WESTERN POWER DISTRIBUTION

Serving the Midlands, South West and Wales

Our Business Plan 2023 - 2028 First Submission

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Contents

Contents

WPD Chief Executive Phil Swift: "Our commitment to customers for RIIO-ED2"

I am proud to introduce WPD's highly ambitious Business Plan for 2023-2028. It has been co-created with more than 19,000 stakeholders and has received significant levels of support and acceptability from our wider customers.

The energy sector is undergoing a significant and exciting period of change as the UK works towards achieving a net zero carbon future. This Business Plan will place WPD at the heart of that shift. We aim to lead the industry and rise to the challenge of driving crucial changes in energy use and customer behaviour. We will be ready for up to 1.5 million electric vehicles and we will set the benchmark by achieving net zero in our own operations, by 2028. At the same time we will play a crucial role supporting our local communities, while continuing to deliver the highest standards of safety, reliability and customer service that our customers have come to expect from us.

At WPD we keep our promises. We have an impressive track record of delivery and offer the best performance in the UK in terms of network reliability, customer service, vulnerable customer support, stakeholder engagement, innovation and new flexible energy services. So the 8 million customers that rely on us every day, can have confidence that the ambitious, stretching targets contained in this plan will be delivered. We never rest on our laurels; we want to deliver continual improvement and the very best outcomes possible for our customers. Our largest ever stakeholder consultation process has held our feet to the fire, delivered unprecedented levels of scrutiny and collaboration and has driven us to create a well-justified, efficient and pioneering set of proposals for our customers today, as well as future generations.

We have built a deep understanding of the environment in which we are operating and we know that times are tough for many, especially as we emerge from the Covid-19 pandemic. We created our 'In This Together - Community Matters' fund within two weeks of the first national lockdown in March 2020 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 invest up to £59 million to support the green recovery.

Our plans from 2023 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 and we have the capability to adapt quickly if volumes exceed these levels. 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 more than £60 million on their bills.

We will always use flexible services first before we build new infrastructure to maximise the utilisation of the existing network. By doing so we will ensure that energy capacity is available to assist local authorities and industry to realise their net zero ambitions. We will also lead the efforts to respond to 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.

Customers pay for everything we do, so it is essential that we deliver value for money. We recognise our responsibility to respond to the challenges of climate change and post-pandemic recovery, but to do so in a way that is as affordable as possible. We will therefore deliver significant uplifts in investment and performance, whilst keeping our portion of the average domestic customer bill broadly flat, around the average current level of £98.

I am extremely proud that our Business Plan is co-created with stakeholders. We have gone further than ever, consulting a broad and varied range of representatives via a robust engagement process that ensures we understand and meet their needs and expectations. We do not just consult on pre-determined proposals, we enabled stakeholders to start from a blank sheet of paper and have shared decision-making power with them. Of the 19,000 stakeholders engaged during the RIIO-ED2 business planning process, 6,400 of these were direct, in-person engagements, and we have held over 250 engagement events to date. We will continue to seek views and feedback over the coming months prior to final submission to Ofgem in December. In addition, an independent challenge body, the Customer Engagement Group, has provided robust challenge and scrutiny at every stage of the process via more than 140 meetings.

We are publishing this first submission Business Plan, having already consulted on two draft versions with our stakeholders. It is therefore the product of extensive stakeholder influence. I know that it will deliver a wide range of positive outcomes that our customers value highly.

Thank you for your support,

Phil Swift
WPD Chief Executive

Navigating our plan

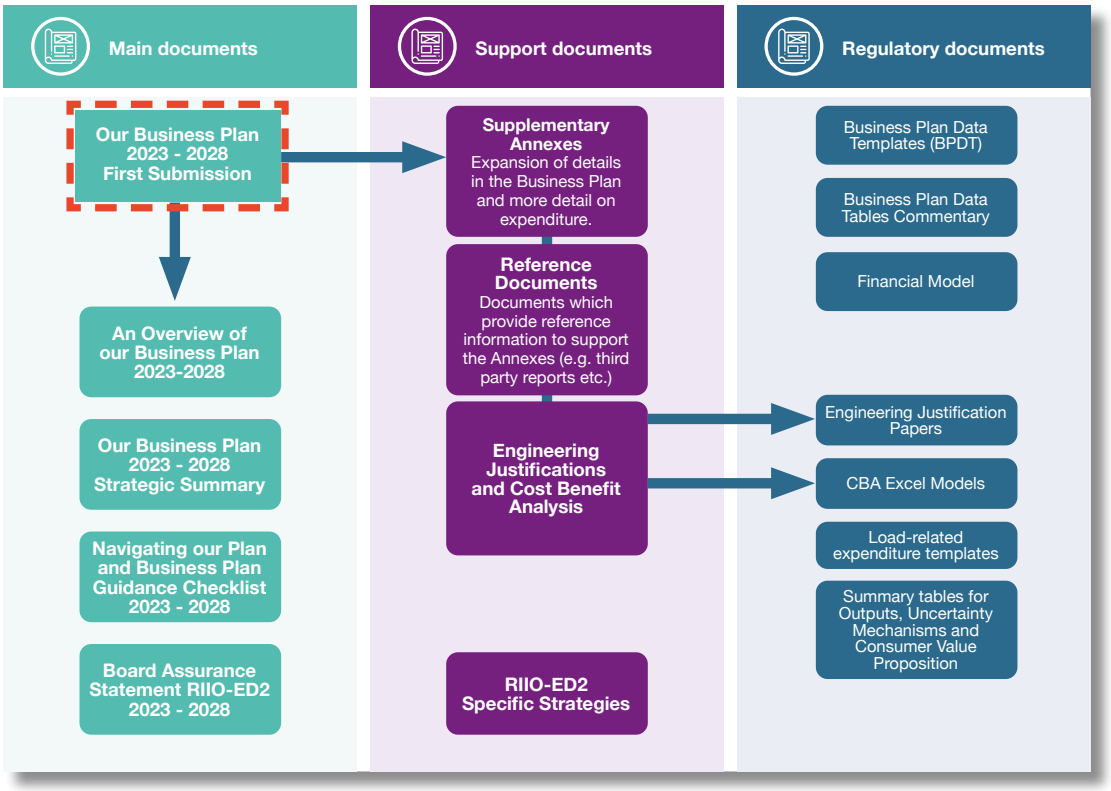
This document is the RIIO-ED2 Business Plan which is part of our first submission to Ofgem.

