaborate with the

wider industry to ensure data has the same meaning, format and description, across all organisations.

5.199. We recognise that our data has often been difficult to find and have already taken steps to address this. We will continue to develop our online Data Hub to further improve the availability of, and access to, our data and complementary datasets.

5.200. By presuming our data to be open, we are not simply making it available through our systems and services. Our role is to enable data to be harvested, housed and utilised irrespective of a specific access point. Our implementation of APIs and client Uniform Resource Locators which provides a direct link to an online date resource, will ensure that this is available and appropriate. Our ENA-wide work on the creation of an energy digital system map for the UK has demonstrated our commitment to make our data available for this purpose.

Making data available

5.201. We are committed to maximising the value of data from within WPD and utilising external data to inform and improve our decisions to increase and further improve our service to customers.

5.202. We have already started the process of digitalisation through the delivery of several projects in our DSO Strategy and work plan. Many of these projects are helping to provide DSO solutions by creating accessible datasets which will be used both within WPD and shared with third parties.

5.203. The following table summarises some of the enhancements we have already made:

Connected Data Portal	The Portal is an online facility that provides our customers and interested stakeholders with access to a wide variety of our existing data sets, centrally with a level of API access.
Map based data	We have developed a number of open access maps to provide customers, stakeholders and other interested third parties with access to a visual representation of our data, with the option to download the background datasets. We currently have maps for power cuts, network capacity, network flexibility, EV capacity and our DFES.
Integrated Network Model (INM)	The INM enables us to align our previously disparate datasets to enable data improvements and a consistent format of network data
Common Information Model (CIM)	Developing data into a more consistent format has meant that we can now share our data openly using the internationally recognised CIM standard for the transfer and provision of electricity network data. This allows direct access to a complete asset and connectivity model to support investment and operational planning for customers and stakeholders.
Open LV	OpenLV was developed as an innovation project. It is a low-cost monitoring system connected at a substation that enables the use of different apps to provide data to suit the needs of the network, customers and the broader supply chain. We have already seen communities making use of this real-time data to get a better understanding of their electricity use, plan for the integration of increased LCTs and explore potential revenue streams from emerging flexibility solutions.
Smart Meter Data	WPD was the first company to achieve an approved Data Privacy Plan for the use of smart meter data.
Embedded Capacity Register	This Embedded Capacity Register is an industry-wide initiative to capture and share data about all generation assets of 1MW. This data is now publicly available in a consistent format.

System Voltage Optimisation (SVO),	We have trialed System Voltage Optimisation (SVO), utilising data provided by the INM to improve our network management system. This aids automated voltage control, optimising the network for the current power flow conditions meaning that the network can be tailored to maximise the connection of load or generation on the network.
Online GIS	We have provided an online version of our GIS system, available through DataPortal2.0 (https://dataportal2.westernpower.co.uk/Auth/Register) We will continue to develop this to provide customers with the information they need to support their planning activity. It will also act as a basic tool to support a system wide Digital System Map

Figure 5.6 Summary of data enhancements made during RIIO-ED1

Understanding the needs of data users

5.204. Our data and digitalisation activities are informed by extensive and ongoing engagement with data users, both inside and outside WPD. We take part in regular and relevant stakeholder engagement to understand what data is required, the format most suitable and how it can be used most effectively as part of digitalised solutions.

5.205. Our stakeholders have told us they have different needs for, and expectations of, the same data. That is why we are committed to ensuring the right data is available in the right format at the right time to serve different users.

5.206. We have worked to provide greater insight into our data stakeholders through the creation of user personas. We have developed profiles for specific roles within our user types to ensure our investments and developments are aligned to meet and exceed their needs.

5.207. Different data formats have been made available for users viewing our future energy scenarios. While interactive maps provide users with an easy-to-navigate geographic view, we also make available more detailed source data to enable more technical users to build their own analysis.

Information technology (IT) to support digitalisation

Figure 5.7 Consultant user persona

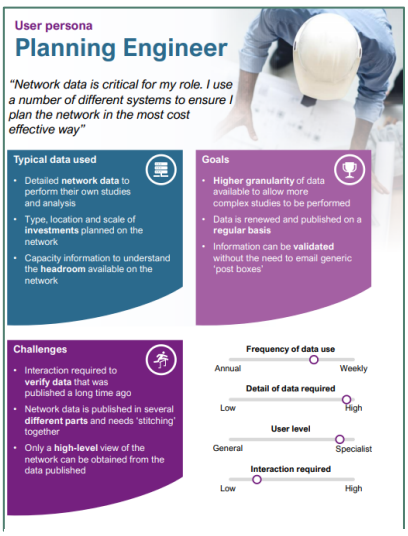


Figure 5.8 Planning Engineer user persona

5.208. To support the transition to a fully digitalised organisation, we will rationalise and modernise our IT systems. This will include replacing and upgrading legacy applications, embracing and investing in new technologies, integration tools and common data platforms.

5.209. Our IT systems have traditionally been developed under the core principles of security, reliability and resilience. While these have served us well in the past, the shift towards open data and digitalisation means we must make our systems more accessible, agile and adaptable to change, as well as continuing to enhance our cyber security controls.

5.210. We will continue to ensure our IT solutions are appropriate, with use cases driving investment in new and augmented solutions. It is anticipated that some of our 'on premise' solutions located at WPD sites will become cloud-based solutions to ensure they continue to be scalable, supported and flexible. We are likely to adopt a hybrid cloud architecture, utilising infrastructure, platform and software as a service solution (IaaS, PaaS and SaaS).

Delivering data best practice

5.211. As more data is made available to third parties, we need to make sure we provide it in a clear way. We are committed to ensuring our activities are in line with the Data Best Practice Guidance, adopted by Ofgem, which outlines 12 principles:

- Identify the roles of stakeholders of the data
- Use common terms within data, metadata and supporting information
- Describe data accurately using industry standard metadata
- Enable potential users to understand the data by providing supporting information
- Make datasets discoverable for potential users
- Learn and understand the needs of their current and prospective data users
- Ensure data quality maintenance and improvement is prioritised by user needs
- Ensure that data is interoperable with other data and digital services
- Protect data and systems in accordance with security, privacy and resilience best practice
- Store, archive and provide access to data in ways that maximise sustaining value
- Ensure that data relating to common assets is presumed open
- Conduct Open Data Triage for presumed open data

5.212. We have already undertaken a number of digitalisation and data enhancements aligned to these principles including:

- Adoption of the Dublin Core metadata standard (a common set of 15 metadata elements describing the data for each dataset)
- Providing data in a discoverable and accessible form (including information maps, guiding users to key network and supporting information)
- Establishing data governance roles
- Implementing a data triage process

5.213. We are committed to exceeding the Data Best Practice principles through RIIO-ED2, driven by our own internal needs and those of our customers. We will openly share our process against each principle, for both current and future activities, to support relevant stakeholder's needs and future planning for third parties.

Delivering digitalisation – Our RIIO-ED2 projects

5.214. During RIIO-ED1, we have implemented a number of digitalised solutions that have allowed us and our customers and stakeholders to operate more effectively. We have identified several developments for RIIO-ED2, aligned to our digitalisation strategy, to further transform our business and continue to deliver value.

5.215. The fast paced nature of digitalisation and data means that we will need to evolve solutions to meet emerging needs throughout RIIO-ED2. We will continue to use stakeholder engagement to shape the changes to meet these evolving needs.

5.216. The currently proposed high-level digitalisation projects for RIIO-ED2 are described below.

Delivering Digitalisation – Our RIIO-ED2 Projects

Project Title	Background	Project Details
Low Voltage Integrated Network Model(INM)	During RIIO-ED1, WPD is developing an Integrated Network Model (INM) for EHV and HV assets. The INM connects directly to our three main systems; the enterprise asset management system, network management system and geospatial information system. The model identifies discrepancies in data between these systems and through an automated process creates a single version of our network, the assets and connectivity.	Building on the EHV and HV INM, development of the LV INM will be required during ED2 to implement advanced LV modelling approaches and facilitate direct LV data provision routinely to customers and interested third parties. This will also enable the automation of appropriate data for external applications including self-service LV design tools and dynamic capacity maps.
Internal Data Platform	During RIIO-ED1, WPD is developing a data catalogue to document the types of data held within systems.	This project is an extension to the data catalogue to create a central WPD Data Platform to enable a single location for WPD data and external data used by WPD staff to ensure a single source of the truth and drive value from this data.
Open Cloud Data Platform	Providing customers with access to data will provide the opportunity for new processes, services and network activities to be developed.	This project is for the development and implementation of an Open Data Platform, enabling customers to access raw data or WPD processed data. It will also have the functionality for customers to develop their own specific data sets from disparate data sources using data dictionary information.
Self-Serve Connections and Services Solution	WPD has been facilitating increased competition in connections, working with customers and third party providers to make it easier for others to assess whether connections can be made.	This solution would utilise the data within the Open Platform to facilitate self-serve connections on at least the LV and HV networks.
Automated Data Mastering Solution	Data improvements enable better and more accurate decisions to be made.	This system is proposed to develop automated data improvements. It builds on manual and semi-automated data mastering including the INM system to continuously and autonomously improve the data within internal master data systems.
Artificial Intelligence (AI) and Machine Learning Applications	As the operation of the networks becomes more complex, more automated processes will be required. The adoption of AI and machine learning techniques is anticipated to drive value from a Data Platform.	Some examples of applications include automated optimised outage planning solutions and real-time network optimisation and system configuration.
Innovation Hub	The Innovation Hub is an online facility to drive innovation.	The Innovation Hub will allow the sharing of little understood and unstructured data for further investigation and analysis. It will also be used to share work in an open

		format so multiple organisations can input and collaborate.
Online work schedule viewer	Third parties want to understand when WPD will be carrying out work either to coordinate activities such as roadworks management or understand network improvements to enable them to make informed decisions about their own investments.	This online viewer would provide customers, stakeholders and other utilities with information about WPD's planned work.
Automated work scheduling	As more data about the network is collected and machine learning/artificial intelligence methods improve, there is an opportunity for automatic scheduling of work activity based on the results of the automated analysis.	Initially this automation could be rules based, but as more data is analysed the machine learning can be used to refine the decision parameters.

Figure 5.9 Digitalisation projects

Forecasting future electricity usage

Our process

5.217. Since 2015, we have been creating Distribution Future Energy Scenario (DFES) reports. From 2020, our System Operator team is producing them annually to forecast rapidly changing low carbon technology uptakes up to 2050. The DFES projections have been aligned to the latest National Electricity System Operator (ESO) scenario forecasts which are available when the DFES process is carried out.

5.218. The scenario information data from the DFES analysis is used to create demand, generation and storage load sets which are then modelled to identify the impacts on the network which lead to constraints. These are published in our Shaping Subtransmission document series.

5.219. A separate process called Distribution Network Options Assessment then compares the costs and benefits of potential different solutions using an industry agreed assessment tool to put forward an investment recommendation.

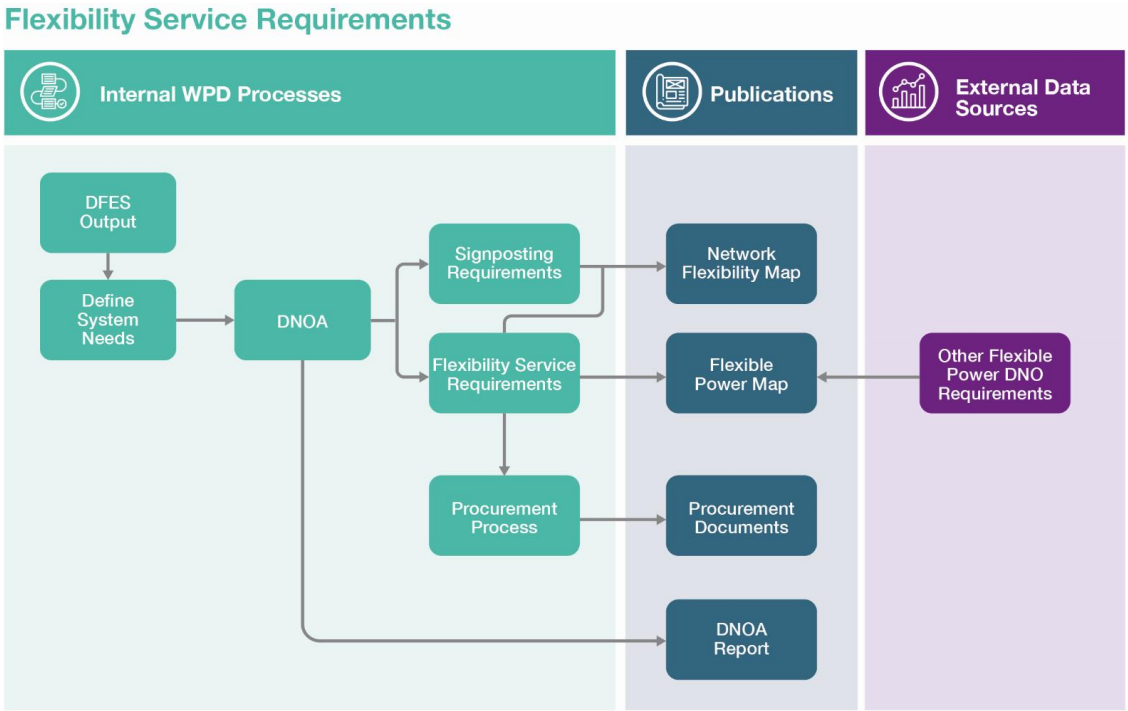


Figure 5.10 Scenario planning

Stage 1: Scenario planning - Production of Distribution Future Energy Scenarios (DFES)

5.220. The first stage of the strategic network planning process is creating the Distribution Future Energy Scenarios (DFES) which use national Future Energy Scenarios (FES) forecasts produced by the Electricity System Operator (ESO), along with local information, to provide a distribution view of the low carbon technology volume changes across DNO licence areas.

5.221. WPD has pledged to produce a full suite of DFES documents each year from 2020. This means there will be an updated suite of DFES documents for all licence areas by January every year throughout RIIO-ED2. This will follow the release of an updated ESO FES in the preceding July.

5.222. Another important part of the work to shape our plans is our interaction with local authorities. WPD Distribution Managers based at our local depots meet with local authority energy representatives to review the assumptions and projections.

Stage 2: Defining a single WPD Best View

5.223. To derive the current WPD Best View, we use an iterative process. DFES data and the WPD Best View from the previous year are used to support stakeholder and local area engagement, which then allow the quality of Local Area Energy Plans to be assessed using criteria derived from Ofgem guidance to gauge the ambition, engagement and deliverability.

Stage 3: Model expected behaviours

5.224. The process considers the additional loadings forecast, and the timing and diversity of the future loads to identify where the growth will result in specific network constraints. The output is published in Shaping Subtransmission reports for each of the four WPD licence areas.

5.225. This is one example of the South West Shaping Transmission report. All four licence area reports are available on our website at https://www.westernpower.co.uk/smarter-networks/network-strategy/strategic-investment-options-shaping-subtransmission

5.226. The constraints identified feed into WPD's longer–term 'signposting' process for identifying long term flexibility requirements. To alleviate potential network constraints, both flexibility services and conventional reinforcement are considered among the investment options.

Using WPD's Best View for the RIIO-ED2 Business Plan

5.227. WPD's Best View scenario is processed in a similar way to the Shaping Subtransmission process. The WPD Best View growth projections are tempered with extra characteristics that are included to account for future changes in consumer behaviour.

5.228. It is assumed that some of the projected growth will be offset by increases in energy efficiency. This will happen as a result of a gradual fall in the underlying demand and the expectation that new demand connecting to the network will be more efficient than the existing stock.

5.229. There is also an allowance made for pricing-led Demand Side Response (DSR). This assumes that market-led price signals (not initiated by WPD) will be utilised to avoid electricity usage at times of peak demand.

5.230. The forecast is based on three components: WPD Best View projected growth driving demand up and efficiency and pricing-led DSR reducing the impact of the demand growth. The projections show that future demand will be higher than current demand.

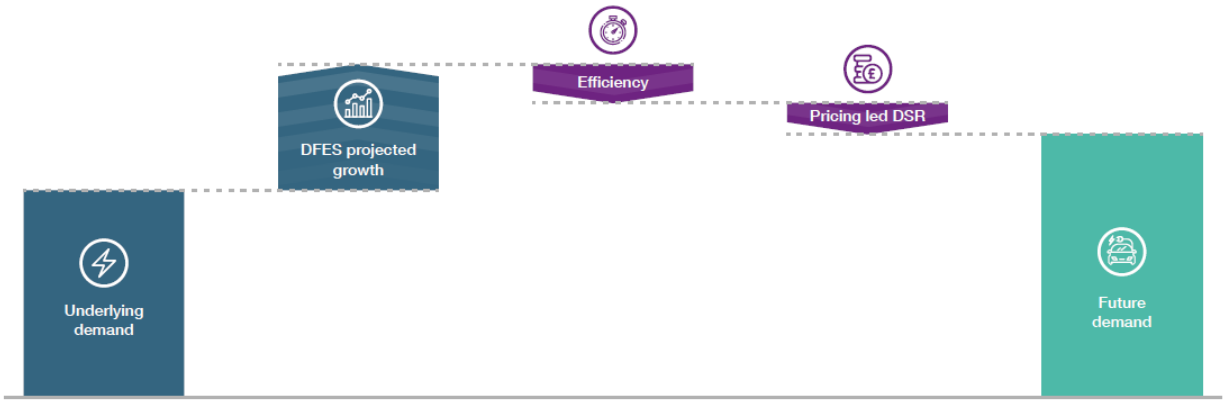


Figure 5.11 Components considered when calculating future demand

5.231. The results of this analysis are used to inform shorter term flexibility requirements in the forecasting process for flexibility procurement cycles. They also help to create projections of network reinforcement requirements for the RIIO-ED2 period found in this Business Plan.