There are two ways to navigate to individual sections of the document. We have included:

- a hyperlinked contents page above;
- 'buttons' on the right hand side of the page.

The full structure of our submission to Ofgem is shown in figure 1.0.

Figure 1.0 WPD's first submission RIIO-ED2 Business Plan submission structure



A list of our supplementary annexes and RIIO-ED2 specific strategies

Ofgem's Business Plan guidance

In April 2021, Ofgem published the latest Business Plan guidance for RIIO-ED2, which provided a list of the information that should be included in companies' Business Plans.

The Business Plan requirements can be found in our document 'Navigating our plan', which details all of our supporting documents as part of the Business Plan submission.

Supplementary annexes

- SA-01 Governance and assurance
- SA-02 We keep our promises
- SA-03 Giving customers a stronger voice - Enhanced engagement
- SA-04 Our commitments
- SA-05 Delivering a smart and flexible electricity network
- SA-06 Expenditure
- SA-06a Load related expenditure
- SA-07 Managing uncertainty
- SA-08 Competition
- SA-09 Financing our plan
- SA-10 Glossary
- SA-11 Investment appraisal

RIIO-ED2 specific strategies

- Digitalisation Strategy
- Digitalisation Action Plan
- DSO Strategy
- Major Connections Strategy
- Innovation Strategy
- Customer Vulnerability Strategy
- Climate Resilience Strategy
- Workforce Resilience Strategy
- Environmental Action Plan

Chapter 1

A summary of our plan

Chapter 1 Contents

1. A summary of our plan

Who we are and how we serve our communities

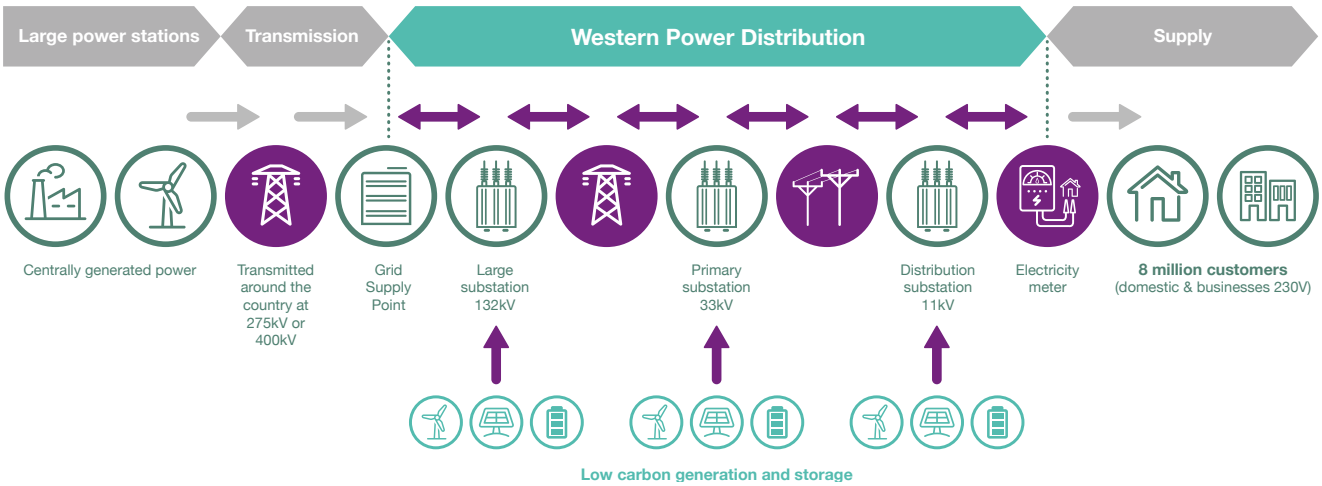
1.1. Western Power Distribution (WPD) is a Distribution Network Operator (DNO) and a Distribution System Operator (DSO), responsible for distributing electricity to 8 million customers, and serving more than a third of the UK (see figure 1.1). We look after a network of wires, poles, pylons, cables and substations, delivering power to homes and businesses across the West Midlands, East Midlands, South Wales and the South West.

Figure 1.1 Geographical area map

1.2. Our customers depend on us to live and work especially with more people working at home as a result of Covid-19. We provide a reliable and efficient power supply at an affordable price, as well as protecting the most vulnerable people in the region. The critical role we play in our society is changing. As well as keeping the lights on today, we are also committed to driving a more sustainable future. It is our mission to respond to the changing energy landscape needs and support the UK's ambition to achieve net zero carbon emissions by 2050.

1.3. Our distribution network connects customers to the National Grid electricity transmission network. We convert the high voltage electricity generated by large power generation sites, such as power stations, and delivered through the National Grid network to lower, voltages (see figure 1.2). We deliver it safely into homes and businesses in our regions, via our safe and reliable network. Our energy landscape is changing as the country drives towards decarbonisation, many smaller generation projects are now connected directly to our network, bypassing the transmission system and the traditional model. Over the coming years, we will experience unprecedented change in our industry, including an exponential rise in electric vehicles, heat pumps and battery storage. We will build on our positive record and experience, deliver transformation and continue to provide a resilient electricity supply.

Figure 1.2 Electricity network system



1.4. Our main responsibilities to our customers are in figure 1.3.

Figure 1.3 Main responsibilities to our customers

Keep the lights on
by operating our network assets effectively

Maintain equipment
so that the network remains reliable

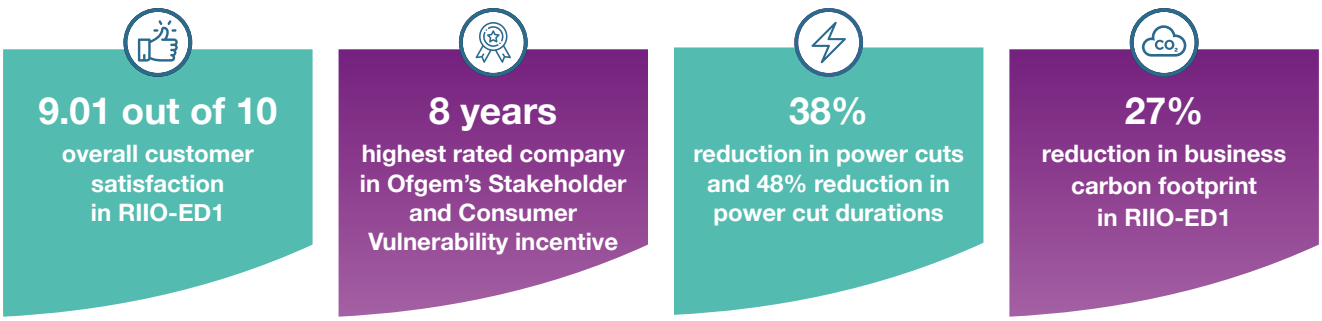
Fix the network
if the equipment gets damaged or is faulty

Connect customers
by upgrading existing networks or building new ones

Operate a smart system
by managing two-way power flows and flexibility services

1.5. We are committed to providing a service essential to our customers at a standard which is nothing less than first class. As the wider energy landscape undergoes extensive changes in how power is generated, we are investing significantly to keep ahead of the challenges and seize opportunities. As a business, we will continue to develop new processes and systems including adopting flexible solutions, to operate a smarter, reliable, and innovative energy network figure 1.4 shows some of our main performance highlights in RIIO-ED1.

Figure 1.4 Summary of our RIIO-ED1 performance areas



9.01 out of 10
overall customer satisfaction in RIIO-ED1

8 years
highest rated company in Ofgem's Stakeholder and Consumer Vulnerability incentive

38%
reduction in power cuts and 48% reduction in power cut durations

27%
reduction in business carbon footprint in RIIO-ED1

Our RIIO-ED1 key performance achievements

1.6. RIIO-ED1 is the current price control period which runs between 2015 and 2023.

1.7. We have delivered on and surpassed the commitments we made during RIIO-ED1. We have also ensured excellent performance levels for our customers at a low cost, by operating an efficient business model, with a flat agile organisational structure.

1.8. Overall in RIIO-ED1, we are the industry's top performing DNO for overall customer satisfaction with an average score of nearly 90%. We are responsive, delivering fast telephone response times of 5.42 seconds in 2020/21, along with quick and effective complaint resolution and wider communication with our customers. We work in continual collaboration with our stakeholders, communities and customers, to understand and meet their changing needs.

1.9. We are leading the way in supporting vulnerable 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 2021, and we are doing increasingly more to proactively find and register hard-to-reach vulnerable people. During RIIO-ED1 to date, we have worked closely with partner organisations, to help 92,000 customers to save more than £37 million on their energy bills. We are consistently the highest scoring DNO for Ofgem's Stakeholder Engagement and Consumer Vulnerability (SECV) incentive. A range of successful WPD initiatives will ensure that vulnerable customers are not left behind in a smart future.

1.10. We are committed to keeping the power on and restoring it quickly if it goes off. We continue to improve our performance by harnessing data, predictive analysis and innovative mapping approaches to minimise faults and reduce response times. We are continually enhancing our cyber security as threats continue to evolve to ensure the security of our network for our customers.

1.11. We have achieved a 27% reduction in our business carbon footprint during the last six years, significantly exceeding our original target of 5%. We are now working to replace our transport fleet with electric vehicles, and finding new innovative ways to increase our sustainability credentials.

1.12. The way power is generated and energy is consumed has changed significantly in the last six years and will continue to do so in the future. We have seen more renewable power connected, a growth in electric vehicles and the increased use of heat pumps for domestic heating. We recognised the need to adapt and be flexible to the changing energy landscape and were therefore proud to be the first DNO to publish a Distribution System Operator plan as well as a Distribution Future Energy Scenarios document.

1.13. Our plans will ensure that we are prepared for the changing energy future. We are the first DNO to commit to a six-monthly procurement cycle for flexibility services. Our Flexible Power brand so far has been used to contract flexibility services totalling 457MW, 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, keeping costs low for our customers.

1.14. Chapter 2 – We keep our promises provides further details on what we have delivered in RIIO-ED1 and the significant platform this provides for our RIIO-ED2 Business Plan.

We are the industry's top performing DNO for overall customer satisfaction with an average score of nearly

90%

We are responsive - delivering fast telephone response times of

5.42 seconds

in 2020/21

We have helped

92,000

customers save more than £37 million on their energy bills since 2015

Our Flexible Power brand has contracted flexibility services totalling

457MW

What is RIIO-ED2?

1.15. We are a regulated business and a natural monopoly. As such, the Office of Gas and Electricity Markets (Ofgem) oversees customer, environmental interests and customer bills. Every five years, Ofgem regulates how much DNOs like WPD can earn and what we need to spend and deliver under a regulated price review model. The next price control review is called RIIO-ED2 which stands for Revenues = Incentives + Innovation + Outputs in Electricity Distribution. It is the second price control under this model and covers the investment years of 2023 - 2028. We are currently in RIIO-ED1, covering 2015 – 2023 which is an eight year price control period.

1.16. 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**.

1.17. This Business Plan outlines what we propose to deliver in our commitments, how this benefits our customers and stakeholders and how much it will cost.

1.18. This Business Plan covers all four of our operating licence areas: West Midlands, East Midlands, South Wales and the South West.

1.19. 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.

A community built plan for today and tomorrow

1.20. Our Business Plan for RIIO-ED2 sets out how we will continue to improve on our already industry leading standards, while adapting to the changing needs of our customers and the environment in which we operate.

1.21. We will continue to provide the reliable, quick and reactive service our customers expect, as well as deliver against ambitious environmental commitments. The plan allows us to further improve network performance, safety and resilience, support our most vulnerable customers and make sure everyone can access the power they need.

1.22. To shape the commitments we will deliver in RIIO-ED2, we have undertaken the most comprehensive and inclusive stakeholder engagement programme ever mounted. More than 19,000 stakeholders have already had their say (more than 6,400 via direct, in-person engagement) as part of a rigorous co-creation programme.