5.232. The following tables summarise some of WPD's high level figures from the calculation of the WPD Best View for each licence area at the start (2023) and the end (2028) of RIIO-ED2.

WPD Best View 2023						
Technology	**Units**	**WMID**	**EMID**	**SWALES**	**SWEST**	**WPD**
Solar Generation	GW (installed capacity)	0.971	1.922	0.772	1.676	5.342
Onshore Wind Generation		0.050	0.409	0.548	0.354	1.362
Other distribution connected generation		1.445	2.208	0.893	0.954	5.500
Battery storage	GW (installed capacity)	0.251	0.357	0.027	0.155	0.789
Electric vehicles	Number of vehicles	255,510	184,320	34,863	73,734	548,427
Heat pumps	Number of heat pumps	72,205	95,738	30,839	66,068	264,850

Figure 5.12 WPD Best View at 2023

WPD Best View 2028						
Technology	**Units**	**WMID**	**EMID**	**SWALES**	**SWEST**	**WPD**
Solar Generation	GW (installed capacity)	1.290	2.784	1.090	2.036	7.200
Onshore Wind Generation		0.050	0.414	0.587	0.407	1.458
Other distribution connected generation		1.505	2.353	0.944	1.074	5.876
Battery storage	GW (installed capacity)	0.347	0.430	0.065	0.223	1.065
Electric vehicles	Number of vehicles	859,665	739,693	168,661	318,053	2,078,872
Heat pumps	Number of heat pumps	248,492	352,980	109,712	181,870	893,054

Figure 5.13 WPD Best View at 2028

5.233. For RIIO-ED2, the data shows that there will be a significant growth in EVs, increasing from 548,000 to 2.1 million while the number of heat pumps is set to grow from 265,000 to 893,000.

Timing of network investment and use of flexibility

5.234. During RIIO-ED1, our standalone DSO team has established flexibility markets that provide an alternative means of addressing network constraints. These make use of new technology and the ability of some network users to provide flexibility in their own consumption either by increasing, reducing or shifting their net import or export.

5.235. This flexibility can be commercially utilised by us to:

- Offset the need for conventional reinforcement
- Provide more capacity for other connections
- Improve our network resilience
- Increase system operability.

Using flexibility to provide additional capacity

5.236. When considering how to address a network constraint, we will always consider whether flexibility offers a more economical solution. Where a cost benefit analysis shows the benefit of adopting a 'flexibility first' approach, we can operate a more efficient and economical network. During RIIO-ED1, we do not expect to make widespread use of flexibility services on our low voltage network constraints. In this period, network capacity will be increased when the network is approaching its capacity limit, with work starting just ahead of need and being completed as the new capacity is required. However, as the volumes and density of flexible LCTs increase, it may become economically viable to consider such solutions. Our view is that this is more likely in RIIO-ED3 or beyond.

5.237. Flexibility can provide more granular increases in network capacity, better reflecting the in-year requirements of network users. Flexibility can also help to manage capacity shortfalls economically and responsively until the need for conventional reinforcement is established. In some circumstances, a longer period of flexibility may allow for more appropriate, long term investment plans to be implemented. Flexibility can also be used to connect new customers to heavily loaded parts of the network without the need for reinforcement.

5.238. While we will be making greater use of flexibility, there will still be situations where it is necessary to carry out conventional network reinforcement, for instance, where there is insufficient flexibility provision to tackle the level of network constraint.

5.239. Work to identify the need for flexibility provision will begin at an earlier stage than plans for conventional reinforcement. This will give us time to assess if there is sufficient flexibility available and to carry out conventional reinforcement, where it is not available.

5.240. By creating an investment trigger for flexibility, which is ahead of the trigger for conventional reinforcement, we can ensure the flexibility market is fully explored before conventional reinforcement needs to start. Generally, this will involve publishing flexibility requirements and investing in flexibility 12 months ahead of the time that a conventional investment decision would be made.

5.241. The following diagram illustrates the different approaches that may arise when load growth begins to reach the limits of the existing network capacity. The traditional pathway using only conventional reinforcement relied on gradual load growth being sufficiently certain and predictable that asset reinforcement could be completed just in time to accommodate the growth. Our 'Flexibility First' approach can soften the criticality of timing for the intervention, if sufficient flexibility is available and economic by managing peak demand leading up to and beyond the capacity limit of the network. The extent to which flexibility is used will be determined by an industry standard cost benefit analysis

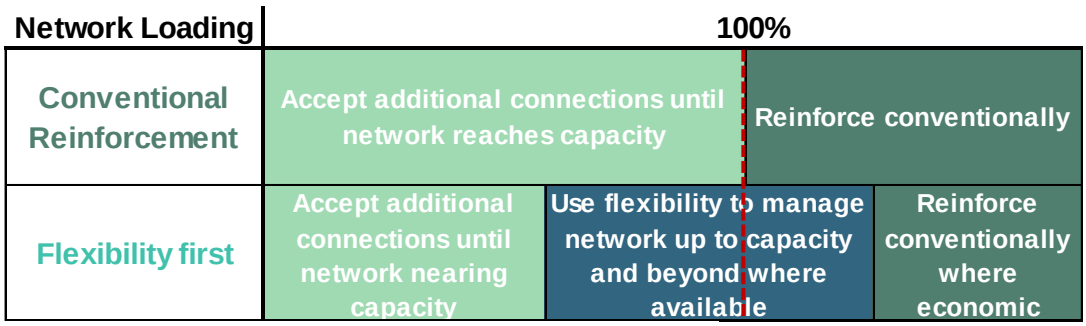


Figure 5.14 Approaches to using flexibility to improve network utilisation

Using flexibility for new connections

5.242. Flexibility is not only used to provide additional capacity to manage load-related constraints. We have also developed and trialled processes enabling us to use flexibility to provide additional capacity for new connections coming onto the network.

5.243. A Constraint Management Zone (CMZ) is an area of network where flexibility is being sought to defer or avoid asset reinforcement. In a CMZ, any flexibility that is not needed to meet existing network constraints can be used to offer capacity for new connections.

5.244. Connecting customers in need of network reinforcement will be offered a flexibility services solution as an alternative to conventional reinforcement. They will be offered two payment methods: one option will be to pay the costs for flexibility and assets retrospectively on an annual basis, while the other will be to settle the costs upfront, based on WPD's Best View of the blend of flexibility and asset costs that will be required. We will manage the constraints using flexibility and take on the risk and responsibility for doing so.

Distribution Network Options Analysis (DNOA)

5.245. WPD's DNOA process provides a systematic methodology to recommend a single investment option.

5.246. If reinforcement is deferred by flexibility, this means ongoing payments must be made to flexibility providers to turn down or turn up import or export of power to allow other customers in the served on the same part of the network to get the power they need. Initial flexibility costs may be small but, as network requirements grow, more flexibility will need to be procured, resulting in rising flexibility costs. If network requirements are reduced by changes in demand or generation, flexibility costs may also fall.

5.247. We compare the viability of the various options by using the Common Evaluation Methodology process, which has been developed under the Energy Networks Association Open Networks programme. This process considers multiple factors including financial, social, losses, safety and carbon benefits to determine the right investment pathway.

Opening up the flexibility market for RIIO-ED2

Providing market information for flexibility services

5.248. There are many electricity consumers who have the potential to shift their demand, by changing the times they use power, or adjusting their export from on-site generation.

5.249. Flexibility markets allow these customers to earn a financial payment for the provision of specified flexibility services.

5.250. The type and amount of service required depends on the nature and scale of the network constraint, which could be as a result of increased loads at certain points in time.

Forecasting

5.251. Forecasting data enables flexibility providers to respond to flexibility tenders and, because it is openly available, allows competing providers the same opportunity to participate in the market.

5.252. WPD's Flexible Power website provides a map of constraint management zones, where we are seeking flexibility, a postcode finder to allow potential suppliers to confirm their site is within the location needed and the operational window for which the demand response will be required.

5.253. The availability window details the time of day, the day of the week and month of the year, power capacity required and a forecast of the total energy needed from flexibility. Operational windows are generally seasonal to support the constraints during the summer and winter demand peaks.

Accessibility to markets

5.254. We expect flexibility services will be provided by many different market participants including demand-response aggregators, electricity suppliers, generation operators, battery operators, industrial and commercial customers, local authorities, community groups and electric vehicle charging operators.

5.255. We know that each of these participants may wish to provide services in a variety of ways so we have explored access through various channels.

Flexible Power	The Flexible Power brand was created by WPD to deliver the procurement of demand response services. It acts as our customer-facing brand when seeking flexibility services and is implemented consistently across all four of our licence areas. As well as providing visibility and enabling routes to participation, Flexible Power also encompasses our flexibility participant portal and electronic dispatch, monitoring and settlement services. It has now been adopted by most of the UK DNOs to facilitate the standardisation of flexibility service integration.

piclo®	Piclo has developed and trialled the UK's first GB-wide flexibility marketplace, supported by funding from BEIS Energy Entrepreneurs Fund. We first displayed our flexibility requirements on the Piclo platform during November 2018.

	Flexibility providers with matching assets in WPD flexibility locations are directed to WPD's Flexible Power site to enter procurement.

	At a more local level, we were a partner on Centrica's Cornwall Local Energy Market (LEM) project which started in July 2017. This project developed a virtual marketplace for flexibility services across the Cornwall region. The Cornwall LEM project targeted both business and residential customers and provided new technology solutions to enable flexibility and help unlock new revenue streams for customers.

5.256. To stimulate market participation, we are enhancing the suite of tools under Flexible Power to provide better market integration. These actions are set to be completed during RIIO-ED1 using open datasets and automated data exchanges which will open many more future routes to accessing WPD flexibility services. These actions include:

- Availability of geographical and postcode information for platforms to pre-qualify and validate flexibility assets
- Standardisation of visibility and forecasting data for hosting on flexibility platforms (implemented)
- Improved sources of data for asset qualification – e.g. linking MPAN to constraint managed zones)

5.257. In RIIO-ED2, we will develop improved, automatic integration with platforms using standardised data exchanges. We will provide more detailed data to the market about our system needs and distribute that data more widely.

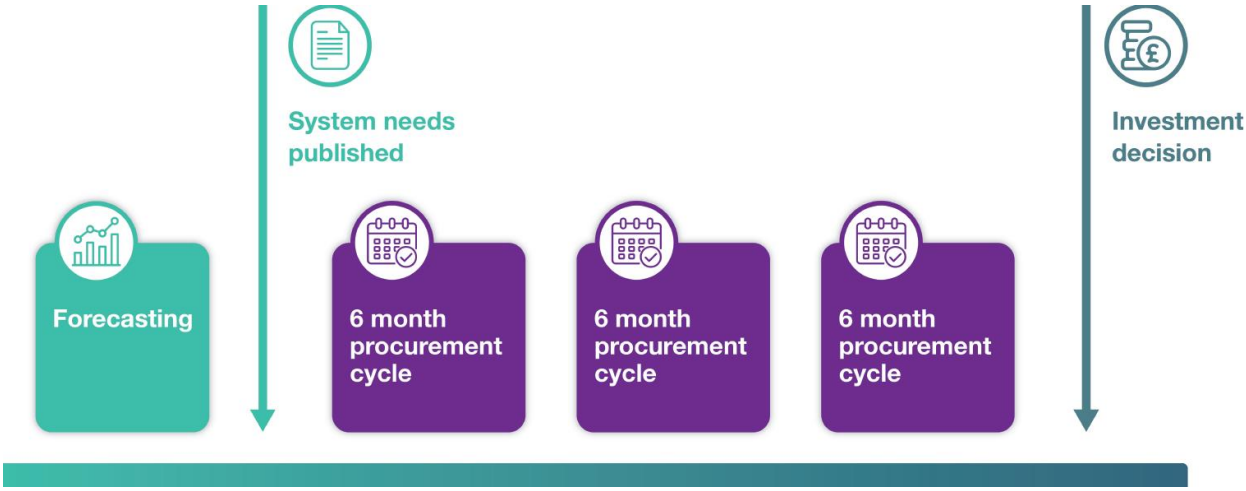


Figure 5.15 Timetable for providing visibility of flexibility services requirements

Procurement process for flexibility services in RIIO-ED2

5.258. Since 2019, we have been operating a multiple cycle approach to procuring flexibility. Our approach allows us to test the market every six months, giving more participants the opportunity to provide this service. This means that WPD contracts with flexibility services in three tranches between six and 18 months ahead of need.

5.259. Potential suppliers of flexibility need to undergo a registration process but, once registered, are invited to consider providing services at each procurement cycle, without further requirement to register.

5.260. WPD has worked collaboratively with the industry to develop a common set of terms and conditions and was the first DNO to adopt these. Informed by stakeholder feedback, they provide low barriers of entry, maximise participation and reduce complexity. They include:

- Mutual and capped liabilities
- Performance based payment mechanisms to incentivise participation
- No penalties for non-delivery, only loss of potential revenue
- No exclusivity clauses
- No obligation to provide availability

5.261. Following feedback from flexibility providers, we have altered the length of our contracts to give greater certainty to market participants. Since 2019, we have been allowing flexibility providers to choose their optimum contract length, from between one and four years and this arrangement will continue into RIIO-ED2.

Operating process

5.262. When flexibility providers have accepted contracts and established the application programming interface, they are available for providing flexibility services. They are paid when they participate and declare availability, as well as when they respond with sufficient change in their demand or generation as required.

Dispatching flexibility

5.263. Where competitive markets have developed, this may result in multiple flexibility providers being able to provide flexibility and our Pricing Strategy allows for market discovery of pricing in competitive markets. Where this is the case, we select the priority order on which flexibility assets are accepted and dispatched first.

5.264. By being transparent about the rules we use to dispatch flexibility, we allow flexibility providers to consider what services to provide and how to make these available.

5.265. As the market grows and matures towards full market-led pricing during RIIO-ED2, then pricing submitted for each flexibility asset will become the dominant factor for consideration.

Reporting of flexibility procurement/ utilisation data

5.266. We publish raw data on signposting and forecasting through our Network Flexibility Map. This includes the availability windows and expected market volumes required for all the DFES scenarios for a five year period. Visualisations of the data are available online through the mapping tool. The geographic dataset is also downloadable without registration.

5.267. Since 2018, WPD has published a procurement cycle results document within one month of contract award, summarising the various stages and results of the tendering process. As the tendering process has developed, more information has been published, including:

- Volumes of flexibility coming through the ‘invitation to tender’ stage
- MW capacity and technology of assets being awarded contracts per CMZ
- Pricing data bid in to the procurement process
- Prices of flexibility awarded in each CMZ

Secondary trading of flexibility contracts

5.268. In RIIO-ED2, our DSO team will continue to procure flexibility by using bi-lateral contracts between WPD and third party flexibility providers.

5.269. All WPD flexibility contracts will be aligned to the latest version (at the time of contract award) of the GB-wide standard contract (developed under Open Networks) ensuring consistency of terms. The standardised DSO products and flexibility contract terms now in place act as enablers for flexibility contracts to be traded between providers on a peer-to-peer basis.

5.270. During RIIO-ED2, we will work with flexibility providers, market operators and platforms to develop practices and systems that allow the secondary trading of flexibility contracts visibility.

Governance Arrangements

Our Commitment to a competitive connections market

5.271. We have a strong track record of working with other connection providers. We have made network data available to Independent Connection Providers (ICPs) and Independent Distribution Network Operators (IDNOs), enabling them to increase their capability by completing their own design work. This WPD owned data is shared to encourage greater competition in connections. All network planners have equal access to our data, whatever company they work for, as part of our commitment to a neutral connections market.

5.272. Our cooperation with ICPs and IDNOs in developing a competitive connections market demonstrates that we can act as a neutral facilitator and support the development of efficient markets which are in the best interests of customers.

Development of flexibility services

5.273. The development of our flexibility services includes a commitment to extensive stakeholder engagement, publication of information and standardisation across the industry.

5.274. Flexible Power, our flexibility product, was initially developed through WPD's ENTIRE innovation project, which involved stakeholders throughout the process. We have since sought to make Flexible Power a standard for flexibility across all DNOs. We continue to engage with stakeholders, using their feedback to inform our evolving flexibility contracts and operational arrangements.

5.275. As flexibility markets develop in RIIO-ED2, they will continue to influence our approach to capacity constraints, network access, network design and commercial arrangements. As they evolve, we will continue to develop processes to ensure we remain a neutral facilitator of these markets.

Independence of decision making

5.276. To deliver the network outcomes we need in the most economical way, our separate DSO team operates the DNOA process. This recommends an investment option based on the profiled capital and operational expenditures of a range of technically viable possibilities. The same process is followed for all reinforcement, whether driven by general load growth or larger individual new connections.

5.277. Our DNO engineering teams use their network design expertise to determine how assets are installed, maintained and repaired. This includes identifying the applicable capacity ratings which can be delivered by these assets.

5.278. Our DSO team is responsible for understanding how the system operates and identifying potential capacity shortfalls or network limitations that require additional investment. They develop the flexibility products needed to meet these system constraints and ensure enough information is published to enable distribution flexibility markets to be established.

5.279. The DSO team assesses the identified investment options and makes recommendations based on published criteria. These recommendations will also be published to ensure transparency and enable scrutiny.

5.280. If the investment recommendation is to use flexibility, the DSO will procure flexibility services through the multiple flexibility markets to meet these system needs. If the investment recommendation involves conventional reinforcement, the DSO function will instruct the DNO function to begin a conventional network design and build.

5.281. The decisions leading to the recommendations will be subject to audit to ensure compliance with the agreed processes.

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Chapter 6

Proposed expenditure

Chapter 6 Contents

6. Proposed expenditure

Summary

6.1. RIIO-ED2 will be a period of significant change as the UK works towards achieving a net zero carbon future. Our expenditure plans reflect this challenge to deliver a network which meets future energy requirements, as well as ensuring we continue to deliver industry-leading service levels to customers at an efficient cost.

6.2. This chapter sets out our high level expenditure plans for 2023 – 2028 across all four licence areas.

6.3. We explain the reasons why costs are forecast to be different in RIIO-ED2 and compare the values to those being incurred in the current price control.

Costs included in this Plan

6.4. The costs presented and discussed are referred to as being part of 'Totex'. This means the licensee's total expenditure (with limited exceptions) on regulated business activities. 'Totex' includes both capital and operating expenditure items over which we have control and which are funded through the price control. The information is presented in alignment with the cost categories we report to Ofgem

6.5. The expenditure included in this document:

- Is stated in 2020/21 prices (current day prices)
- Is based on our current expenditure forecast, which may be revised ahead of final submission to Ofgem in December 2021 to take account of further analysis and stakeholder feedback
- Includes pensions costs (excluding established pension deficit repair payments), based on current actuarial projections

6.6. There are some costs which we incur outside Totex. These are either funded directly by customers or have specific 'pass through' arrangements because we do not have direct control over them. Because they are not funded through Totex, they are not included in this second draft version of the Business Plan.

6.7. There are some expenditure areas where the requirement is yet to be decided through government and regulatory policy. Since the requirements are largely unknown, no cost forecast have been included. For example, this applies to areas including the requirement for enhanced Black Start capability.

A summary of Total expenditure (Totex)

6.8. The table below compares our forecast annual average and total Totex costs for RIIO-ED2 against our average costs for RIIO-ED1.

6.9. We propose to spend £6.06bn during the five years of RIIO-ED2.

6.10. This is a 16% increase on the annual average expenditure in RIIO-ED2 and increases are seen in all four licence areas.

Totex					
£m, 20/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	320	313	160	252	1,046
RIIO-ED2 Annual Average (forecast)	356	357	190	309	1,213
RIIO-ED2 Total (5 years)	1,782	1,787	949	1,546	6,064

Figure 6.1 Our Totex expenditure

6.11. From the outset of RIIO-ED1, we have focused on delivering the outputs in our Business Plan, as well as delivering other activities not foreseen at that time (including dealing with significant growth in distributed generation, establishing a Distribution System Operator (DSO) capability, producing the Distribution Future Energy Scenarios and adopting flexibility as an alternative to conventional reinforcement). We are expecting to end RIIO-ED1 with expenditure broadly in line with RIIO-ED1 allowances.

6.12. Our investment proposals for RIIO-ED2 continue to cover the delivery of core activities (including asset replacement and resolution of faults), while also providing more network capacity to accommodate growth in low carbon technology and establishing enhanced DSO functions. Expenditure plans incorporate the utilisation of flexibility to minimise the need for costly reinforcement and an overall clear focus on business efficiency to keep bills as low as possible. The costs forecast also reflect the delivery of commitments developed through extensive stakeholder engagement.

6.13. The chart below compares our average annual spend in RIIO-ED1 to our current forecast for RIIO-ED2. Our total annual spend is forecast to increase driven primarily by an increase in reinforcement of the network, which is absolutely essential to facilate the move to net zero carbon emissions.

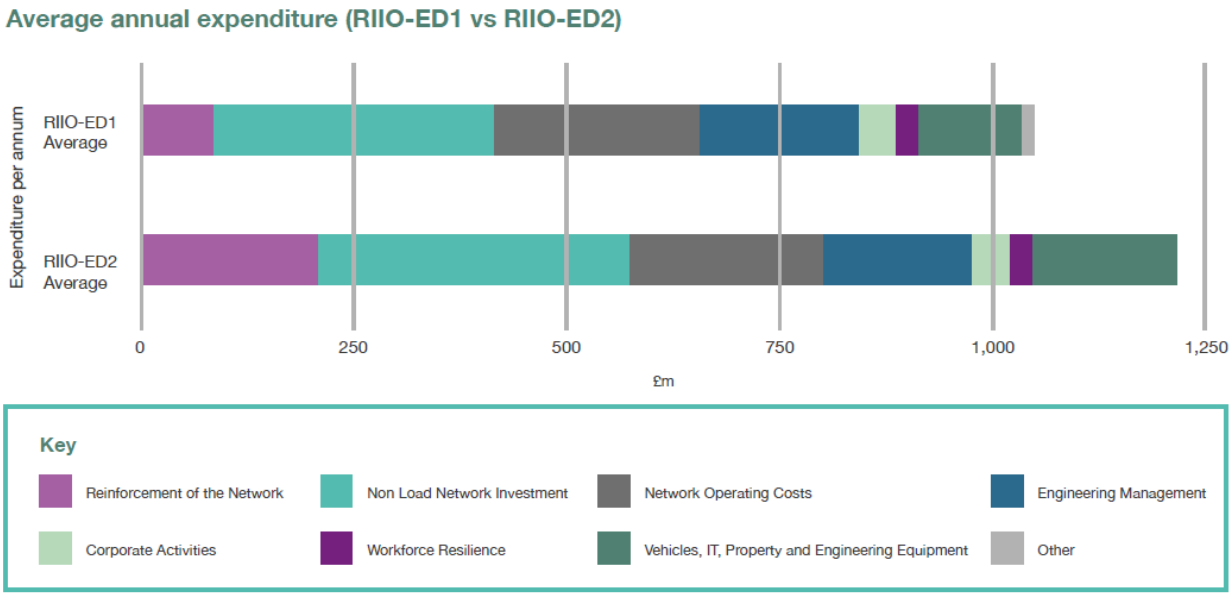

Figure 6.2 Average annual expenditure RIIO-ED1 vs RIIO-ED2

6.14. WPD has a proven record of cost efficient delivery. The RIIO-ED2 Business Plan builds upon these existing efficiencies by factoring in further productivity and unit cost improvements.

Cost allocations

6.15. Cost accounting either uses direct booking of time and materials to specific activities for staff who work directly on delivery of projects or cost allocations for salaried. As salaried staff do not complete time sheets, but can work on activities outside of Totex, part of their costs is reallocated outside the price control.

6.16. WPD's organisation for delivery of work on the network is set up using a geographical team structure. This means that a team has responsibility for all the main activities in its local area, including connections, maintenance, network investment and other non-price control work including service alterations which are charged directly to customers. Each team member carrying out physical work on the network completes a timesheet so that the reason for the costs can be separately identified. This also applies to the cost of materials and the cost of using external contractors. This allows these costs to be directly attributed to a specific activity.

6.17. There are certain staff, covering engineering and corporate functions, who do not complete timesheets. This includes: engineering management, including project management and clerical support, based locally; centralised engineering management teams carrying out studies for the development of the network; and corporate activities including human resources. Some of these indirect staff support activities relate to Totex as well as activities classified as being outside the price control. To ensure that the appropriate costs are included in Totex and that the areas of work outside the price control are fully costed (including all indirect activities related to delivering this work), we undertake a process to allocate part of our indirect costs to this work outside the price control. This allocation is subject to an internal methodology, which is being fully reviewed and updated for RIIO-ED2.

6.18. All Totex costs shown in this document follow the allocation of indirect activities to non-price control activities. However, where expenditure is presented by high level activity areas, this expenditure is shown before the impact of these indirect allocations (for example all Business Support corporate costs are included before a part of these is allocated outside the price control).

6.19. Corporate activities including finance, IT and other activities including the control centre and contact centre, are operated as shared activities across WPD licence areas, as this is judged to be the most cost effective way of working. Shared costs have been allocated across the four licensees using an approach which is consistent with the one followed in RIIO-ED1. This allocated the shared costs using the following proportions:

- 30% West Midlands
- 30% East Midlands
- 15% South Wales
- 25% South West.

WPD total core expenditure forecast

6.20. The tables below show the high level activity breakdown of the expenditure forecast to deliver our proposed Business Plan commitments. The activity costs are shown before allocations to activities outside the price control. Allocations and adjustments are shown separately to determine the Totex values.

6.21. The information is shown for WPD in total, as well providing details for each of the four licence areas.

WPD's core expenditure forecast

WPD Total Expenditure								
£m at 2020/21 prices	Average per year in RIIO-ED1	Average per year in RIIO-ED2	Spend profile in RIIO-ED2					Total RIIO-ED2
			2023/24	2024/25	2025/26	2026/27	2027/28	
Reinforcement of the Network	83	200	153	167	197	222	258	999
Non Load Network Investment	334	375	356	367	396	384	374	1,877
Network Operating Costs	247	226	233	233	222	222	220	1,129
Engineering Management	232	243	242	242	243	243	244	1,215
Corporate Activities	50	51	51	51	50	51	50	253
Workforce Resilience	31	31	30	31	32	31	31	154
Vehicles, IT, Property & Engineering Equipment	141	192	200	212	195	181	173	962
Network Innovation Allowance	1	1	1	1	1	1	1	4
Atypicals	10	0	0	0	0	0	0	0
TOTAL EXPENDITURE	1,128	1,318	1,265	1,304	1,336	1,335	1,351	6,591
Indirect Allocations	-64	-88	-89	-90	-88	-87	-86	-440
Totex Adjustments	-18	-17	-17	-17	-17	-17	-17	-87
TOTEX	1,046	1,213	1,159	1,196	1,231	1,231	1,248	6,064

Figure 6.3 WPD RIIO-ED2 expenditure forecast

West Midlands' core expenditure forecast

West Midlands - Expenditure funded through DUoS								
£m at 2020/21 prices	Average per year in RIIO-ED1	Average per year in RIIO-ED2	Spend profile in RIIO ED2					Total RIIO-ED2
			2023/24	2024/25	2025/26	2026/27	2027/28	
Reinforcement of the Network	28	63	44	45	62	74	89	314
Non Load Network Investment	99	108	105	109	113	109	107	542
Network Operating Costs	78	65	67	68	64	65	63	327
Engineering Management	72	76	76	76	76	76	76	380
Corporate Activities	15	15	15	15	15	15	15	75
Workforce Resilience	9	8	8	8	8	8	8	39
Vehicles, IT, Property & Engineering Equipment	39	52	54	58	52	50	48	261
Network Innovation Allowance	0	0	0	0	0	0	0	1
Atypicals	3	0	0	0	0	0	0	0
TOTAL EXPENDITURE	343	388	370	378	390	396	406	1,940
Indirect Allocations	-19	-28	-28	-29	-28	-27	-27	-139
Totex Adjustments	-4	-4	-4	-4	-4	-4	-4	-19
TOTEX	321	356	338	345	358	365	375	1,782

Figure 6.4 West Midlands RIIO-ED2 expenditure forecast

East Midlands' core expenditure forecast

East Midlands - Expenditure funded through DUoS								
£m at 2020/21 prices	Average per year in RIIO-ED1	Average per year in RIIO-ED2	Spend profile in RIIO ED2					Total RIIO-ED2
			2023/24	2024/25	2025/26	2026/27	2027/28	
Reinforcement of the Network	36	59	46	53	61	63	73	297
Non Load Network Investment	90	108	103	104	115	109	107	538
Network Operating Costs	74	69	71	71	67	68	67	345
Engineering Management	72	75	75	74	75	75	75	373
Corporate Activities	15	15	15	15	15	15	15	75
Workforce Resilience	10	10	9	10	11	11	11	51
Vehicles, IT, Property & Engineering Equipment	39	56	55	61	57	54	51	279
Network Innovation Allowance	0	0	0	0	0	0	0	1
Atypicals	2	0	0	0	0	0	0	0
TOTAL EXPENDITURE	338	392	375	389	400	395	400	1,959
Indirect Allocations	-19	-29	-29	-29	-29	-29	-29	-145
Totex Adjustments	-6	-5	-5	-5	-5	-5	-5	-27
TOTEX	314	357	340	354	366	361	366	1,787

Figure 6.5 East Midlands RIIO-ED2 expenditure forecast

South Wales' core expenditure forecast

South Wales - Expenditure funded through DUoS								
£m at 2020/21 prices	Average per year in RIIO-ED1	Average per year in RIIO-ED2	Spend profile in RIIO ED2					Total RIIO-ED2
			2023/24	2024/25	2025/26	2026/27	2027/28	
Reinforcement of the Network	7	32	28	28	30	33	40	159
Non Load Network Investment	55	56	52	55	60	58	57	282
Network Operating Costs	36	34	36	36	33	33	33	171
Engineering Management	35	37	36	37	37	37	37	184
Corporate Activities	8	8	8	8	8	8	8	38
Workforce Resilience	6	6	6	6	6	6	5	28
Vehicles, IT, Property & Engineering Equipment	26	33	37	38	35	29	28	167
Network Innovation Allowance	0	0	0	0	0	0	0	1
Atypicals	2	0	0	0	0	0	0	0
TOTAL EXPENDITURE	174	206	202	207	209	203	208	1,030
Indirect Allocations	-11	-13	-13	-13	-13	-13	-13	-66
Totex Adjustments	-3	-3	-3	-3	-3	-3	-3	-15
TOTEX	160	190	186	191	193	187	193	949

Figure 6.6 South Wales RIIO-ED2 expenditure forecast

South West's core expenditure forecast

South West - Expenditure funded through DUoS								
£m at 2020/21 prices	Average per year in RIIO-ED1	Average per year in RIIO-ED2	Spend profile in RIIO ED2					Total RIIO-ED2
			2023/24	2024/25	2025/26	2026/27	2027/28	
Reinforcement of the Network	12	46	35	41	45	53	56	230
Non Load Network Investment	89	103	96	99	108	108	103	514
Network Operating Costs	59	57	59	58	57	56	56	286
Engineering Management	53	56	55	55	56	56	56	278
Corporate Activities	13	13	13	13	13	13	13	64
Workforce Resilience	7	7	7	7	8	7	7	36
Vehicles, IT, Property & Engineering Equipment	37	51	54	56	51	48	46	254
Network Innovation Allowance	0	0	0	0	0	0	0	1
Atypicals	3	0	0	0	0	0	0	0
TOTAL EXPENDITURE	273	333	319	330	337	341	337	1,663
Indirect Allocations	-15	-18	-19	-19	-18	-18	-18	-90
Totex Adjustments	-6	-5	-5	-5	-5	-5	-5	-27
TOTEX	252	309	295	306	313	318	314	1,546

Figure 6.7 South West RIIO-ED2 expenditure forecast

Cost and workload forecast considerations

6.22. WPD has been a consistently strong performer in the electricity distribution sector, operating a proven business model for many years. However, the environment in which we operate is changing rapidly as the UK moves towards net zero. Other developments, including the shift towards greater digitisation, and the increased importance of cyber security, have also heavily influenced our plan. While we expect to face many challenges and opportunities in RIIO-ED2, our strong business model provides the foundation for the efficient delivery of our plan.

WPD's Best View for future network capacity requirements

6.23. We have used a wide range of sources to inform the current Business Plan projections for reinforcement activities. These include:

- UK government net zero aspirations and legislation, including the recent 10 Point Plan and Energy White Paper.
- Committee on Climate Change's 6th Carbon Budget
- Welsh government net zero aspirations
- Electricity System Operator – Future Energy Scenarios (ESO FES)
- Distribution Future Energy Scenarios (DFES)
- Local Area Energy Plans (LAEPs)
- ENA Common Scenario

6.24. These sources provide a series of scenario projections which have been consolidated to inform a WPD Best View, which is then used to develop our current forecasts. The current WPD Best View scenario indicates that there will be significant increases in demand due to the accelerated use of Low Carbon Technologies (LCTs). This will call for significantly increased levels of network reinforcement during RIIO-ED2 in comparison to previous levels of expenditure.

6.25. The current version of the WPD Best View and associated costs is based on the DFES published in 2019. Future expenditure forecasts will be based on the revised DFES which were published for stakeholder comment at the end of 2020.

6.26. In the Business Plan Guidance, Ofgem provided further information on the scenarios for which our costed plan must be resilient against. In light of this, we are reviewing our forecasting models. The costs of delivering network capacity based on Ofgem's scenario will be included in future versions of this plan, in line with any further guidance from Ofgem on developing and presenting these forecasting scenarios.

6.27. This draft Business Plan presents the total costs which will enable us to deliver government and local authority objectives.

6.28. The approach to how these costs will be funded is still being determined by Ofgem. The way we have shown the costs assumes that full allowances will be provided at the start of the price control. This gives clarity on how much we expect the cost to be.

6.29. We recognise that various different proposals are being considered to manage the uncertainty of these costs and that some of these costs may ultimately be funded through volume drivers and uncertainty mechanisms. We will review the presentation of the cost forecasts following further guidance from Ofgem.

Access SCR

6.30. Our current WPD Best View may need to be updated because of the ongoing refinement of the charging methodology policy for connections. Ofgem has deferred a decision on the Access and Forward-Looking Charges Significant Code Review (Access SCR), which means that it is unclear how the changes will affect funding requirements.

6.31. The amount of investment needed under RIIO-ED2 may need to change following the outcome of this review.

6.32. At this time, our RIIO-ED2 cost forecasts have been prepared on the basis of no change. However, once Ofgem has published its proposals, we will update our Business Plan to explain how our spending plans could be impacted by any changes in the Access SCR proposals, especially relating to costs and volumes of connections.

DSO and digitisation

6.33. We are building upon our traditional role of Distribution Network Operator (DNO) to incorporate Distribution System Operator (DSO) roles and functions. We believe that the adoption of DSO functions will be essential to driving performance and efficiency from our network and ensuring we can meet the future energy demands of all our customers.

6.34. Ofgem has identified three core DSO roles for RIIO-ED2: planning and network development; network operation; and market development. WPD has been developing DSO functionality in all three areas during RIIO-ED1 and we will continue to expand capability in these areas during RIIO-ED2. This will involve increasing data acquisition from the network, enhancing established DSO processes, developing new systems and sharing more data. These changes must be underpinned by greater data visibility and digitalisation of our processes and systems.

6.35. The costs and implications of carrying out DSO functions and increasing digitisation are fully embedded across all relevant activities in this plan. These changes are a natural extension of the functions we already perform which place us in a strong position to take on the role of Distribution System Operator.