1.23. Beginning with a blank sheet of paper, the process involved a diverse range of engagement activities that delivered highly effective opportunities for our stakeholders to review, comment and contribute to the draft plans. We have so far engaged, 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 45 core commitments which can be used to measure our performance throughout RIIO-ED2.

1.24. Over the last two years, we have therefore developed our plan in partnership with local authorities, charities, utilities, developers, suppliers, businesses and domestic bill paying customers. They have all helped us to shape the investment plan for our future.

1.25. We held regular meetings with the Customer Engagement Group (CEG) throughout the engagement process. The extensive and varied expertise of the CEG members has provided us with a range of excellent challenges throughout the development of the plan. The CEG was instrumental in the design of our engagement plan, encouraging us to continue to be highly ambitious and industry leading in our approach.

1.26. This current plan has been significantly refined by our stakeholders. We have published two drafts for consultation (see figure 1.5) in January 2021 and then March 2021, prior to producing this first submission Business Plan for Ofgem’s Challenge Group.

Figure 1.5 Our Business Plan publications and consultations to date

Our RIIO-ED2 Business Plan principles

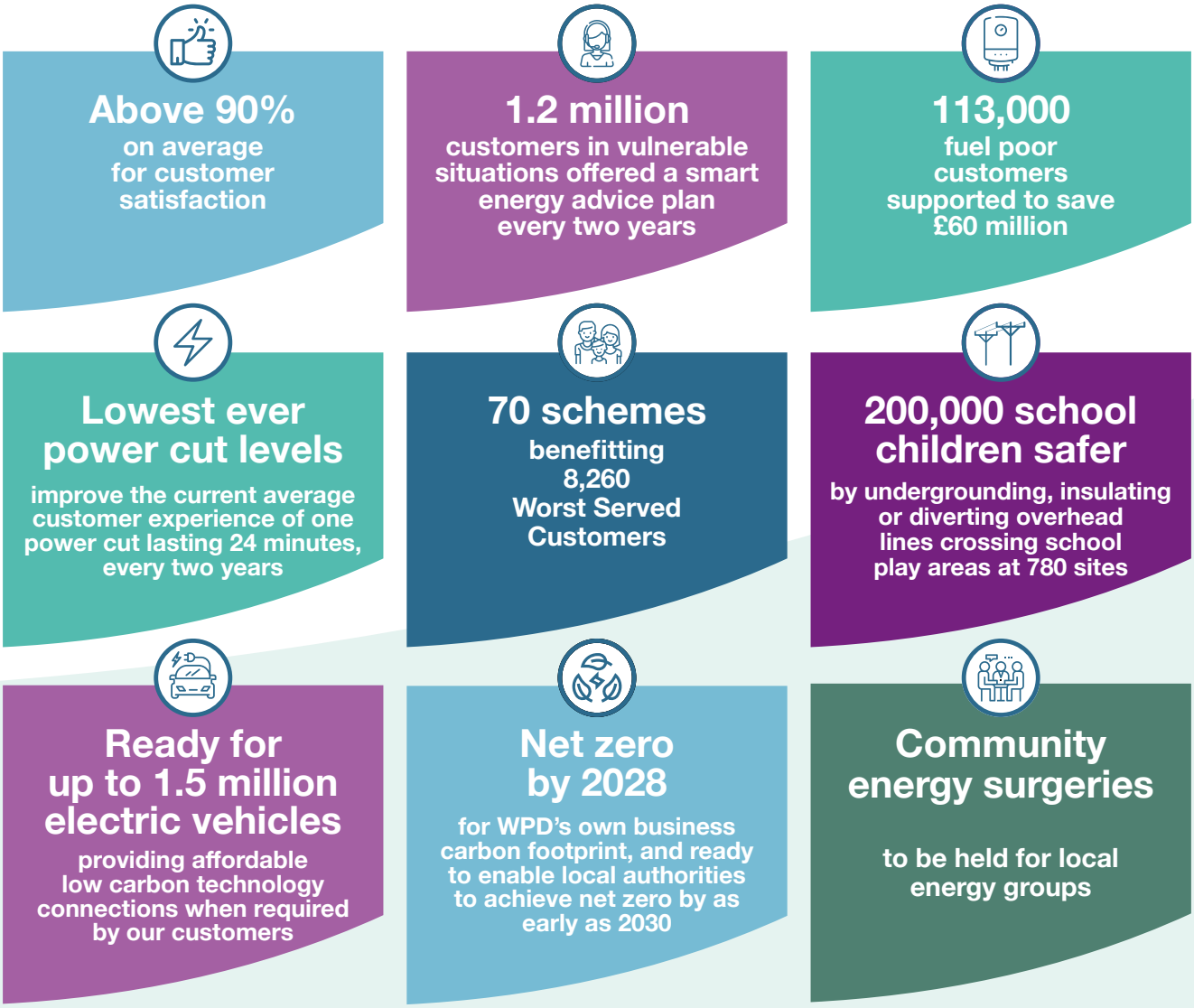
1.27. Our RIIO-ED2 Business Plan has been built on key principles:

- 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 our customers.
- Sustainable and enabling net zero before 2050.

What we will deliver in RIIO-ED2

1.28. Our RIIO-ED2 Business Plan demonstrates our ability to provide excellent levels of network performance and industry leading customer service, make sure bills are affordable for all and ensure that the network is equipped to support the government's Ten Point Plan to deliver the net zero carbon initiative. Our plan contains 45 core commitments against which we will be measured throughout RIIO-ED2. Some of the key core commitments are shown in figure 1.6 and further details can be found in Chapter 4.

Figure 1.6 RIIO-ED2 key core commitments

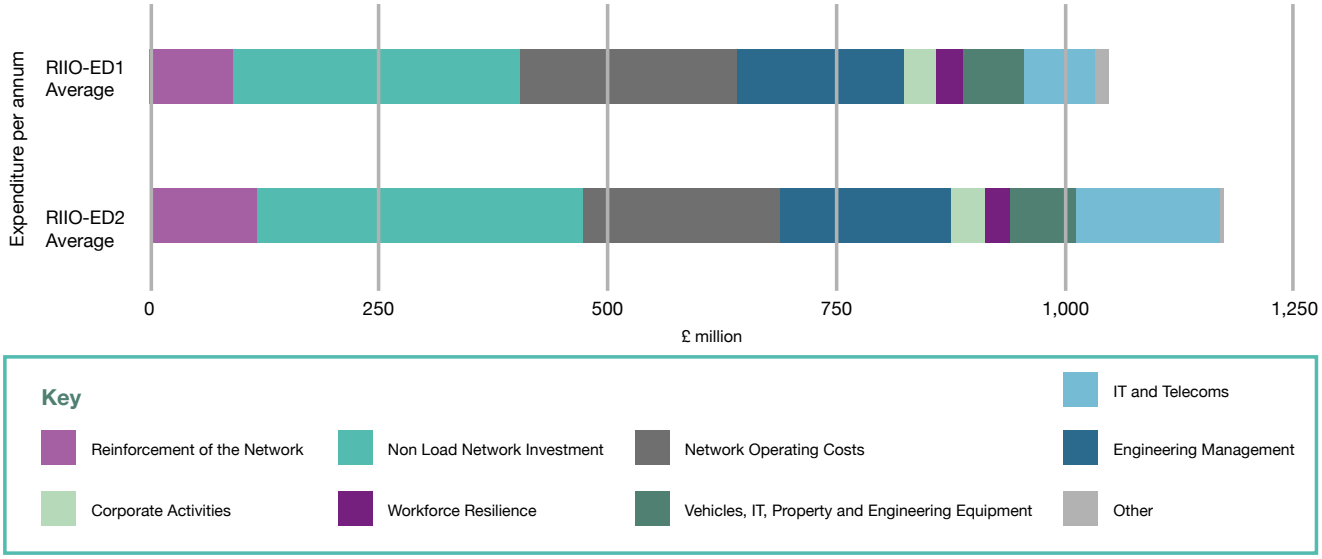


What we will spend in RIIO-ED2

1.29. We plan to invest around £6.2 billion in the network across the period 2023-2028 to deliver our commitments and provide the high level of service our customers expect. This is an increase in overall expenditure of around £939 million from current levels. This will deliver significant benefits to customers, show leadership to move towards net zero and create a robust cyber secure network. We will do all this while ensuring that customer bills remain broadly the same as present day levels.

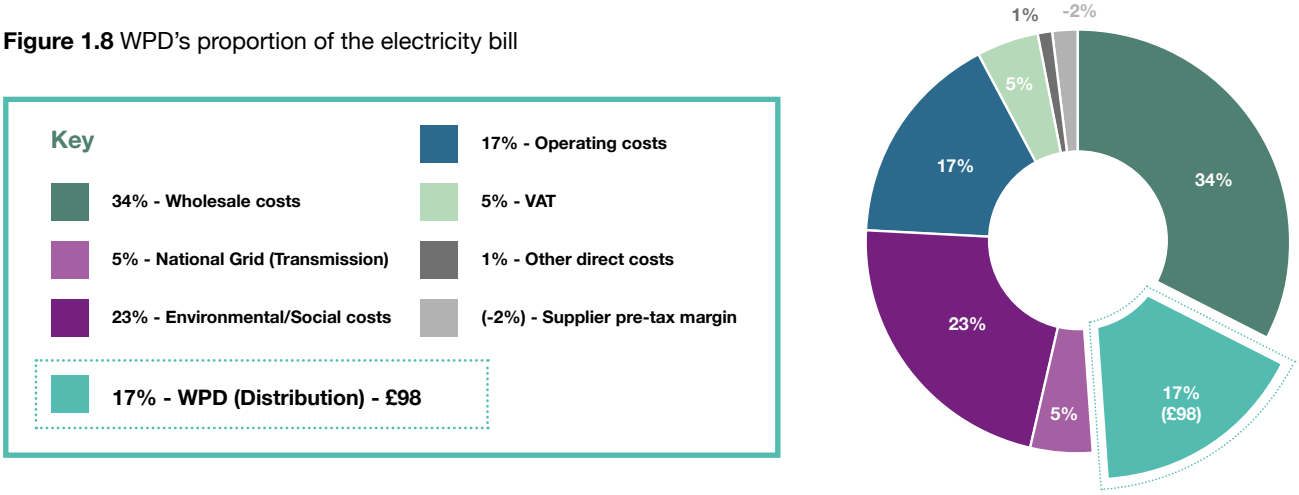
1.30. Figure 1.7 compares our average annual spend in RIIO-ED1 to our forecast for RIIO-ED2. Our total annual spend is forecast to increase, driven primarily by an imperative increase in the reinforcement of the network to facilitate the move to net zero carbon emissions and cyber security.

Figure 1.7 Average annual expenditure (RIIO-ED1 vs RIIO-ED2)



1.31. Around 17% of an average domestic customer's yearly electricity bill is allocated to us (see figure 1.8). We expect this to remain broadly at the same level in RIIO-ED2.

Figure 1.8 WPD's proportion of the electricity bill



1.32. Our current calculations estimate that the impact of the increased expenditure would result in a £1.52 increase to the average domestic bill. We plan, however, to largely offset that increase by delivering efficiencies, coupled with changes to the financing parameters and other aspects of the RIIO-ED2 framework. At present, this means that we intend to keep our bills broadly flat across the five year period 2023-2028, with no anticipated increase.

1.33. 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 undertake necessary additional investment.

1.34. The impact on customer bills is driven by factors including the overall proposed expenditure, the efficiency measures we implement, and the allowed finance package and inflation rates.

1.35. If our expenditure levels did not increase as planned, and remained at current levels (£1.05 billion per year), customers' bills could be reduced, based on the financing assumptions we expect for RIIO-ED2. But 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.

Average current annual expenditure

£1.05 billion

Average annual expenditure proposed for RIIO-ED2

£1.24 billion

Creating a sustainable future

1.36. Tackling climate change is a priority for the whole world and is a high priority for us as we are uniquely placed to lead. Our RIIO-ED2 Business Plan recognises that we must 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 demand, 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.

1.37. Our plans require us 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, help us make informed investment decisions and ensure that data from the network is available to those who need it in a secure manner.