6.36. The main cost impacts fall into the following areas:

- A separate management structure for DSO within WPD's existing organisational structure. This degree of separation will allow network strategy teams to carry out independent scrutiny of network investment options and help to create a neutral market place for flexibility. This structure is already in place, but will develop further in RIIO-ED2, as DSO functionality grows
- More comprehensive network strategy planning processes. WPD has already committed to producing a full suite of DFES analysis and documents each year and has been working with local authorities to understand Local Area Energy Plans.
- Adoption of 'flexibility first' considerations for network reinforcement, expanding the flexibility market and supporting the provision of flexibility services.
- Enhanced data collection and greater data visibility to allow better decision making. Investment is included to ensure we have the right systems and infrastructure in place.
- Development of operational systems to meet our DSO and digitisation objectives, which will include both enhancements to the existing applications and development of new systems to interact with the existing control systems. The main focus will be on higher network voltages, along with increased amounts of data and visibility of network operation implemented for lower voltages.
- Increase investment in cyber resilience and security to prevent possible future security breaches to the electricity distribution network through IT and OT Systems, especially where these systems are expanded to increase network monitoring and control. Focus will be on updating old 'legacy' IT and OT systems and ensuring that all systems and technologies are designed and implemented with the relevant level of cyber security controls.

Risk and asset strategy

6.37. We have an extensive network of assets, spread across a large geographical area, providing supplies to 7.9 million consumers. This vast network must be kept in good working order to prevent the assets failing. We regularly inspect and maintain our assets, gathering information about their condition, as part of the process. The assets in poorest condition are replaced to manage the risk on the network.

6.38. Asset-based risk considers the probability that an asset will fail (based on its condition) alongside the consequences of that failure (taking into account safety, the environment, impact on customer service and cost of rectification). The industry uses risk measures to gauge asset health and criticality; For RIIO-ED2, these will be based upon Network Asset Risk Metrics (NARMs) which allow assets to be classified into different levels of health and criticality. Those with the poorest health and highest criticality carry the greatest risk. Because every asset has its own risk value, NARMs enables us to generate an overall risk measure for all the assessed assets.

6.39. Without intervention, the overall risk to the network would increase as the network deteriorates. Our asset replacement actions remove higher risk assets, which eliminates risk from the network. The resultant level of risk depends on the overall age and condition of the network. For example, a network with a lot of new assets requires less replacement activity and therefore may result in a higher network risk, while a network with many older poor condition assets requires more work which could lead to a lower resultant risk.

6.40. Our strategy for managing condition-based risk is not about reducing or increasing network risk; it is about doing what is necessary to remove poor condition assets. This means that poor condition assets, or those identified as being in poor condition, drive the work programme. The resultant network risk will reflect this programme.

6.41. The processes for NARMs are currently being implemented. Further details will be provided in future versions of the business plan.

Our proven delivery record

6.42. WPD's established organisational structure is key to our proven track record of delivering on customer service and our work programme commitments. This in-sourced team-based structure provides a great foundation for the successful delivery of our investment programmes for RIIO-ED2.

6.43. We have a strong belief that the use of in-house regional resources is crucial to cost effective, efficient delivery, which is why we use geographically based teams to serve each local area. Our staff know the local area, the local network and local developments, enabling us to provide efficient, high quality customer service. The organisational structure is flat, with devolved decision-making and minimal bureaucracy. This structure and ethos will continue to be a core part of our delivery model for RIIO-ED2.

6.44. The biggest change to our organisational structure will be an increase in the staff and systems needed to deliver our DSO and digitisation targets. We will apply the same principles of minimal bureaucracy and a culture of delegated personal responsibility, when introducing these developments.

Innovation

6.45. We are committed to harnessing innovation to introduce new techniques, improve the way we operate the network and develop new services for vulnerable customers. We're also using innovation to identify efficiencies and provide value for money to our customers.

6.46. We will continue to collaborate with third parties and fully participate in Ofgem's Strategic Innovation Fund and the Network Innovation Allowance. We will also support other research, development and demonstration projects, which fall outside the scope of Ofgem's innovation mechanisms.

Purchasing strategy

6.47. Contract and material tendering is the most frequently used method of purchasing goods and services throughout WPD. Tenders are conducted in accordance with appropriate legislation by our purchasing team, which is fully embedded within the business to deliver the most strategically and commercially advantageous contracts for us.

6.48. Our purchasing strategy is to multi-source goods and services, not only to protect the business from a single point of supply failure but also to encourage competition. Where appropriate, we tender goods and services through 'lots' which may be applied across all four licence areas or split into smaller geographical areas. By using this approach, we can procure the most economically advantageous contracts which deliver value to us and our customers.

Regional factors

6.49. We distribute electricity to a wide range of different areas, including:

- Densely populated urban areas in Birmingham and the West Midlands
- Large cities including Bristol, Cardiff, Nottingham, Derby, Leicester and Stoke
- Sparsely populated rural areas in Lincolnshire, Herefordshire, Cornwall and South Wales.

6.50. Each location has its unique challenges. For example, travel times can vary significantly, due to a shortage of direct routes in more rural areas and the effect of traffic congestion in major cities.

6.51. Many local authorities in our licence areas have their own net zero plans, which will drive different paces of change and levels of investment on the network.

6.52. We operate a consistent pay structure across WPD. For example, overhead linesmen are all on the same pay grade, terms and conditions, irrespective of whether they are based in Cornwall, urban Birmingham or rural Lincolnshire.

6.53. There may be some regional variations in contract prices, through the selection of best rates for different regions; these differences are factored into our plans and unit costs where applicable. Differences in other areas, including payments related to the operation of different pension schemes (especially older schemes), are also included in our plans.

6.54. On balance, we consider the mix of differences within WPD does not necessitate any specific locational or regional adjustments to our expenditure plan.

6.55. However, we do expect Ofgem to 'normalise' factors outside DNOs' control and will continue to participate in ongoing discussions with Ofgem to determine how these are best addressed. An example of this is street works costs. In most local authority areas, permit schemes are in place but may impose different working practices in different areas; this may call for some benchmarking adjustments across company plans by Ofgem. This plan has embedded costs where these schemes are already in operation, and has not yet accounted for new schemes. We expect that the costs associated with new schemes will be covered by an uncertainty mechanism.

Reinforcement of the network

6.56. Load-related investment is expenditure incurred when providing additional capacity on the network to facilitate new connections as well as load growth. This covers both demand and generation. Load-related reinforcement investment falls into four categories: connections, general reinforcement, fault level reinforcement and new transmission capacity charges. The annual expenditure in all four category areas is expected to increase during RIIO-ED2, despite a significant increase in the use of flexibility to offset traditional reinforcement.

6.57. Reinforcement will increase from 7% of Totex as an average in RIIO-ED1, to 10% of Totex in the last year of RIIO-ED1, and then to 15% in RIIO-ED2.

6.58. The main reason for higher load-related expenditure is the government's 2050 net zero target, which is driving significant growth in low carbon technologies, including electric vehicles, heat pumps, storage and distributed generation. This is exacerbated by the ambitious local development plans of many local authorities in our region which feature commercial, industrial and housing developments.

6.59. To ensure we meet these demands, we have used numerous data sources, including national forecasts of growth by the Electricity System Operator and local information about regional aspirations, to establish our WPD Best View of anticipated future network loads and constraints.

Reinforcement of the Network					
£m, 20/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	28	36	7	12	83
RIIO-ED2 Annual Average (forecast)	63	59	32	46	200
RIIO-ED2 Total (5 years)	314	297	159	230	999

Figure 6.8 Reinforcement expenditure

Our forecasting approach

6.60. The WPD Best View was created using the Distribution Future Energy Scenarios (DFES) for each licence area, which capture the growth projections for different technologies in the next 15 years. The DFES framework follows four scenarios aligned to the National Grid Future Energy Scenarios framework. This accounts for the growth of:

- Low carbon technologies including electric vehicles and heat pumps
- Distributed generation and storage technologies to further exploit the UK's renewable energy potential
- 'Conventional' demand, including new domestic, industrial and commercial developments as outlined in local plans.

6.61. Each of the technology types featured in the WPD Best View were given an electrical profile, to plot the expected impact on the WPD network. The profiles were compiled using metering data for existing customers and synthesised data from innovation project trials, led by various DNOs.

6.62. The forecasting process produces a set of growth rates, which were overlaid onto a power system model of the primary network to identify which areas of the network would need reinforcement during RIIO-ED2, and when this would need to happen. The data was then disaggregated down to the LV and HV network level and loaded into a network modelling tool, known as the Network Investment Forecasting Tool (NIFT), specifically developed for WPD by EATL to identify the LV and HV network reinforcement requirements. NIFT incorporates a model of WPD's LV feeders and HV transformers using WPD asset and geographic data, and maps the forecast localised demand and DER growth from the 'WPD Best View' scenario on to these simulated networks to identify where and when additional capacity will be required.

Flexibility

6.63. We have made significant progress in our ability to operate the network more flexibly, balancing sources of supply and demand in real time to avoid the need for costly reinforcement, where possible. This includes local management of generation output, load and power flows.

6.64. We anticipate that the use of flexibility will increase during RIIO-ED2 although it is not expected that the market will be able to provide services to match all constraints. Our 'flexibility first' approach means that, for all reinforcement issues, we consider whether flexibility is a credible option to address network issues and avoid reinforcement.

6.65. We have identified 55 potential schemes (of 139 on the initial primary reinforcement list) where we anticipate that flexibility will defer the traditional investment scheme beyond the RIIO-ED2 period. The total deferred investment is estimated at over £150m.

Connections related reinforcement

6.66. When new connections are made to the network there is sometimes a requirement to increase the capacity of the existing network. Connecting customers directly fund the assets that will be for their sole use along with a proportion of the reinforcement costs, determined by rules specified by connection charging statements. The remainder of the reinforcement costs is funded through the price control because it provides capacity that can be used by other customers. This is known as DUoS funded reinforcement. We have used the growth projections from the WPD Best View to determine the volume of new connections and the associated reinforcement requirements.

General reinforcement

6.67. General reinforcement is the investment required to provide adequate capacity on the network for generic load growth (i.e. it is not related to any individual customer or new connections).

6.68. General reinforcement enables WPD to fulfil its obligation to provide adequate network capacity to meet network security standards and ensure that the voltage of the network remains within statutory limits. These obligations are found in the Electricity Networks Association Engineering Recommendation for Security of Supply P2/7, which specifies the expected capability of the network to meet demands under defined outage conditions, and the Electricity Supply Quality and Continuity Regulations (ESQCR), which defines voltage limits.

6.69. General reinforcement is split into two categories: secondary network reinforcement which covers the low voltage (LV) and high voltage (HV) networks and primary network reinforcement, which covers the EHV (33kV and 66kV) and 132kV networks.

LV and HV forecasts (High volume - low cost)

6.70. WPD's NIFT modelling tool has been used to identify the reinforcement requirement at LV and HV. To produce expenditure forecasts, annual volumes of interventions from NIFT were multiplied by costed standard projects. For LV circuits, the unit cost of a typical circuit scheme was used. To produce the HV substation forecast, assumed standard interventions, built using asset replacement unit costs, were applied to the forecast volumes of transformer upgrades.

6.71. To better manage future load growth and reinforcement requirements, we are planning to install increased amounts of LV monitoring. This monitoring will provide greater visibility of the loads and voltage on the network, allowing proactive measures to be taken in real time, providing verification of modelled and smart meter information and giving a more accurate view of reinforcement requirements. The locations for installation will be prioritised based on existing knowledge of heavily loaded circuits alongside analysis of smart meter data which will be used to provide an insight into where the network may be reaching capacity. We anticipate that the improved and more accurate data will enable better management of reinforcement activity, allowing some to be deferred.

EHV and 132kV forecasts (Low volume - high cost)

6.72. The WPD Best View has been used within detailed network analysis to identify potential circuit and transformer overloads as well as voltage excursions outside statutory limits at both the EHV and 132kV levels.

6.73. For each network constraint, the optimum reinforcement scheme was then identified after evaluating a range of options and their associated costs which included the assessment of using flexibility as an alternative to conventional reinforcement.

Fault level reinforcement

6.74. Certain faults on the network can cause very high current to flow until the network is switched off automatically by circuit breakers. The network is designed to withstand these fault levels, but the number of generators and large induction motors connected to the network can cause the fault current to exceed the rating of the circuit breakers, overhead line and cables. This can introduce a risk of catastrophic failure to the overhead lines and cables, or when the switchgear is operated.

6.75. We have a duty of care for our employees and members of the public to apply temporary operational limitations to ensure they is not at risk of injury due to the failure of the company's assets in high fault level situations. Because these involve sub-optimal running arrangements, they are only used as interim solutions until the equipment can be changed. The implementation of sub-optimal network running arrangements can affect network performance and constrain the capacity of the network, restricting the connection of additional load or generation.

6.76. Situations like this are typically resolved by replacing switchgear and overhead lines and cables with higher rated assets. In some cases, fault levels can also be reduced by changing transformers for higher impedance models. Smart interventions, including the use of fault current limiters, are also applied where this is an economical solution.

6.77. A significant factor in increased fault levels is the connection of distributed generation. The growth in distributed generation is expected to continue into RIIO-ED2, resulting in an increase in fault levels on parts of the network.

6.78. Eleven fault level schemes have been identified during the RIIO-ED2 period across WPD. These have been developed by:

- Identifying all sites which have a current switchgear duty rating of 90-95%
- Undertaking further analysis of these substations to identify the projected growth in fault levels over the RIIO-ED2 period in line with the WPD Best View scenario
- Considering whether fault levels could be reduced by altering network running arrangements or whether network investment was the most appropriate solution.

New transmission capacity charges

6.79. WPD interconnects to the transmission network reinforcement, typically at the Grid Supply Points (GSPs) which are 400/132kV or 275/132kV interface substations between the transmission and distribution networks.

6.80. Load growth on the distribution networks may call for extra capacity from the transmission system. This is provided by National Grid which recoups the costs through exit charges. Where these exit charges are linked to load related requirements, they form part of the costs within the price control Totex.

6.81. Eight GSPs have been identified as sites for reinforcement during RIIO-ED2. We plan to use flexibility to address issues at three of these sites removing the need for reinforcement, while conventional reinforcement by National Grid is required for the other five GSPs.

Non load-related investment

6.82. Non load-related investment encompasses a broad range of activities linked to the replacement and refurbishment of assets, as well as improving safety, reducing environmental impact, improving network performance and investing in new enhanced IT and telecoms for operating the network. This section focuses on the activities associated with highest expenditure and/or most change.

6.83. Through RIIO-ED1 and RIIO-ED2, this area represents around 30% of Totex.

Asset replacement

6.84. Asset replacement is the largest area of expenditure in non-load network investment, both in RIIO-ED1 and into RIIO-ED2. Our replacement strategy, which focusses on removing assets in poorest condition, is not changing which means that total replacement expenditure will remain broadly the same in RIIO-ED2.

Non Load Network Investment					
£m, 20/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	99	90	55	89	334
RIIO-ED2 Annual Average (forecast)	108	108	56	103	375
RIIO-ED2 Total (5 years)	542	538	282	514	1,877

Figure 6.9 Non Load Network Investment expenditure

6.85. We use a range of modelling techniques to determine the volumes of replacement activity required, including:

- Network Asset Risk Metrics (NARMs)
- Statistical age-based modelling
- Run-rate analysis
- Population impacted analysis
- Bespoke programmes

6.86. Current analysis suggests that, while overall costs will remain broadly the same, the level of activity will vary between asset categories. For example, replacement volumes of switchgear (particularly at HV) will be lower in RIIO-ED2 and more LV consac cable will be replaced to reduce the higher fault rate and inconvenience to customers.

6.87. Generally, assets will be replaced on a like-for-like basis using modern equivalents, although larger capacity assets may be used either to reduce network losses or to take account of anticipated load growth. The anticipated load growth from the increased uptake of low carbon technologies (such as electric vehicles and heat pumps) means that consideration will be given to installing greater capacity assets where there is a strong indication that load growth will take place. This incremental reinforcement should negate the need for subsequent reinforcement as load increases, meaning that assets are only ‘touched once’ before 2050. The small incremental increase in material costs will reduce long term costs particularly for cable assets, where the majority of the costs arise from excavation and reinstatement.

Operational IT and Telecoms

6.88. Operational IT and Telecoms is the area where we expect to see the biggest increase in activity. This encompasses the dedicated communication infrastructure and network management system, which monitors the electricity network, controls load flows and enables response to faults.

6.89. We are forecasting additional expenditure in the following areas:

- Control systems, as a result of the development of our DSO capabilities
- Sensing and monitoring required on the network, including power quality monitoring and distributed energy resource SCADA monitors
- Remote Terminal Equipment (RTU) replacement programme to replace end of life units with Internet Protocol enabled RTUs.
- Modernising WPD's radio based telecoms system to a Long Term Evolution (LTe) (this development is currently under review with Ofcom and may be funded through a future uncertainty mechanism rather than upfront allowances).
- Cyber resilience for Operational IT and Telecoms to meet an expected growth in cyber security risks.

Diversions

6.90. Diversions activity is predominantly driven by third party requirements. For most activity areas, forecasts are based on trends in costs and volumes from RIIO-ED1. However, an increase has been included for LV, due to the issue of wooden poles in gardens. Since the start of RIIO-ED1, WPD has experienced a significant rise in wooden pole claims activity, largely driven by the marketing activities of compensation agents. This was not foreseen before the start of the RIIO-ED1 and, as a result, has been reported in atypical costs during the period. For the RIIO-ED2 forecast, these costs are now included in diversions as an ongoing activity.

Overhead line clearances

6.91. We have obligations to ensure that overhead lines have sufficient clearance to objects, buildings and the ground. Detailed survey work has identified that there are a number of low ground clearance issues that need to be resolved.

6.92. The volume of activity expected during RIIO-ED2 is based on known issues and a forecast of the number of additional issues that may be identified during future inspections. The existing work programme is built around risk-based timescales depending on the current height of the conductors, with the majority of the work to be completed by 2029.