Governance and assurance

Board engagement

1.38. Our business strategy is to ensure our customers will receive an affordable, sustainable service, which is fully supported by our stakeholders, will enable them to be net zero by 2050, and everything we do will align with WPD's values. This Business Plan details our strategy over the price control period and beyond. The Board has been closely engaged in the development of our plan to ensure that the needs of our stakeholders are properly recognised and addressed.

Governance arrangements for developing our plan

1.39. Our business has a well established internal controls framework. It is closely monitored by our Board, which consists of two non-executive independent directors and four executive directors.

1.40. Our Board has been actively engaged throughout the plan development process. This has included:

- Overseeing that suitable arrangements and resources were in place to develop our plan.
- Monitoring progress against key milestones.
- Ensuring that there was an appropriate assurance plan in place.
- Challenging draft versions of our plan, its output commitments and how key risks are being managed.

1.41. Our Executive Council (comprising of our four executive directors) provided strategic direction and oversight for the plan development. Alison Sleightholm, our Resources and External Affairs Director has provided day to day oversight of the plan development.

1.42. Our plan has been developed using a highly experienced team who are integrated with the operational delivery team and who enjoy a close working relationship with our Executive team. Mark Shaw was reassigned from his role as Network Services Manager in charge the West Midlands licence area, to lead our internal Business Plan Group and oversee the preparation of our plan.

1.43. Our two non-executive independent directors have played a key role in oversight and challenge. Access was provided to the Customer Engagement Group (CEG) Chair to gain confidence in the effectiveness of the working relationship between the WPD Board and our Business Plan Group.

1.44. Our Board engagement processes, combined with the strength of our customer engagement programme and assurance programme described below, have enabled us to provide robust challenge to our plan and steer its strategic direction. We believe this plan is of high quality, deliverable and is ambitious in scope to support the UK's transition to net zero carbon emissions.

Assuring our plan

1.45. A comprehensive assurance programme was critical to the Board. We needed to be confident that the content of our plan was both accurate and met our strategic aims. We understood that a robust assurance programme helps build confidence in our plan amongst our stakeholders.

1.46. Our assurance approach applied and expanded WPD's data assurance programme, used for compliance with Ofgem Data Assurance Guidance. We set wide ranging assurance objectives and we used risk assessments to identify and understand potential issues. Our assurance programme was targeted to ensure the right resources were applied.

1.47. We used a range of internal and external specialists to assure that our plan assurance objectives were addressed. We engaged PricewaterhouseCoopers to assess our governance and assurance programme and asked them to identify best practice opportunities that we could apply.

1.48. Our Business Plan Group was encouraged to actively and openly engage with our CEG to leverage their skills and insights.

1.49. We continue to deliver an extensive stakeholder engagement programme to ensure our business is responsive to evolving needs and to co-create our Business Plan commitments. We are the only DNO to publish two early versions of our Business Plan and consulted widely on those drafts to assure that we had correctly interpreted and addressed stakeholder priorities.

1.50. Based on the outcomes of our assurance programme, the Board have collectively satisfied ourselves that:

- The Business Plan has been built upon an effective stakeholder engagement programme and that feedback from our CEG has been addressed and acted upon;
- The output commitments contained within this plan are deliverable;
- The approaches described in the plan and the associated costs are efficient.

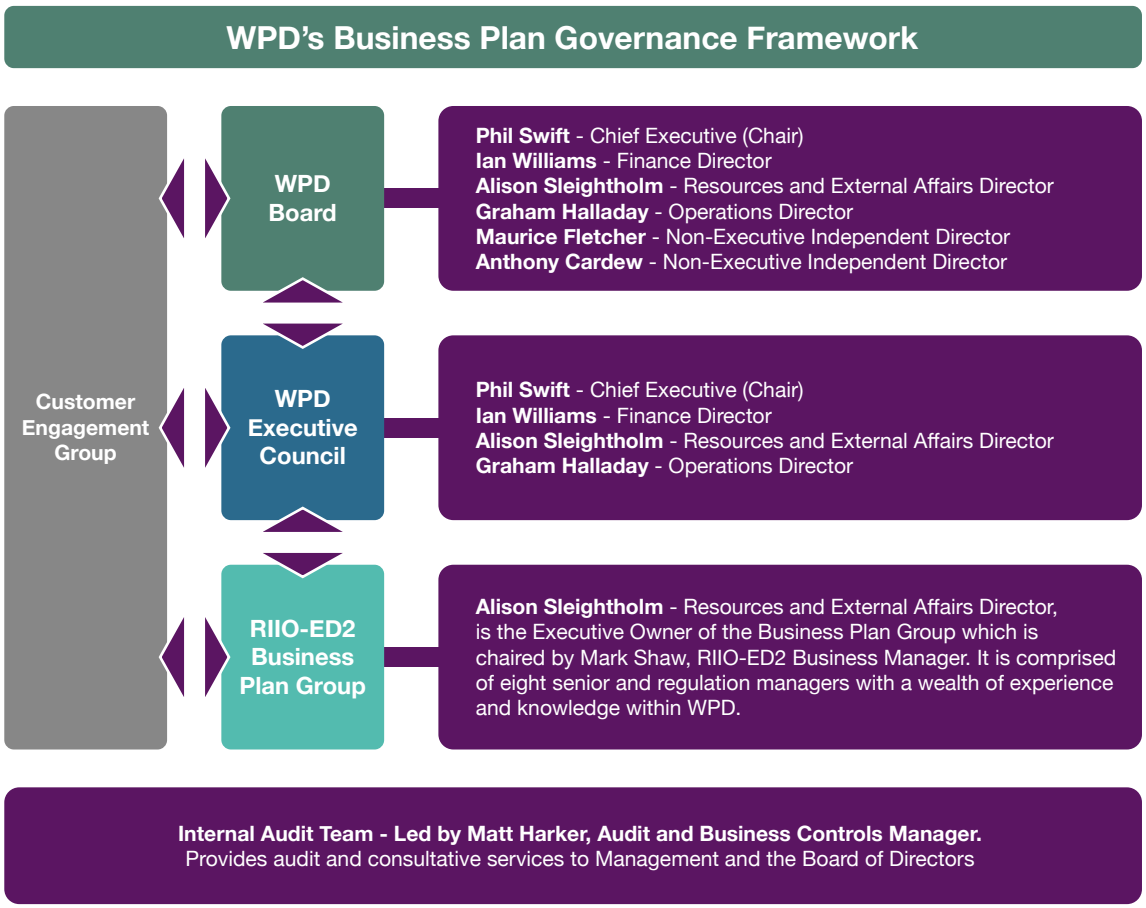
1.51. They believe the plan is both innovative and ambitious in supporting the UK transition to zero carbon emissions.