Environmental

6.93. Our Environmental Action Plan and core commitments list a range of activities designed to proactively reduce leaks from network equipment. We also need to comply with all applicable new environmental legislation. A number of programmes will be in place to achieve these objectives, including the removal of all PCB contaminated equipment from the WPD network by 2025 and the use of techniques to reduce fluid filled cable network leaks by 50%compared to RIIO-ED1.

Other

6.94. Our Legal and Safety programme is relatively small but includes new expenditure to deal with safety risks associated with overhead lines that either cross or run adjacent to schools and playing fields.

6.95. There are some programmes where we have been unable to forecast additional costs, because of uncertainties beyond our control. This includes expenditure on enhancing Black Start capability (which is awaiting government requirements) and diversions required to accommodate planned rail electrification. We expect any future expenditure in these areas to be covered by uncertainty mechanisms.

Network Operating Costs

6.96. Network Operating Costs (NOCs) are collectively associated with faults, severe weather response, inspection and maintenance, and tree cutting activities. In RIIO-ED1, NOCs form about 22% of Totex but, due to ongoing efficiency initiatives, will make up only about 17% of Totex in RIIO- ED2.

Network Operating Costs					
£m, 20/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	78	74	36	59	247
RIIO-ED2 Annual Average (forecast)	65	69	34	57	226
RIIO-ED2 Total (5 years)	327	345	171	286	1,129

Figure 6.10 Network Operating Costs

Headlines

6.97. We will continue to challenge costs in this area, while maintaining the high level of service our customers expect.

6.98. We currently forecast a reduction of around 10% in fault costs into RIIO-ED2. This is due to progressive reduction in the number of faults as a result of various business initiatives and a focus on reducing unit costs. However, response to faults will remain a high priority, ensuring that customer supplies are restored as quickly as possible.

6.99. WPD will continue with programmes of routine tree clearance and tree resilience clearance. Routine clearance cycles will be carried out across all voltage levels. However, there will be a gradual change in the approach to routine clearance at HV and EHV, moving away from the use of contractors to manage clearance requirements to a WPD-directed approach, using data from Light Detection and Ranging (LiDAR) analysis. This will improve the effectiveness of tree clearance and lead to lower costs in the future. Resilience clearance will be focused on EHV networks with completion of all EHV initial clearance in RIIO-ED2.

6.100. In RIIO-ED2, most inspection and maintenance cycles will remain unchanged. However, there is an increased requirement for cut-out inspections, as it is expected that DNOs will carry out inspections following the roll out of smart meters (an activity which is currently fulfilled by suppliers and their meter operators). Costs have been included in the forecast for this additional activity.

Engineering management

6.101. The physical work we do could not go ahead without the support of indirect activities, including planning, project management, system records and stores. This activity also includes wayleave payments, which are payments made as compensation to landowners and occupiers for losses associated with WPD's apparatus on private land.

6.102. These costs form about 21% of Totex in RIIO-ED1 and about 18% of Totex in RIIO- ED2.

Engineering Management					
£m, 20/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	72	72	35	53	232
RIIO-ED2 Annual Average (forecast)	76	75	37	56	243
RIIO-ED2 Total (5 years)	380	373	184	278	1,215

Figure 6.11 Engineering Management expenditure

Headlines

6.103. We are not proposing changes to the core DNO organisational structures in RIIO-ED2. Savings made during the latter part of RIIO-ED1 are expected to offset some of the costs of increasing volumes of work in RIIO-ED2. However, there are a number of areas where we are forecasting change.

6.104. The significant increase in reinforcement activities will require additional indirect activity in areas including detailed project design and project management activities (covering all phases from project authorisation, work preparation, construction and physical connection through to ensuring all technical records and projects costs are updated). Additional costs have been included in the forecast for these increased activities.

6.105. Many DSO functions will be carried out by teams and processes that form part of engineering management teams. We are forecasting the need for some additional staff to cover these new processes and our commitments, as well as to support the move towards digitalisation and increasing data policy and management. We are also proposing to introduce community energy engineers to support local community energy projects.

6.106. We are forecasting an increase in call centre handlers to help uphold our PSR commitments. This is in response to an expected growth in the number of customers joining our PSR during RIIO-ED2 and our pledge to make sure vulnerable customers are not left behind in the DSO transition. All other proposed customer service commitments will be delivered through current cost levels.

6.107. As part of our commitment to innovate, a small amount of additional innovation spending has been forecast to cover projects that will no longer be eligible for funding under the Network Innovation Allowance (NIA). This includes projects which explore technological advances to network assets, and support community energy projects and non-carbon related environmental benefits.

6.108. We currently forecast that wayleave payments will be relatively consistent into RIIO-ED2. Wayleave payment rates are negotiated annually by the Energy Networks Association with the National Farmers Union, Farmers Union of Wales and the Country Landowners Association and we anticipate these to remain relatively stable.

Corporate activities

6.109. Corporate activities include a number of central functions across all licence areas, including human resources, finance and regulation, procurement, corporate communications, legal services and executive functions.

6.110. WPD's aim to operate a low overhead business will not change as we enter RIIO-ED2. Corporate activities account for about 4% of Totex.

Corporate Activities					
£m, 20/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	15	15	8	13	50
RIIO-ED2 Annual Average (forecast)	15	15	8	13	51
RIIO-ED2 Total (5 years)	75	75	38	64	253

Figure 6.12 Corporate Activities expenditure

Headlines

6.111. Although there will be increased requirements in some of these areas as we expand DSO capability and carry out additional reinforcement programmes, these will be absorbed within existing resources, thanks to process improvements and efficiencies.

6.112. To deliver our commitments, we also forecast some additional expenditure for increased social outreach projects for vulnerable customers. We will continue to offer fuel poverty advice, along with new projects to protect vulnerable customers in a smart future.

Workforce resilience

6.113. Working and operating on the electricity network requires staff to be fully trained and competent to undertake the required activities safely following prescribed procedures. The adoption of more smart ways to operate the network and manage data will call for new skills, as well as the recruitment and training of appropriately skilled staff.

6.114. The costs of training staff form about 2% of Totex.

Workforce Resilience					
£m, 20/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	9	10	6	7	31
RIIO-ED2 Annual Average (forecast)	8	10	6	7	31
RIIO-ED2 Total (5 years)	39	51	28	36	154

Figure 6.13 Workforce Resilience expenditure

Headlines

6.115. Our existing apprenticeship, skills trainee, graduate and technical staff trainee programmes have enabled us to maintain the right number and mix of staff to deliver our programmes of work successfully. We expect the development of these trainee programmes will continue to deliver the right outcomes for us during RIIO-ED2.

6.116. To train additional staff, we are able to adapt existing space to create extra workshops and classrooms in our training centres and satellite facilities. We have a proven record of being able

to recruit and 'train the trainer' and have continued to run a significant apprentice programme since DPCR3 (2000-2005).

6.117. WPD will continue to invest in staff development in RIIO-ED2. Our workforce renewal programme for RIIO-ED2 will continue to make sure our staff have relevant skills in the evolving energy sector, including DSO and commercial skills, as well as core engineering expertise. WPD is committed to achieving the Investors in People (IIP) award, gaining platinum accreditation. Our strategy will also focus on enhancing gender and BAME representation, and driving benefits from a more diverse workforce.

Vehicles, IT, property and engineering equipment

6.118. This section covers the capital purchase of non-network assets and associated running (opex) costs to support these assets including:

- Purchase of vehicles and associated running costs (e.g. fuel, vehicle maintenance)
- Purchase of non-operational IT systems and equipment (business systems that are not primarily used in the real time management of network assets) and associated running costs
- Purchase and refurbishment of non-operational property (including local depots and corporate offices) and running costs of existing property
- Purchase of small tools, equipment, plant and machinery

6.119. Due to the expanded importance of these areas, these costs will represent 15% of Totex in RIIO-ED2, increasing from 12% in RIIO- ED1.

Vehicles, IT, Property & Engineering Equipment					
£m, 20/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	39	39	26	37	141
RIIO-ED2 Annual Average (forecast)	52	56	33	51	192
RIIO-ED2 Total (5 years)	261	279	167	254	962

Figure 6.14 Vehicles, IT, Property and Engineering Equipment expenditure

Operational vehicle fleet

6.120. In line with our core commitments, we will replace 89% of our existing commercial van vehicle fleet with electric vehicles by 2028. While the market prices for electric vehicles are currently higher than those for diesel models, there are clear environmental benefits, as well as lower fuel and maintenance costs.

6.121. We will also replace at least 50 of our worst polluting mobile generators during RIIO-ED2, as part of our commitment to net zero. These will be replaced with modern, more efficient, improved emission versions.

Non-operational IT and Telecoms expenditure

6.122. We are forecasting additional non-operational IT expenditure, associated with:

- Development of our DSO capabilities which includes data & digitalisation and network analysis requirements
- Proposed fibre network expansion to strengthen telecoms resilience in light of the growing demands for real time data collection and transmission back to control

- Construction of additional telecoms sites and refurbishment of others to extend remote control and monitoring functionality of the electricity network
- Upgrading of backhaul network facilities
- Cyber resilience IT to tackle an expected growth in cyber security risks, including a new data centre security upgrade (associated property costs are also included in the forecast).

6.123. IT and Telecoms running costs will also increase. We are forecasting additional expenditure in the following areas:

- IT infrastructure hardware and software maintenance and support costs associated with the development of our DSO capabilities
- Business applications growth resulting in the increased requirement for hardware and software maintenance
- Increased number of IT staff, including those to join our cyber security team, to ensure we remain able to meet increasing demands for more complex IT systems
- IT cyber resilience maintenance costs, including IT security software and hardware maintenance and system penetration testing.

Property

6.124. WPD has a property portfolio of 63 non-operational sites and 31 garages. Ownership is a combination of freeholds and leaseholds, with significant variation in the age of buildings. Work has begun to assess potential construction and refurbishment requirements in RIIO-ED2, as well as installation of renewable local generation at all sites.

Other costs within the price control

6.125. These costs include innovation and atypical costs.

Other Costs Within Price Control					
£m, 20/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	4	2	2	3	11
RIIO-ED2 Annual Average (forecast)	0	0	0	0	1
RIIO-ED2 Total (5 years)	1	1	1	1	4

Figure 6.15 Other Costs expenditure

6.126. Innovation is primarily funded through the Network Innovation Allowance (NIA) and Network Innovation Competition (NIC) with the NIC being replaced by the Strategic Innovation Fund in RIIO-ED2). DNOs fund approximately 10% of the costs, which are included in Totex as part of Other Costs.

6.127. For RIIO-ED2, Ofgem is proposing to continue its NIA funding, but restrict eligibility to projects which advance the UK's net zero goals and tackle consumer vulnerability. WPD plans to play an active part and will continue to invest in these innovation activities. RIIO-ED2 expenditure is likely to be fairly consistent with RIIO-ED1 levels.

6.128. Additional investment will also be specifically targeted at projects which promote technological advances to network assets, support community energy projects and explore non-carbon related environmental benefits. As these will not be eligible for NIA, these are forecast in Engineering Management.

6.129. No costs have been forecast for the Strategic Innovation Fund. This is a competitive process across the wider industry and difficult to forecast at this stage. We expect to participate fully and work with a range of partners to develop projects for submission.

6.130. Atypical costs are those costs that are one-off and/or not foreseen for inclusion in a business plan. For this reason, we are not forecasting any in this Business Plan.

Driving business efficiency to keep bills low

6.131. WPD's ambition is to deliver a network which meets future energy requirements, as well as continuing to deliver industry-leading customer service at an efficient cost.

6.132. During RIIO-ED1, we have focused on delivering the work programmes specified in our business plan and outputs agreed with our stakeholders. In addition, we have delivered many other outputs not foreseen before the start of RIIO-ED1 (including establishing a DSO capability). We deliver on our proposals and respond to our stakeholders.

6.133. This is reflected in our RIIO-ED1 expenditure profile, where we have clearly delivered the investment programmes to which we were committed, as well as making service enhancements beyond our original RIIO-ED1 pledges. The costs of these service enhancements have been offset by efficiencies throughout the period.

6.134. Efficiency and value for customers is very important to us. We have been working to understand our current cost efficiency performance and will use our findings to inform and challenge our costs for RIIO-ED2.

6.135. We believe efficiency should consider both the cost of delivery and customer benefits. This reflects our commitment to provide value for money without compromising our high standards of customer service. This is supported by our stakeholders who have told us that efficiency is about much more than just the cost of delivery.

6.136. In RIIO-ED2, we are committed to delivering efficiencies on total expenditure. Some efficiencies have been embedded in this forecast while others will be wider forecast productivity improvements linked to trends in the wider economy (known as Ongoing Efficiency).

6.137. In the long term, customers will see benefit from WPD's industry-leading work to advance DSO functionality and whole system thinking. The development of flexible solutions, working closely with transmission, customers and third parties, has begun to unlock a wealth of efficiency opportunities that will provide benefits for customers.

6.138. Our commitment to efficiency in our 'business as usual' activities means that bills will not increase by more than necessary. Wherever possible, we will continue to minimise and mitigate cost pressures, including those over which we have little direct control. In particular, we are expecting the costs of both direct and contracted labour and materials to increase above inflation (known as Real Price Effects or RPEs). While we will make every effort not to pass these price pressures onto our customers, we cannot ignore them.

6.139. We are currently assuming that the effect of cost increases as a result of RPEs will be offset by the productivity improvements (ongoing efficiency) we will implement in RIIO-ED2. We are continuing to develop our thinking and analysis on these factors and will review this position for future versions of the Business Plan.

Bill impact

6.140. We are proposing to spend more money per year than in RIIO-ED1 in order to deliver the commitments contained in this document, as well as to deliver against key government policy including the transition to a net zero carbon future. Based on current financing assumptions, we are anticipating that despite this increased expenditure, customer bills will remain broadly the same as they are today – at £96 per year for the average domestic customer.

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Chapter 7

Managing uncertainty

7. Managing uncertainty

Summary

7.1. We recognise the need for our business plan to be flexible to adapt to evolving circumstances in an increasingly complex world. Whilst some types of work to manage the network are certain, the absolute volumes of activity could evolve over time. Uncertainty can become apparent due to potential changes in legislation and government policy and unforeseen events such as Covid-19, as seen in the current price control period.

7.2. Uncertainty mechanisms are financial mechanisms that flex the allowed revenue for DNOs, linked to changes in requirements not factored in to baselines at the time, protecting both customers and companies from risk.

7.3. This chapter sets out how uncertainty mechanisms work and also demonstrates how we will be adaptive to change.

Uncertainty

Uncertainty mechanisms

7.4. Our RIIO-ED2 business plan includes costs where we have robust information to support the volumes of work proposed, based on historical information where relevant, and detailed stakeholder engagement, However, forecasting of workload and costs for a five year price control will always involve some uncertainty, particularly when the Business Plan is submitted two years before the start of the period. Inevitably, things will change between the time of the plan's submission and the end of the period. Many of these changes will not be significant and will therefore require no adjustment to the plan.

7.5. However, where the impact is material due to either:

- A substantial shift in external policy – e.g. legislation or government policy
- Changes to the amount that is being delivered compared to the level originally funded under the price control – e.g. levels of electric vehicle or heat pump take-up compared to the forecast
- A risk outside of WPD's control – e.g. a pandemic

In these cases, a mechanism needs to be in place to allow adjustments to allowed revenue to cover any changes. These are called uncertainty mechanisms.

7.6. Although we are well placed to manage the risk to delivery of our plan, some areas of uncertainty call for additional mechanisms because of the external nature of the uncertainty and its potential impact. This is particularly true at present, when distribution networks face growing demands to be flexible as they adapt to changing circumstances in an increasingly complex world. Uncertainty mechanisms allow the revenues of network companies to change in line with changing requirements, protecting both customers and companies from risk.

7.7. Uncertainty mechanisms can be:

- Volume driver –where there is uncertainty about the future level of demand
- Re-opener mechanism – where the needs case, timing or scope of a project is unclear
- Pass through mechanism – where expenditure is entirely outside the company's control
- Indexation – where the evolution of prices is unknown
- Use-it-or-lose allowance - to adjust allowances where a specific activity has to be done but the costs are uncertain.

7.8. In the period 2023 to 2028, it is clear that the drive to transform the energy sector – including significant changes in the operation of the energy market and the connection of electric vehicle charging points and heat pumps will bring uncertainties. Although we have every confidence in our forecast, there will always be a level of uncertainty regarding the actual number of new connections delivered by 2028.

7.9. Reinforcement is a major expenditure area currently under internal review. We are updating our forecasts and scenarios in line with those published as part of the Business Plan Guidance. We will also consider how these reinforcement activities could be funded through the price control. This could include a combination of baseline allowances and uncertainty mechanisms including volume drivers. Volume drivers allow allowances to be adjusted in line with actual volumes of work delivered.

7.10. Uncertainty can become apparent as a result of changes in legislation and government policy which take place after the Business Plan has been submitted and can have a material impact on costs. That's why we propose uncertainty mechanisms, as part of our Business Plan, which allow for an additional revenue that could not be forecasted, or wasn't allowed, as part of this price control settlement.

7.11. Uncertainty can also require us to adapt our processes and procedures enabling us to continue to deliver excellent service in an ever changing and dynamic market place.

7.12. The proposals in this second draft Business Plan have been derived using the most up-to-date information available and therefore represent WPD's current forecast of expenditure.

7.13. Ofgem has recognised the need for uncertainty mechanisms and has included a number of these for RIIO-ED2:

7.14. We continue to review our current forecast of expenditure and Ofgem's proposals to determine how these would work for WPD and also whether there are any other mechanisms that we could propose that would be appropriate for our plan.

7.15. That is why we have not included a list of uncertainty mechanisms in the plan at this stage. These will be included as part of our submission in July 2021.

Uncertainty Mechanisms for RIIO-ED2
Cyber Resilience Information Technology
Cyber Resilience Operational Technology
Physical Site Security
Black Start
Net Zero
Strategic Investment /Load Related Reopener
Coordinated Adjustment Mechanism
Environmental legislation
Street works

Figure 7.1 Uncertainty Mechanisms

Adapting to change

7.16. WPD recognises that the UK is experiencing a period of significant change as it works towards a net zero carbon future.

7.17. As a key player in net zero, we need to react quickly to implement the appropriate solutions as electricity demand changes, in response to factors including the expected increase in heat pumps and electric vehicles. We also need to react to unforeseen circumstances and ensure that we maintain the excellent service that our customers expect.

Track record

7.18. We have a proven track record of adapting to change and unforeseen challenges during RIIO-ED1. In that time, we reacted effectively to a series of changing external demands. These included:

- Responding to high levels of distributed generation enquiries (especially for large solar farms) at the beginning of the price control period
- Developing Distribution System Operator (DSO) capabilities and becoming the first Distribution Network Operator (DNO) to publish a fully costed DSO plan
- Being the first to publish Distribution Future Energy Scenario (DFES) documents to forecast the regional distribution of Low Carbon Technologies (LCTs)
- Being the first to commit to a six monthly procurement cycle for flexibility services
- Implementing processes for the removal of transformers potentially contaminated with polychlorinated biphenyls (PCBs) to comply with revised environmental directives.

7.19. None of these challenges could have been identified at the start of RIIO-ED1 and clearly demonstrate WPD's ability to adapt, react and, in many cases, be the first to deliver change.

Responding to the Covid-19 pandemic

7.20. There is no better example of our ability to adapt than our response to the Covid-19 pandemic. From March 2020, the Covid-19 pandemic had a significant impact on our customers, staff and working practices. We had to adapt quickly to minimise the impact on our operations to ensure we maintained our excellent customer service while operating responsibly and safely.

7.21. During the first national lockdown, there was a brief pause in customer-driven works, to protect customers and staff from unnecessary social contact, particularly as much of this work involved entering customers' property. Essential work on restoring power cuts and cutting trees on the network continued throughout the pandemic.

7.22. In response to the financial hardship experienced by some of our customers, we launched our £1m 'Community Matters' fund to support vulnerable customer affected by the outbreak.

7.23. During the pandemic, there was an increase in the number of laptops refurbished, to accommodate the introduction of home working. The number of remote access servers in use has also increased from two to four, to support home working. Skype was introduced to enable internal meetings and presentations to take place remotely.

7.24. Since the start of the pandemic, we have continued to engage extensively with our stakeholders. We have inevitably needed to adapt our approach, for instance, by using online workshops as our principal means of delivering sessions. This did not lead to any dip in attendance rates - if anything, we have seen increased stakeholder representation in some instances, from people who found it easier to participate remotely than to attend events in person.

7.25. By continuing to engage regularly throughout the pandemic, and always including questions on the impact of Covid-19, we have been able to build a continually refreshed understanding of

stakeholder views. This has been very important as the impact of the pandemic has shifted throughout the year.

7.26. The learning from the Covid-19 pandemic will be used to prepare us for any similar event that may occur in RIIO-ED2, with many of these protocols able to be put into place quickly and effectively should a similar event occur.

Adapting in RIIO-ED2

7.27. As we enter RIIO-ED2, we'll be operating in an even more dynamic energy sector, making our ability to respond quickly to challenges even more critical. This will be particularly relevant to the unpredictable growth of LCTs but also to other events including changes to environmental legislation or post-Covid requirements.

7.28. To help achieve this, WPD has created a simple model to show how we will adapt rapidly to meet the changing needs of our stakeholders and the energy market.

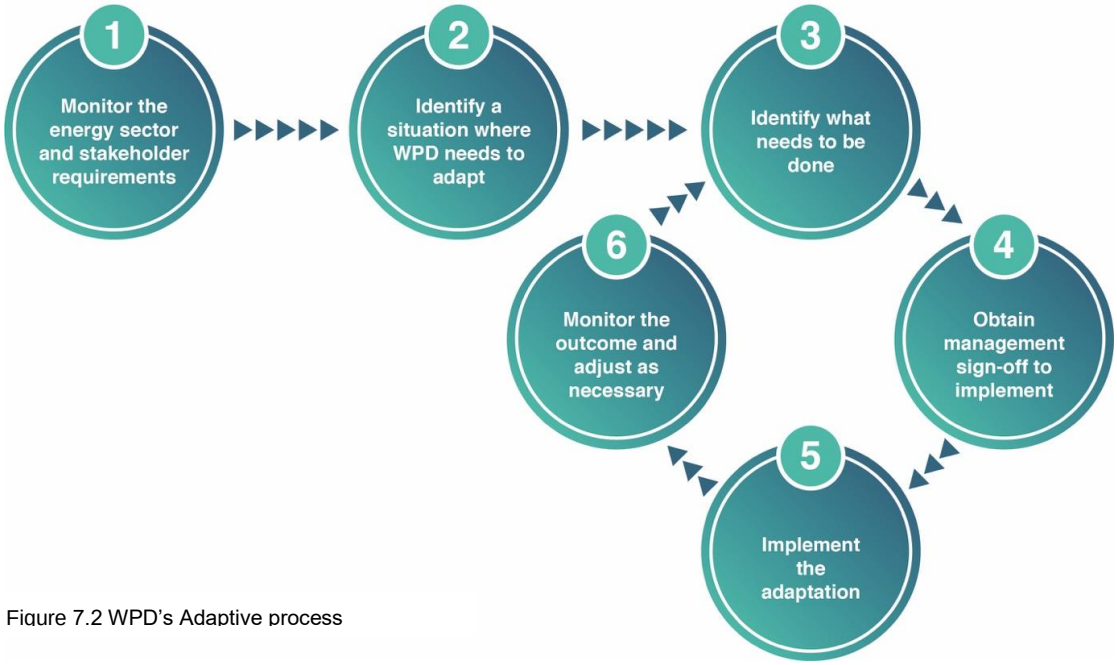

Figure 7.2 WPD's Adaptive process

1. Monitor the energy sector and stakeholder requirements

   – We will ensure we are engaged with our stakeholders to understand the changes needed to meet their expectations. This will involve an extensive programme of generic and bespoke stakeholder engagement, including annual engagement with local authorities, annual stakeholder workshops, bespoke sessions with connections customers and community energy groups, as well as liaison with government, the regulator and industry groups. We will also need to monitor the outputs from experts across the industry to ensure we can identify emerging trends. WPD already engages extensively in all of these activities and will continue to do so throughout RIIO-ED2.

2. Identify a situation where WPD needs to adapt

   – Staff must be empowered to identify changes which will lead to improvements at WPD. To do this, they must feel able to make a recommendation and see it through. We

believe this culture already exists at WPD and that it is supported by our purpose and values.

3. Identify what needs to be done

   - To develop the best solutions to meet the needs of a rapidly changing market, we must continue to recruit and retain the best and most experienced staff. These staff are crucial to enable WPD to adapt and respond effectively to the challenges ahead. This commitment to our staff will continue to be critical as we progress through RIIO-ED2.

4. Obtain management sign-off to implement

   - At WPD, there are only two levels of management between the executive and junior management which means decisions can be made more quickly. All staff have the power to propose changes and solutions which can be actioned within departments, or escalated rapidly to senior level where there are wider implications for the business. The speed of this sign-off is key to our ability to respond quickly and appropriately to changing demands.

5. Implement the adaptation

   - To maximise effectiveness, it is vital that adaptations are actioned as quickly as possible. The consequences of these changes (including those made to data collection and reporting) should be addressed at the same time. At WPD, we pride ourselves on adapting to, and delivering on, our stakeholders' expectations which is why we are confident we can continue to implement changes quickly and efficiently during RIIO-ED2.

6. Monitor the outcome and adjust as necessary

   - We will continue to engage extensively with stakeholders and to monitor the effectiveness of changes to ensure we have delivered the desired outcomes for our stakeholders. Where processes need to be revised, alternative solutions will be developed as quickly as possible to ensure we create maximum benefit at the earliest opportunity.

7.29. These key steps are already in place at WPD. As some parts of the process are informal, we are working to create a more recognised and transparent model that can be used for successful adaptations across WPD. We are confident that we have a culture and capacity that enables us to adapt quickly in response to emerging issues. As an 'enabler', we develop and implement solutions quickly and will continue to keep abreast of changing stakeholder requirements to make sure we uphold our reputation for adapting effectively and efficiently to change.

Chapter 8

Competition

8. Competition

Summary

8.1. WPD supports competition in electricity distribution wherever it can deliver benefits for consumers. In our sector, we have already seen a number of areas opened up to wider competition, including connections, metering and the introduction of Independent Distribution Network Operators.

8.2. This chapter explains the different types of competition.

Types of competition

Native competition

8.3. Native competition is competition run by DNOs within their price control.

8.4. Our approach to native competition is based on the following principles:

- Demonstrating innovation and fresh thinking in approaching the market
- Effective use of insourcing, and limited use of contractors where required, to embed competition between our teams and add customer value
- Keeping abreast of developments in the market and acting quickly when we see opportunities to innovate and do things differently.
- Continuing to fund the development of innovative products and services where these are not market ready
- Continuing to look for opportunities to deploy early-or late-stage competition models where a new high-value project emerges.

8.5. During RIIO-ED2, we will continue to be ambitious by exploring and improving our native approach to competition to ensure we deliver the best outcomes for consumers which considers the flexibility in a period of significant evolving policy landscape with greater contractual certainty, quality and lower costs.

8.6. WPD's insourcing model allows us full control of the end-to-end process with our customers with clear lines of ownership and responsibility bringing us closer to the customer. It has also enabled us to respond quickly to changing circumstances, deliver efficiencies, avoid contractual disputes and ensure we retain full knowledge and expertise within our business.

8.7. In an evolving policy landscape, which is influenced by the growth of new initiatives, including community energy and Vehicle to Grid (V2G) technology, DNOs are well placed to facilitate and develop opportunities for a future market.

8.8. We do not believe there are significant new opportunities for further competition in RIIO-ED2 to deliver customer benefits beyond those we are already using in RIIO-ED1. These will continue into RIIO-ED2- for example WPD was the first DNO to seek alternative solutions to traditional network reinforcement for the £140m of reinforcement planned for the last three years of RIIO-ED1.

8.9. Chapter 5 sets out our plans for using and incorporating third party contracts and flexibility options within our plan to deliver the most efficient solution.

8.10. We are proud to be industry-leading in the way we have tested the market for alternative solutions to network capacity issues. In 2020, WPD was the first DNO to go out to tender for flexibility contracts on all the areas of reinforcement planned for the last three years of RIIO-ED1.

Early competition

8.11. Early competition refers to competition that occurs prior to the detailed design, surveying and consenting phases of a large project.

8.12. We do not have any specific projects identified that exceed, or have the potential to exceed, the £50m threshold identified for early competition in our RIIO-ED2 business plan. We will continue to review this position as we receive further clarity on the UK's decarbonisation pathways and the potential for more and larger projects to be considered.

Late competition

8.13. Late competition is where a decision is made later on in a project programme, prior to physical construction, to open the delivery of a large project up to competition.

8.14. We do not have any projects identified in our RIIO-ED2 plan that either exceed, or have the potential to exceed the £100m identified by Ofgem for late competition.

8.15. We will continue to ensure and demonstrate that all investments, regardless of size, achieve the best outcome for consumers through the implementation of our plan.

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Chapter 9

Financing the plan

Chapter 9

9. Financing our plan

Summary

9.1. Our Business Plan explains the work with our stakeholders to build a plan that delivers the outputs they require in an evolving energy landscape.

9.2. Our proposed RIIO-ED2 financing package will provide the funding to deliver these outputs along with a package of incentives required to compensate investors for risks associated with delivering the agreed outputs over the next five years.

9.3. The content of this section builds on Ofgem's Finance Annex of the Sector Specific Methodology Decision (SSMD), which was published on 11 March 2021.

Financial package

9.4. We are still analysing the content of this Finance Annex, and we will provide further details on the financing elements of our Business Plan in our third publication, to be published in July 2021. The table below sets out what is included in the 'Financing our Plan' chapter of this second draft of our business plan, and the additional information that is to follow in our July 2021 Business Plan. Any relevant information included in the second version will also be included in the third version of the Business Plan. A final version of our Business Plan will be published in December 2021.

Business Plan 2	Business Plan 3	Reason
Ofgem's working assumptions from the SSMD Finance Annex	WPD's proposed assumptions, having evaluated Ofgem's SSMD Finance Annex proposals	Further analysis is required to understand whether we consider the Business Plan is financeable under Ofgem's latest working assumptions. Inclusion of Ofgem's assumptions in this chapter does not mean that we have accepted these assumptions. Our July 2021 Business Plan publication will set out our evaluation of whether our Business Plan is financeable under Ofgem's working assumptions and include details of the assumptions we intend to use. The values included elsewhere in this Business Plan have been calculated using WPD's own assumptions at this stage.
High level financial projections	Detailed financial projections for each year of the RIIO-ED2 period	Further work is required to build in feedback from the second publication of our Business Plan, and evaluate how any uncertainty mechanisms will impact financial projections, before providing further details.
Target credit rating for the notional company	Financial ratios calculated using Ofgem's working assumptions	Financial ratios will be an output of Ofgem's Business Plan Financial Model (BPFM) which is not due to be issued by Ofgem until April 2021.
Details of Ofgem stress test scenarios required	Outcome of Ofgem stress test scenarios	Stress testing will be performed using Ofgem's BPFM which is not due to be issued by Ofgem until April 2021.

	Any additional stress tests WPD considers are required at this stage.	Stress testing will be performed using Ofgem's BPFM which is not due to be issued by Ofgem until April 2021.
	WPD's proposed Totex capitalisation and depreciation rates.	Further analysis will be required based on the outcome of the BPFM before capitalisation and depreciation rates can be proposed.
	Dividend and equity issuance policies	Further analysis will be required based on the outcome of the BPFM before dividend and equity issuance policies can be decided.
	Evolution of the RAV	The evolution of the RAV is dependent upon the finalisation of expenditure, and capitalisation and depreciation rates.
	WPD's revenue requirements for RIIO-ED2	WPD's revenue requirements are dependent upon the finalisation of all of the above.
	Details of the sources and uses of cash during RIIO-ED2	The amount of cash required by WPD in RIIO-ED2 is dependent upon the finalisation of all of the above.
High level indications of the impact of WPD's Business Plan on customer bills.	Further details on the impact on customer bills	The calculation of the impact on customer bills relies upon the revenue requirements, which is dependent upon the finalisation of the items set out above.
Background on asset lives, current pensions, tax and related party arrangements	Further detail in relation to pensions, tax and related party assumptions, including a breakdown of RIIO-ED2 cost projections in these areas.	Calculation of pensions' costs and tax charges and allowances will follow with detailed financial projections included in the third draft of our Business Plan. WPD will confirm its position on asset lives as part of the financeability analysis conducted using Ofgem's BPFM.
	Stakeholder feedback	We are in the process of engaging with stakeholders, including our core investor community, and we will provide details of the outcome of this once available.

Figure 9.1 – Financing the Plan – contents

Financial projections for the RIIO-ED2 period

9.5. We set out below our current high level Totex expenditure projections for the RIIO-ED2 period. Further work is required to build in feedback from this second publication of our Business Plan, and evaluate how any potential uncertainty mechanisms will impact financial projections, before providing further details.

9.6. One of the areas of uncertainty which we will need to consider is the funding of our RIIO-ED2 reinforcement expenditure, given the additional challenges set out in the government's net zero legislation.

9.7. The table below splits out reinforcement expenditure; WPD is currently evaluating whether this expenditure should form part of up-front allowances or whether elements of it should be subject to an uncertainty mechanism. Moving expenditure from ex-ante allowances to uncertainty mechanisms increases risks for investors, which should be reflected in the allowed cost of capital; any uncertainty mechanism is also likely to delay recovery of costs compared to up front allowances, which may then have a negative impact on financeability which would also need to be addressed through the financial parameters.

RIIO-ED2: Financial projections						
£m, 20/21 prices	2023/24	2024/25	2025/26	2026/27	2027/28	Total RIIO-ED2
Reinforcement expenditure	153	167	197	222	258	999
Other Totex expenditure	1,005	1,029	1,033	1,008	989	5,065
WPD Total Totex expenditure	1,159	1,196	1,231	1,231	1,248	6,064

Figure 9.2 RIIO-ED2 Financial projections

Business financing objectives

9.8. Investment is essential to support the UK's transition to net zero carbon emissions. As set out in this Business Plan, there is therefore a need for continued and significant investment in our electricity distribution network. Ofgem's statutory duty to ensure that efficient companies should be able to finance their activities is key to attracting this future investment[1].

Key financial ratios

9.9. The Ofgem BPFM will generate the ratios used by Ratings Agencies to evaluate credit ratings, including those which Ofgem has specified it will be reviewing. We will use these ratios to assess whether our draft Business Plan is financeable under Ofgem's working assumptions. This will involve analysing outcomes in Ofgem's BPFM. The ratios Ofgem has stated it will look at[2] are:

- Gearing;
- FFO Interest Cover (including accretions);
- FFO Interest Cover (cash interest);
- Adjusted Interest Cover Ratio (AICR) or PMICR[3];
- Nominal PMICR[4];
- FFO/Net Debt; and
- RCF/Net Debt.

9.10. Ofgem stated its approach to assessing financeability in 2019[5], which includes:

- Assessing financeability on a notional basis at the individual licensee level;
- Considering a suite of financial ratios, including the average over the five year control and any trend;
- Consideration of qualitative factors alongside financial ratios;
- Setting the notional gearing level at the start of the price control with modelled gearing allowed to fluctuate in accordance with price control cash flows; and
- Carrying out sensitivity testing to assess the resilience of financial ratios under different scenarios.