1.52. Alongside our Business Plan we have published a Board Assurance Statement that incorporates the requirements that are stipulated in the Ofgem regulatory guidance.

1.53. Our Board Assurance Statement is available on our website at **www.westernpower.co.uk/RIIO-ED2BusinessPlan**

1.54. WPD's Business Plan Governance Framework sets out the components of the governance framework supporting the development of the Business Plan and can be seen in figure 1.9.

Figure 1.9 Governance framework



1.55. We provide more detailed explanations of our Business Plan development governance and assurance programme within Supplementary Annex SA-01 Governance and assurance.

Delivering our Business Plan

1.56. The success of our business is built by our people. WPD is fully committed to keeping its employees motivated and fully involved in the delivery of our Business Plan. Our aim is to provide a fair and balanced reward framework that is competitive within the market, to ensure we continue to attract, recruit, retain and engage the right calibre of employees to support the achievement of our Business Plan commitments. It is underpinned by our values as a company and a strategic objective to ensure that WPD is the 'employer of choice' with diversity, equity and inclusion being a key pillar of our workforce strategy.

1.57. The salaries and conditions of WPD's wider workforce are agreed with the recognised Trade Unions ensuring that the terms and conditions are aligned to current industry practices. Our base salaries, short-term and long-term incentive plans and pensions are also benchmarked against appropriate energy and comparator groups to ensure that we continue to deliver in an efficient and effective way.

1.58. Short term incentives for directors and the senior leadership team are linked to the priorities of our customers and stakeholders. Our bonus plans incentivise the delivery of both financial, strategic and operational measures such as customer satisfaction and network performance as well as the demonstration of leadership qualities. Depending on their areas of responsibility, individual senior leadership team members will also have personal objectives linked to Business Plan objectives.

1.59. For example, in 2021 the short term incentive plan included:

- Customer satisfaction.
- Network performance.
- Financial performance.
- Percentage of customer complaints resolved in 24 hours.
- Providing support for vulnerable customers.
- Stakeholder engagement.
- Leadership qualities.

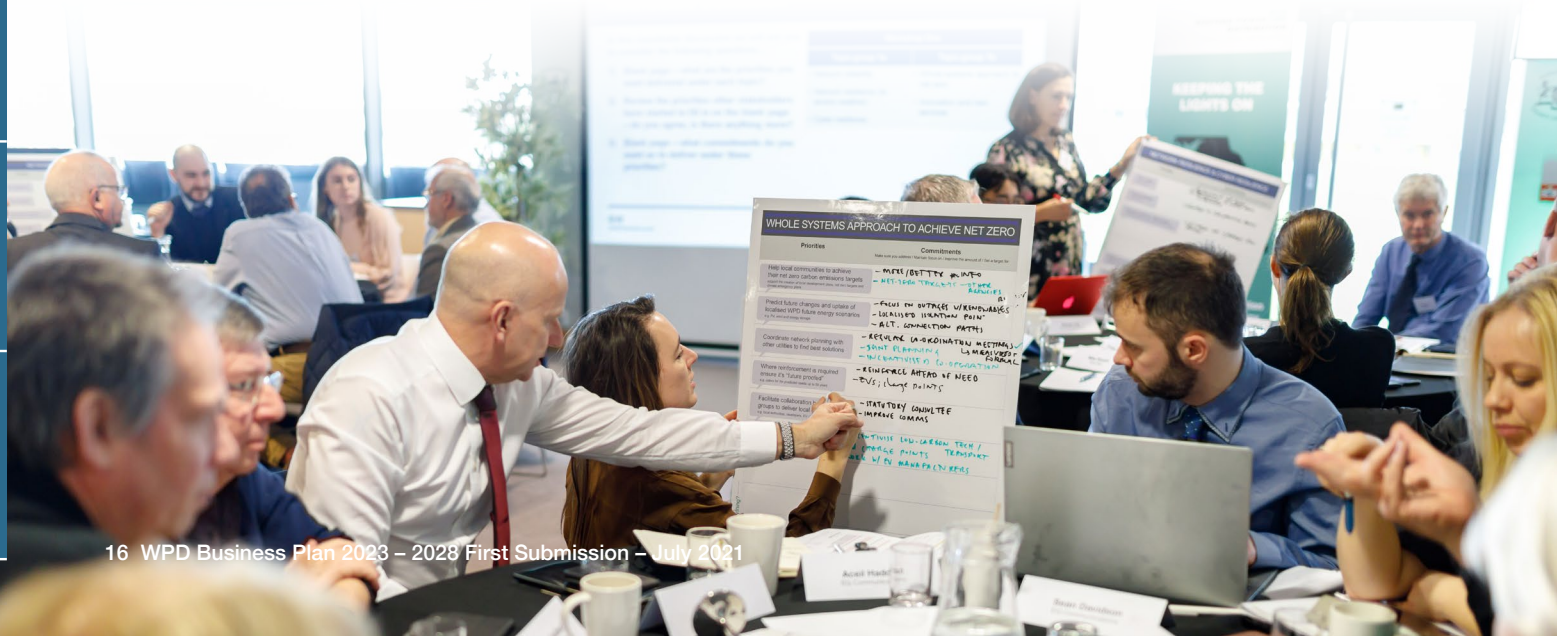
1.60. This ensures a clear line of sight between individual performance and contribution, and the delivery of our business strategy and key objectives, which drive quality outcomes for our customers.

1.61. Our long term incentive plan also includes key performance measures. The targets are set by the remuneration committee which is chaired by a non-executive board member. To reinforce the long term nature of incentives, awards are made in shares after a three year period.