9.11. We will consider Ofgem's approach to financeability and following rating agency methodologies as minimum financeability requirements, alongside any further financeability considerations we consider relevant.

9.12. Ofgem also stated that licences will continue to include a requirement to maintain an investment grade credit rating on an actual structure basis.

9.13. The definition of Investment grade included in WPD's current licence is BBB- or higher by Fitch ratings or S&P, Baa3 or higher by Moody's or BBB (low) or higher by DBRS.

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1 "…the Authority has a duty to secure that licensees are able to finance their obligations under the Gas Act and Electricity Act." Appendix 2 - The Authority's powers and duties, p.32, 'Arrangements for responding in the event that an energy network company experiences deteriorating financial health', Ofgem, 12 October 2009.

2 Financeability Assessment for RIIO-ED2: Further Information; Ofgem slide pack, 26 March 2019, slide 6.

3 Alternative ratio can be calculated that adjusts numerator for excess fast money (ratio calculated with reference to actual controllable opex rather than fast pot expenditure)

4 Alternative ratio can be calculated that adjusts numerator for excess fast money (ratio calculated with reference to actual controllable opex rather than fast pot expenditure)

5 Financeability Assessment for RIIO-ED2: Further Information; Ofgem slide pack, 26 March 2019.

WPD's target ratings

9.14. Ofgem stated in the RIIO-ED2 SSMD for Gas and Transmission companies that it would not target a particular rating, but that this was a decision for company boards[6].

9.15. We have adopted a target credit rating of BBB+/Baa1 for the notional company, for RIIO-ED2, for the following reasons:

- Ofgem calculates the RIIO-1 Cost of Debt allowance as the trailing average of actual corporate bond yields issued by entities with A and BBB ratings, as reflected by the relevant iBoxx index. It follows that a company would need to have a rating between BBB+ and A- to incur debt costs reflective of this average.
- Ofgem has transitioned the cost of debt allowance for RIIO-ED2 away from the A/BBB blend of the Non-Financials index to the Utilities iBoxx which does not target a specific rating beyond investment grade. This creates a risk of mismatch between the rating implied in the allowance and the rating of the notional company used in Ofgem's financeability assessment over time. Absent the clarity in the rating in allowance for RIIO-ED2, WPD considers it appropriate for a company to target a rating between BBB+ and A- to maintain consistency with the RIIO-ED1 approach.
- In Ofgem's RIIO-ED2 Final Determinations for the Gas and Transmission companies, Ofgem states: "We consider the credit quality of all GD&T notional companies is two notches above minimum investment grade (BBB+/Baa1 equivalent) in the round and that this headroom over the licence requirement means the notional company is adequately resilient to macro-economic and other downside scenarios."[7]
- A BBB+ allows a level of resilience to withstand unforeseen market shocks, without the loss of investment grade status.
- In its Summary of Final Determinations for the recent water companies' price control appeal, the Competition & Markets Authority (CMA) uses the iBoxx A/BBB benchmark over 15- and 20-year trailing averages as a cross check for its estimates for embedded debt and sets an allowance for new debt costs relative to an iBoxx A/BBB 10+ benchmark[8]. Further, the CMA performed its own financeability analysis with reference to a Baa1 target in its Provisional Findings[9].
- The adoption of a lower credit rating for the RIIO-ED2 financeability assessment whilst maintaining a cost of debt allowance based on a higher rating would result in a shortfall of notional debt funding by Ofgem as companies with lower credit ratings would not be able to borrow at comparable rates to the Ofgem allowance.

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[6] RIIO-ED2 Sector Specific Methodology Decision – Finance, 24 May 2019, p. 92 (para 4.27)

[7] RIIO-ED2 Final Determinations – Finance Annex (REVISED), 03 February 2021, p.190: https://www.ofgem.gov.uk/system/files/docs/2021/02/final_determinations_-_finance_annex_revised_002.pdf

[8] p.26, CMA: Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited Price Determinations, Summary of Final Determinations, 17 March 2021. https://www.gov.uk/government/news/cma-issues-final-decision-on-water-price-controls

[9] Paragraph 10.91, page 700, CMA: Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited Price Determinations, Provisional findings, 29 September 2020 https://assets.publishing.service.gov.uk/media/5f7c467ee90e070dde709cee/Water_provisional_determinations_report_all_-_September_2020_---_web_-online-2.pdf

Ofgem's working assumptions

9.16. Our July Business Plan will include the set of financial metrics detailed by Ofgem and model both the notional and actual financial structures. These financial metrics provided by Ofgem include the working assumptions and interest rate and inflation assumptions.

9.17. Ofgem's working assumptions set out in the March 2021 Sector Specific Methodology Decision document[10] for the RIIO-ED2 Electricity Distribution price control are set out in the table below:

Parameter	Ofgem working assumption, CPIH real
Gearing	60%
Cost of Debt	2.087% average for 2023/24-2027/28 period
Cost of Equity	4.400% average for 2023/24-2027/28 period (after a 0.25% deduction for expected outperformance)
Cost of Capital	3.012% average for 2023/24-2027/28 period

Figure 9.3 Ofgem Sector Specific Methodology Decision working assumptions

9.18. Once we have fully evaluated the financeability of our draft Business Plan using these assumptions, on both a notional and actual capital structure basis, we may adjust the draft Business Plan to ensure it is financeable under Ofgem's working assumptions, or propose an alternative Business Plan using different assumptions. Ofgem's document "Financeability Assessment for RIIO-ED2: Further Information"[11] lists several 'levers' which we could consider adjusting to improve the financeability of the Business Plan:

- Adjusting Capitalisation rates
- Adjusting Depreciation rate (or Asset life)
- Restriction of dividends
- Refinancing of expensive debt
- Adjusting notional gearing

9.19. We note above that Ofgem considers that refinancing existing debt is an option available to licensees to resolve potential financeability issues. It should be noted that much fixed rate debt, in line with standard market practice, has 'make whole' provisions that need to be paid upon the early termination of the debt, meaning that it is not an efficient mechanism, nor beneficial from a cost perspective, to simply refinance debt at a lower cost when interest rates decline. As set out in more detail in our Track Record section, the RIIO-ED1 Cost of Debt allowance does not cover our actual cost of debt for RIIO-ED1, which has a direct impact on our earned equity return. We therefore already have a direct and significant incentive to refinance higher cost debt, and has done so wherever possible. We therefore do not consider that further refinancing of existing debt is an efficient option to resolve financeability issues for RIIO-ED2; Ofgem has a duty to ensure that efficient companies are able to finance their investment and, if the current working assumptions do not allow for this, returns should be adjusted upwards accordingly.

9.20. We are of the view that Ofgem should set the financial parameters so that business plans are financeable without the need to make changes to asset lives and undermine its strong track record of regulatory certainty. We set out further detail on this issue in paragraphs 9.29 – 9.31.

9.21. Our July 2021 Business Plan will provide explanations and evidence to support the capitalisation and regulatory depreciation rates we propose for each year, and explanations and evidence to support any deviation from the above working assumptions.

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[10] RIIO-ED2 Sector Specific Methodology Decision: Annex 3 Finance, 11 March 2021 https://www.ofgem.gov.uk/system/files/docs/2021/03/riio_ed2_ssmd_annex_3_finance.pdf

[11] Financeability Assessment for RIIO-ED2: Further Information; Ofgem slide pack, 26 March 2019.

Ofgem's suggested set of common stress test scenarios

9.22. In its Sector Specific Methodology Consultation document for Gas and Transmission companies, Ofgem stated that it expects all network companies to run the scenarios below as a minimum as part of their July business plan submissions[12]: These stress tests were reiterated by Ofgem in the RIIO-ED2 SSMD.

Factor	Ofgem Proposed Level (relative to working assumption level)
Macro Scenarios	
Interest rate scenarios	±1% compared to forward implied rates as per the base case in each year (for RFR, Libor/SONIA and iBoxx inputs)
CPIH scenarios	±1% in each year
RPI-CPIH divergence scenarios	±0.5% from assumed RPI/CPIH wedge
Performance Scenarios	
Totex performance	±10%
RoRE	±2% compared to base assumption
Other Scenarios	
Proportion of inflation linked debt	±5%*

Figure 9.4 Ofgem suggested scenarios from the Sector Specific Methodology Decision

* Compared to notional company assumption of 25% for notional company analysis and compared to actual company proportion forecast at end of RIIO-1 for actual company analysis.

9.23. We will set out the results of these stress tests in our July 2021 Business Plan.

9.24. Ofgem has asked us to test these different scenarios to understand their impact on the financeability of our Business Plan. The key factors that we use to measure the financeability of the plan are the credit ratio limits that we must meet and the Return on Regulatory Equity (RoRE). We will set out the additional scenarios we consider are required at this stage, and provide details of these scenarios, and why they should be considered, in our July 2021 Business Plan.

[12] Paragraph 4.80 and table 19, p.96, RIIO-ED2 Sector Specific Methodology Decision – Finance, 24 May 2019

Availability of capital

9.25. We will need to raise a significant amount of capital during RIIO-ED2 to fund our RIIO-ED2 Totex expenditure of approximately £6bn, which will prove challenging. Significant capital markets exist in the UK, the United States and in Europe and other markets that ensure that, relative to the size of the markets, the capital to be raised should be modest and financeable, provided that the RIIO-ED2 allowed cost of capital is set at an appropriate rate to attract this investment.

9.26. In its report 'Further analysis of Ofgem's proposal to adjust baseline returns'[13], Frontier Economics explains that the societal costs that arise from setting the allowed return too high or too low are not symmetrical. The report highlights that setting the allowed return too low creates a material risk of underinvestment which, in the energy sector, would have socio-economic implications including lower investment in low-carbon technology, delayed transition to carbon neutral goals, curtailment cost, higher failure rates through older assets resulting in lost load and electricity not supplied.

9.27. Such consequences of under investment are considered more harmful to customer interests than marginally higher than necessary network charges as a result of setting the return too high, creating a rational preference for regulators to "aim up" when selecting their point estimate for the cost of capital from their estimated range. The policy of aiming up is confirmed by the CMA in its Summary of Final Determinations for the water companies in the following statement: "Our cost of equity is 0.25% above the mid-point of our range of possible estimates. However, we conclude that a cost of equity of this level is needed to secure finance and to promote investment in the sector in the long-term, in circumstances where equity costs have fallen sharply"[14].

[13] Further analysis of Ofgem's proposal to adjust baseline returns", A report prepared for the ENA, Frontier Economics, September 2020

[14] p.4, CMA: Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited Price Determinations, Summary of Final Determinations, 17 March 2021.
https://www.gov.uk/government/news/cma-issues-final-decision-on-water-price-controls

Other policy areas: Asset lives, current pensions, tax and related party arrangements

9.28. We set out below our current thinking on these policy areas. We are still working through our evaluation of options in relation to some of these areas and will provide further details in our July 2021 Business Plan publication.

Asset lives

9.29. The default assumed asset lives arrangement in the RIIO-ED2 price control period is for all new electricity assets to be depreciated over 45 years, whilst all existing assets continue to be depreciated over the current lives of 20 years - 45 years depending upon the year of investment.

9.30. As stated above, asset lives are one of the levers Ofgem lists which can be used to improve financeability. In January 2011, Ofgem consulted on regulatory asset lives for electricity distribution assets; the outcome of this consultation was a decision to use an average expected economic asset life of 45 years for new assets from the commencement of RIIO-ED1. As part of this review, Ofgem stated that, in the longer term, electricity distribution asset lives should more closely reflect the useful or economic asset life[15]. Ofgem's decision letter also stated that the RIIO approach of using economic lives to determine the regulatory depreciation profile represents a sustainable long-term policy. Ofgem stated that its proposals were supported by consumer representatives.

9.31. We are of the view that, in light of the above, Ofgem should set the financial parameters so that business plans are financeable without the need to make changes to asset lives. We will provide further information on this in our July 2021 Business Plan.

Related party costs

9.32. Our four DNOs are part of the same corporate group. For efficiency reasons, the DNOs operate as an integrated distribution business, with most corporate functions centralised, primarily in WPD South West. That DNO provides services to the other DNOs, the costs of which are charged to those other DNOs on an arm's length basis.

9.33. We also operate a single banking system, with Western Power Distribution (South West) plc acting as the banker for the rest of the Group. Therefore any monies received from third parties or payable to third parties in the normal course of business use the WPD South West bank accounts. Any monies outstanding to or from South West are recognised within the ledger of the respective company and interest is charged on a monthly basis. In line with licence requirements these 'trading balances' are reviewed and/or repaid from time to time. If money is to be loaned to another, non DNO, group company, it has to first meet the regulatory requirements as a permitted company and then the terms of the loan will be made on an arm's length basis at the prevailing market rate.

9.34. For each of the above related party cost transfers, we have robust guidelines in place that have been reviewed by legal counsel to ensure they meet legal and regulatory requirements.

[15] p.3, 'Decision letter on the regulatory asset lives for electricity distribution assets', Ofgem, 31 March 2011 https://www.ofgem.gov.uk/sites/default/files/docs/2011/03/assetlivedecision_0.pdf

Taxation

Basis of tax modelling for tax allowance

9.35. In the Spring 2021 Budget, the government announced that the corporation tax rate would increase to 25% from 1 April 2023. We will therefore use this rate in modelling the tax charge and corresponding tax allowance in the Business Plan for the RIIO-ED2 period.

9.36. Tax for price control purposes is on a cash basis so deferred tax is ignored.

9.37. The calculated notional tax charge will then be uplifted to account for the tax charge on the allowance received. The uplifted amount is the tax allowance.

Capital allowance pools

9.38. In the RIIO-ED1 Final Proposals, Ofgem stated that it would roll forward regulatory tax pool calculations at the end of the RIIO-1 period[16]. We agree that this is the correct approach; any change to opening RIIO-ED2 capital allowance pools would otherwise require an adjustment for the difference from closing RIIO-ED1 pools. We accept that capital allowance pools in the notional tax allowance calculations may have diverged from companies' actual pool balances. However, this divergence is only a temporary timing difference. We have therefore assumed that WPD's RIIO-ED2 opening tax pool balances will be the forecast RIIO-ED1 closing pool balances as calculated in the RIIO-ED1 Price Control Financial Model.

9.39. Total RIIO-ED2 forecast expenditure has then been allocated to the various tax pools using percentage allocations for each DNO, calculated on the basis of the pattern of spend for each individual DNO, as was the case in RIIO-ED1. We are considering making adjustments to these allocations to aim for convergence between actual pool balances and those included in the notional tax allowance calculation by the end of RIIO-ED2. Again we consider this to be the correct approach for Ofgem to adopt for RIIO-ED2.

9.40. Capital allowances will be calculated based on the rates for the RIIO-ED2 period set out in the spring 2021 budget where applicable, or otherwise according to current legislation. Note that there is currently a mismatch between the asset life used in the calculation of the writing down allowance for the deferred revenue expenditure (DRE) tax pool for corporation tax purposes and the asset life used by Ofgem in RIIO-ED1 to calculate tax allowance revenue; for actual corporation tax purposes, writing down allowances for the DRE tax pool are calculated using an asset life of 69 years, whereas Ofgem uses 45 years to calculate DRE writing down allowances in the calculation of the tax allowance. WPD's Business Plan has assumed that the asset life is the same (69 years) for the calculation of DRE writing down allowances for both actual tax expense and tax allowance in RIIO-ED2; we do not consider there to be any reason to assume otherwise.

Business rates

9.41. Business Rates are a tax on the occupation of property. They are based on the rental value of the property set by the Valuation Office, an executive agency of the Inland Revenue. Rates are calculated as rateable value multiplied by the uniform business rate, which is set by Central Government.

9.42. The next revaluation to set rateable values is scheduled to take effect in England and Wales on 1 April 2023. Forecast RIIO-ED2 business rates in this version of the RIIO-ED2 Business Plan are based on the current rateable value, increased in line with inflation. Further details of these costs will be provided in the July 2021 publication of WPD's Business Plan.

[16] Table A9.1, p.101. Ofgem, RIIO-ED1: Final determinations for the slow-track electricity distribution companies, 28 November 2014.

Pensions

9.43. Ongoing pensions' costs and incremental deficit repair payments are included in the various categories of costs in elsewhere in this plan. The remaining pension deficit repair costs are subject to a separate allowance.

Background

9.44. There are two types of pension scheme:

- Final Salary Schemes that provide a pension to employees based on their salary at the time they retire (or leave employment if that is earlier) and their years of service;
- Defined Contribution Schemes that provide a pension that depends on how much was paid into the scheme by the employee and employer.

9.45. Final salary schemes need to be funded on the basis of estimates of the value of investments held by the scheme (the assets) and the projected pension costs (the liabilities). Both the assets and liabilities vary over time and full valuations are carried out every three years. If the assets are worth more than the estimate of the liabilities, there is a surplus. If the assets are worth less than the liabilities, there is a deficit.

9.46. When there is a deficit, companies have a legal obligation to pay in enough money over time to ensure that the deficit is eliminated. The period over which the deficit is eliminated is the deficit recovery period.

9.47. By their nature, defined contribution schemes can have neither a surplus nor a deficit.

9.48. Pensions' matters are overseen by the Pensions Regulator who ensures that companies meet their obligations to the pension schemes under both the pension scheme trust deeds and the Pensions Act.

WPD pension schemes

9.49. We operate two main final salary schemes, the WPD Electricity Supply Pension Scheme (WPD ESPS) for employees and former employees of South West and South Wales; and the CN Electricity Supply Pension Scheme (CN ESPS) for employees and former employees of East Midlands and West Midlands. Both of these final salary schemes are closed to new members.

9.50. We also operate a defined contribution (DC) scheme, the Western Power Pension Scheme (WPPS), for employees that joined WPD after the final salary schemes were closed to new members.

9.51. Ofgem has undertaken to give companies an allowance to pay the regulated 'distribution' portion of the WPD ESPS and the CN ESPS deficits as at 31 March 2010. This is known as the Established Deficit. No specific allowance is available for any deficit that is created after 31 March 2010 although the costs of any such incremental deficit relating to regulated activities will be allowed as part of overall employment costs within Totex. However, because of investment market changes, and changes in estimates of how long pensions are due to be paid, the March 2010 deficit is revalued from time to time.

9.52. As set out by Ofgem in the SSMD Finance Annex, the allowances for companies' Established Deficits are updated through a triennial review. The last review was completed in November 2020 and the next triennial review will be in November 2023. Ofgem has stated that this review sits outside the RIIO-ED2 price control review.[17]

9.53. We will provide a breakdown of pensions costs included in our RIIO-ED2 Business Plan in the July 2021 publication.

Our revenue request for RIIO-ED2

9.54. Our core expenditure costs (Totex costs) are split between fast pot and slow pot:

- fast pot costs incurred in RIIO-ED2 are recovered in RIIO-ED2;
- slow pot costs incurred in RIIO-ED2 are spread over a number of years (known as RAV depreciation) to reflect the long term value of network assets.

9.55. In addition to the items above, customer bills in RIIO-ED2 may also be adjusted for the following items:

- RIIO-ED1 incentives/cost true-up: our plan takes into account variances between allowances and actual expenditure in RIIO-ED1 that will be dealt with in RIIO-ED2 and rewards earned in RIIO-ED1 but paid in RIIO-ED2. Note that RIIO-ED2 incentive rewards including IIS are not included in this plan and;
- Revenue profiling. Our current high-level projections in this second iteration of our Business Plan do not include any revenue profiling for the RIIO-ED2 period.

9.56. Our customer bills are therefore made-up of the following items:

- fast pot costs (including normal pensions);
- depreciation (including normal pensions) on RIIO-ED2 and previous price control slow pot costs;
- pensions deficit repair payments (including true-ups from previous price controls);
- rates and licence fees;
- transmission exit charges;
- RIIO-ED1 incentive/costs true-up;
- financing costs;
- tax payment allowances; and
- revenue profiling, where applicable.

Sources and uses of funds

9.57. Our work and investment in the network during the RIIO-ED2 period will require funding. This funding will largely come from revenues but will also require new capital to be raised. We will provide detailed information showing the sources and uses of cash during RIIO-ED2 for our four DNOs in our July 2021 Business Plan. We are still in the process of discussing our Business Plan with our stakeholders and digesting SSMD, and assessing financeability.

[17] SSMD Finance Annex, p.70.

Impact on customers' bills

9.58. Modelled changes in customers' bills are driven by a number of key areas of expenditure, and by the financial parameters, including the working assumptions set by Ofgem. These may include:

- The switch to CPIH from RPI inflation required by Ofgem
- Changes to Incentives revenues, if these are included in the base line modelling;
- Changes to Totex allowances;
- Changes to pass through costs;
- Changes to pension deficit repair allowances;
- Changes to the allowed Cost of capital (WACC); and
- Changes to Totex capitalisation and asset lives.

9.59. Our current calculations estimate that the impact of the increased expenditure set out above would result in an approximate £1.95 increase on the average domestic bill in 2022/23, if all other elements of the price control were unchanged. However, it is likely that that this will be more than offset by changes to the financing parameters and other aspects of the RIIO-ED2 price control process. The combination of these changes means that we intend to keep the average RIIO-ED2 domestic customer bill broadly in line with the end of RIIO-ED1.

Board assurance regarding the proposed financial package for RIIO-ED2

9.60. In our July 2021 Business Plan publication, we will provide a detailed assessment of the financial package prescribed by Ofgem in the published Business Plan Guidance document and the SSMD Finance Annex, and whether the Board is satisfied that our licensees are financeable on both a notional and actual capital structure basis.

WESTERN POWER DISTRIBUTION

Serving the Midlands, South West and Wales

Chapter 10

Glossary

10. Glossary

A

Accident Frequency Rate (AFR)
Accident frequency rate is derived from the number of annual accidents and the number of staff, and is expressed as 'accidents per 100 members of staff'.

Active Network Management (ANM)
Using flexible network customers autonomously and in real-time to increase the utilisation of network assets without breaching operational limits, thereby reducing the need for reinforcement, speeding up connections and reducing costs.

Application Programming Interfaces (API)
Flexible Power has created an electronic API, which allows our platform to monitor, instruct and settle all flexibility services without any human interaction. Our work in this area again makes us an industry leader.

Areas of Outstanding Natural Beauty (AONBs)
Improving visual amenity in National Parks and Areas of Outstanding Natural Beauty (AONBs), by identifying and replacing overhead lines with underground cables

B

BEIS
The government's Department for Business, Energy and Industrial Strategy.

Broad Measure of Customer Satisfaction (BMCS)
An incentive scheme made up of a customer satisfaction survey, an assessment of how complaints are dealt with and a review of stakeholder engagement.

Building Research Establishment Environmental Assessment Method (BREEAM)
A methodology used by the building industry to assess the environmental aspects of building construction and refurbishment.

Business Carbon Footprint (BCF)
BCF is a calculation which represents the effect our work has on the environment. BCF is measured and reported using equivalent tonnes of carbon dioxide to express the impact of energy usage in offices, emissions from vehicles and the release of greenhouse gases.

C

Capital expenditure
Expenditure on investment in long-lived distribution assets, including underground cables, overhead electricity lines and substations.

Community Energy
Provides customers an opportunity to make appointments with our expert advisers to learn more about community energy and how to get their own schemes up and running.

Competition in Connections (CIC)
Historically, the incumbent DNO would have provided new connections. Over recent price controls, Ofgem has promoted greater involvement of third parties in both the design of connections and on-site delivery of connections work. This means that third party connection providers compete for the business of providing new connections in a competitive market.

Constraint Management Zones (CMZ)
Constraint Management Zones is a designated area of network which employs commercial techniques to manage electrical constraints.

Customer Connection Steering Group (CCSG)
The Customer Connection Steering Group provides feedback on proposed initiatives and a strategic steer, ensuring that we address the priorities identified by our connection customers.

Customer Engagement Group (CEG)
Ofgem required all utility companies to set up an independent Customer Engagement Group (CEG), to challenge and scrutinise the RIIO-ED2 Business Plans.

Customer Interruptions (CIs)
The number of customers whose supplies have been interrupted per 100 customers per year over all incidents, where an interruption of supply lasts for three minutes or longer, excluding re-interruptions to the supply of customers previously interrupted during the same incident.

Customer Minutes Lost (CMLs)
The average duration of interruptions to supply per year, where an interruption of supply to customer(s) lasts for three minutes or longer.

Customer Service Excellence (CSE) Standard
This is a Government scheme which recognises organisations that provide effective and excellent customer service. Similar assessments were previously awarded through the Charter Mark.

D

Demand Response/Demand Side Response (DSR)
A technique that can be employed to reduce load on the network when maximum demand is reaching or exceeding the capacity of the network. It relies upon commercial agreements being in place with customers who can reduce their load and have agreed to do so under the instruction of the DNO.

Digitalisation
Is the process of using digital technologies to make fundamental changes to the way the network is operated, There has been a gradual increase of digital technologies on the network – from automation to monitoring equipment.

Digitisation
Collecting information about the network using sensors and control equipment is known as digitisation, which also includes converting existing analogue information into digital formats.

Distributed Energy Resources (DER)
Smaller power sources embedded in the distribution network that can be used to provide the power to meet demand.

Distribution Future Energy Scenarios (DFES)
Forecasts the volumes and regional distribution of low carbon technology uptake in our region. This uses stakeholder-informed bottom up analysis to align with national industry-developed future energy scenarios.

Distributed Generation (DG)
Electricity generation connected to the distribution network. It includes wind turbines, domestic solar panels, large scale photo-voltaic farms, hydro-electric power and biomass generators. Sometimes referred to as embedded generation.

Distribution Network Operators (DNOs)
A DNO is a holder of an electricity distribution licence. There are 14 DNOs which are owned by six different ownership groups.

Distribution Network Options Analysis
The options for investment are considered in the Distribution Network Options Assessment (DNOA) process which determines whether flexibility, conventional reinforcement or alternative innovative approaches provide the most economical solution.

Distribution System Operator (DSO)
It is anticipated that changes to the energy sector will require Distribution Network Operators to adapt the traditional, passive role of network management and incorporate additional functions with full operational responsibility for forecasting energy production and consumption along with balancing demand and generation on the distribution network.

Distribution Use of System (DUoS) charges
These are the charges levied to electricity suppliers for DNO costs that can be recovered

from customers. The amount is determined through price control reviews.

E

Environmental Action Plan (EAP)
Environmental Action Plan sets out our ambitions to meet our stakeholders' net zero expectations, by reducing our environmental impact.

Embodied Carbon
This is the carbon footprint of a material or a product. It takes into account how much greenhouse gas (GHG) is released throughout the supply chain and is often measured over the entire life cycle of a product or service.

Energy Networks Association (ENA)
The industry body for UK transmission and distribution network operators for gas and electricity in the UK and Ireland.

Engagement
The process by which an organisation involves people who may be affected by the decisions it makes, or can influence the way in which actions are delivered.

ESG
The Environment, Social and Governance criteria has been set by the Institutional Shareholding Services Inc, consist of standards for company operations that can be used by socially conscious investors to screen potential investments, and by wider stakeholders as assurance of a company's ethical approach.

ESO FES
The Electricity System Operator (ESO) has published Future Energy Scenarios (FES). These scenarios are intended to provide credible pathways for the future of energy, with each scenario considering how much energy will be required and where that energy may come from.

ESQCR
Electricity, Safety, Quality and Continuity Regulations 2002. The ESQCR specify safety standards, which aim to protect the general public and customers from danger.

Extra High Voltage (EHV)
Voltages over 20kV up to, but not including, 132kV.

F

Flexible Power
WPD was the first DNO to commit to a six monthly procurement cycle for flexibility services. Our customer-facing flexibility service, is known as 'Flexible Power', uses an electronic, automated dispatch platform.

Flexible Services
Techniques used to provide more capacity in the network or reduce demand. These are provided by third parties through contractual arrangements. They can offset the need for reinforcement work.

Fuel poverty
Fuel poverty describes circumstances where customers struggle to afford electricity and to effectively heat their properties.

G

Green Recovery
The government's plan to stimulate greener investment and cut emissions, following on from Coronavirus.

Guaranteed Standards of Performance (GSOPs)
Guaranteed Standards of Performance set minimum service levels to be met across a range of activities covering supply interruptions, appointments and connections.

H

Health and Safety Executive (HSE)
A government organisation that has the responsibility of enforcing health and safety legislation.

Heat Pump
Systems which capture heat energy from the ground, bodies of water or air. They can be used for space heating, water heating, heat recovery and cooling in a range of buildings. A supply of electricity is required to power the heat pump system.

High Voltage (HV)
Voltages over 1kV and up to, but not including, 22kV.

I

Independent Distribution Network Operator (IDNO)
A company that can construct new electricity networks, embedded within and connected to the DNOs network, retaining ownership of and being responsible for the operation of the new network.

Independent Connections Provider (ICP)
A third party company that can construct new connections and the associated electricity network on behalf of a customer, with the network being adopted by either an IDNO or the DNO.

Inspections and Maintenance (I&M)
Activities carried out on a routine basis for the visual checking of the external condition of assets and the invasive examination of plant and equipment.

Integrated Network Model (INM)
The INM enables us to align our previously disparate data sets to enable data improvements and a consistent format of network data.

L

LiDAR
Light Detection and Ranging (LiDAR) equipment used to survey our overhead lines for infringement by trees; this allows targeted tree cutting at the optimum time to prevent the trees' growth affecting our network.

Load
The amount of power flowing through an asset or a network. This may also be referred to as demand.

Local Area Energy Plans (LAEPs)
Local authorities are required to develop Local Area Energy Plans to identify the changes they need to make to achieve net zero targets.

Long Term Evolution (LTe)
In telecommunications, Long-Term Evolution is a standard for wireless broadband communication for mobile devices and data terminals. It increases the capacity and speed using a different radio interface together with core network improvements.

Low Carbon Technology (LCT)
This is the collective term for devices that reduce the amount of carbon being used for heating, transport and generation. It includes electric vehicles, heat pumps and solar generation.

Low Voltage (LV)
This refers to voltages up to, but not including, 1kV.

N

NARMs
Network Asset Risk Metrics (NARMs) are used to calculate the future risk associated with an asset over a number of years and to prioritise those assets which need to be changed.

Network Innovation Allowance (NIA)
An allowance agreed as part of the price control to fund smaller scale innovation projects.

Network Innovation Competition (NIC)
An annual funding competition for larger and more complex innovation projects. The NIC (and NIA) replaced the Low Carbon Networks Fund at the commencement of RIIO-ED1.

Net zero
The UK's Climate Change Act (2008) sets out how the UK tackles climate change. The act says that by 2050 the UK Government must reduce greenhouse gas emissions by at least 100% compared with 1990 levels.

O

Office of Gas and Electricity Markets (Ofgem)
Ofgem is responsible for regulating the gas and electricity markets and network monopolies in the UK to ensure customers' needs are protected.

Open Data
The presumption that all data can be shared unless proven otherwise for privacy, security or commercial confidentiality reasons.

Operational Technology (OT)
OT is technology that communicates and interfaces with business systems and physical assets and includes systems including our communications system which allows us to interact remotely with sensors and monitors on the physical distribution network.

P

Polychlorinated biphenyls (PCBs)
PCBs are now known to be highly toxic industrial compounds and were found in the oil of some pre- 1989 transformers and a small range of other equipment.

Perfluorocarbon Tracer (PFT)
A chemical that is injected into fluid filled cables, used to speed up the location of leaks.

Price Control
WPD is a regional monopoly – our customers are such because of where they live and work. WPD is therefore regulated by Ofgem to make sure that we provide a high level of service for the money we are allowed to charge.

Priority Services Register (PSR)
A database that records details about customers in vulnerable circumstances so that additional support can be provided if needed.

Photovoltaic (PV)
Is the conversion of light into electricity using semiconducting materials that exhibit the photovoltaic effect, an example of this is a solar cell.

R

Real Price Effects (RPE)
Increase in prices of materials, direct staff or contract labour, over and above increases in inflation.

Reinforcement
The provision of more network capacity by installing more assets or installing higher rated assets

Remote Terminal Units (RTUs)
RTUs are microprocessor devices that are installed at substations and they collect data from transducers fitted to equipment and enable it to be communicated back to control systems. As they are electronic devices they have relatively short lives.

RIIO (Revenue = incentives + innovation + outputs)
The current regulatory framework, introduced for electricity distribution in 2015/16. It places emphasis on incentives to drive the innovation needed to deliver a sustainable energy network at value for money to existing and future consumers.

RIIO Electricity Distribution 1 (RIIO-ED1)
The eight year price control period that runs from 1 April 2015 to 31 March 2023. It is the first electricity distribution price control that uses the RIIO framework for setting allowances.

RIIO Electricity Distribution 2 (RIIO-ED2)
The electricity distribution price control period that runs from 1 April 2023 to 31 March 2028.

Ofgem has determined that the RIIO-ED2 price control will be five years in length.

S

SBTs
Science-based targets provide a clearly defined pathway for companies to reduce greenhouse gas emissions.

Site of Special Scientific Interest (SSSIs)
A Site of Special Scientific Interest is a formal conversation designation. It can describe an area that is of particular interest to science due to the rare species of fauna or flora it contains, or important geological or physiological features that may lie in its boundaries.

Smart Grid
A generic term for a range of measures that are used to operate electricity networks more flexibly, allowing more generation or demand (load) to be connected and managing the associated power flows.

Smart Meters
Smart meters record the energy consumed within a property and are capable of being read remotely.

Social Contract
A social contract is a framework for the delivery of our stakeholders' priorities, through social and environmental initiatives that go above and beyond our business plan strategy.

Social Value Research
Social value is determined by asking a customer to make a series of trade-offs between different levels of potential service delivery and to assign values to the preferred outcomes they would like us to deliver.

Stakeholder Engagement and Consumer Vulnerability Strategy (SECV)
An incentive mechanism designed to encourage network companies to engage proactively with stakeholders and to deliver a consumer focused, socially responsible and sustainable energy service.

Strategic Innovation Fund (SIF)
The Strategic Innovation Fund will support large scale, strategic innovation projects in RIIO-ED2.

Substation
A part of the distribution network that transforms voltage and allows the re-routing of power by switching the configuration.

Sulphur Hexafluoride (SF_6)
A gas widely used as an insulating medium in transmission and distribution equipment. It has excellent insulating properties but is a potent greenhouse gas. It continues to be used because there are no alternatives available.

Supervisory Control and Data Acquisition (SCADA)
This is the term used for the system that monitors and controls distributed assets. It comprises the remote terminal units, communication infrastructure and human interface within central control rooms.

T

Technical Network Losses
These are losses associated with power flowing through the network.

Time to Connect Incentive (TTC and TTQ)
An incentive scheme which focusses on two elements – the time taken to provide a quotation for a connection and once the offer is accepted the time taken to complete the necessary connection works. Rewards are available to DNOs who outperform common targets set by Ofgem. Time to Connect and Time to Quote targets are expressed in days.

Totex
The licensee's total expenditure (with limited exceptions) on regulated business activities. It includes both capital and operating expenditure items that the licensee has control over.

Transformer
Converts electricity from one voltage to another.

V

Vulnerable Customers

Vulnerable customers include those customers who are medically dependent upon electricity, have special communication requirements, have other special needs with a dependence upon electricity (e.g. stair lift), are elderly, have a transient vulnerability to a power cut or need assistance with energy affordability.

W

Western Power Distribution (WPD)

The electricity distribution network operator that holds four distribution licences for West Midlands, East Midlands, South Wales and South West.

Worst Served Customers

Customers who experience 12 or more higher voltage interruptions over a three year period, with a minimum of three in any one year.

WESTERN POWER DISTRIBUTION

Serving the Midlands, South West and Wales

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