1.62. Some of our recognition rewards sit within a less formal framework and are made to an individual team member and others are awarded to a team. Some examples include:

- Apprentice of the Year – this is an annual award that is made to one employee in each of the four licence areas.
- Long Service Awards recognise service milestones at 20, 30, 40, and 50 years of service in the form of a voucher with an increasing monetary value for each milestone.
- Safety awards to teams who are accident free.
- Matching awards for employees who raise money for charitable causes.
- Spot awards typically up to £100 to recognise employees who go the extra mile for customers.

1.63. We will continue to evolve this framework into the RIIO-ED2 period as this allows the leadership and teams to focus on what is important to our stakeholders and will drive the greatest benefit for customers.



Chapter 2

We keep our promises

Chapter 2 Contents

2. We keep our promises

Summary

2.1. Our Business Plan for RIIO-ED1 (2015 to 2023) was ambitious and industry leading. Building on this impressive platform, we have listened to our stakeholders and will deliver an even bolder plan and set of stretching commitments for RIIO-ED2, learning from previous challenges and steering the business towards decarbonisation. Here, we will detail our activities during RIIO-ED1, looking at how current delivery will inform our future ambitions.

2.2. We have proved that we keep our promises to customers and deliver on our commitments. In RIIO-ED1, we were the only Distribution Network Operator to be fast-tracked by the regulator. That means that our Business Plan was judged by Ofgem to be of a high standard and well justified, meaning that it was accepted in full. Ofgem recognised WPD as the leading company for customer service and our ability to reduce costs and operate efficiently.

2.3. We know that using in-house regional resources are key to the delivery of a tailored, cost effective and efficient service to our customers. We are proud to use local expert teams to serve each local area. Our staff are part of their own communities; they know their area, network and many of their customers, strengthening our ability to deliver a streamlined, quality customer service.

2.4. In RIIO-ED1, WPD is recognised as the top DNO for customer satisfaction with an average score of 9.01 out of 10. Our commitment to customer excellence is at the heart of our business and drives a culture of continual improvement, striving to go further than before. Significantly improving our network reliability and reducing our business carbon footprint beyond target are two examples of how this commitment works in action.

2.5. We were also the first DNO to set up a Distribution System Operator function which has helped to accelerate the move to local generation and flexible services, future-proofing our network and making it much more adaptable. During the pandemic, we have supported local community projects by creating a £1 million fund called 'In This Together - Community Matters' and committed up to £59 million to the green recovery.

2.6. We have achieved these enhanced outcomes by utilising the allowances we received in RIIO-ED1, ensuring that customers receive service improvements and value for money. As we plan for the challenges of a rapidly changing energy market, we are more ambitious than ever. We want to exceed our customers' expectations and deliver a reliable, fair, affordable and innovative network for everybody.

2.7. Further detail on our track record is included in Supplementary Annex SA-02: We keep our promises.

Our performance today will drive our plans for tomorrow

2.8. Our strong track record of delivering excellent levels of performance for customers underpins our confidence that we can build on the successes of RIIO-ED1 to deliver our RIIO-ED2 plan.

2.9. Exceptional customer service and the safety of our customers, staff, contractors and the general public are our top priorities. In the same way that we delivered or exceeded 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 (see figure 2.1).

Figure 2.1 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 environment 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

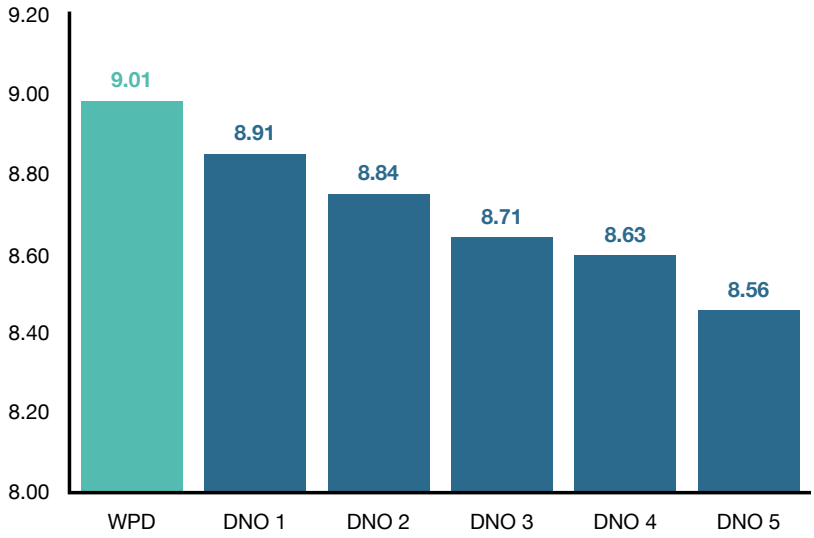
Proven delivery of excellent customer service

2.10. We are determined to remain industry leading in customer service.

2.11. We have consistently been the top performer with a six-year average result for customer satisfaction of 9.01 out of 10 during RIIO-ED1 (see figure 2.2).

Figure 2.2 Broad Measure of Customer Satisfaction 2015 - 2021

BMCS - average RIIO-ED1 weighted score by DNO group



2.12. We treat our customers as we would expect to be treated. This simple and solid principle, which we call the 'golden rule', influences everything we do.

2.13. When it comes to customer service, our mantra is to deliver high quality 'First Time, Every Time'. Whoever is dealing with the customer takes responsibility for resolving the issue 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. We train our staff to take personal responsibility and get the job done.

2.14. Talking to our customers – however and whenever they want – is vital to build trust and deliver excellence. We have regionally based, in-house contact centres, where we answer calls in an average of 5.42 seconds. WPD ensures first class customer service by regularly engaging with customers through a range of channels, including our annual stakeholder workshops. Engagement helps us to understand and refine our approach in line with customer need.

2.15. We were delighted to win four awards at the December 2020 International Engage Awards, as shown in figure 2.3, for our outstanding customer service, against stiff competition from the likes of Microsoft, Sainsbury's, Coca-Cola, DPD, British Gas and the 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. The awards were a great achievement for our team who are fully committed and focused on continual improvement (see figure 2.3).

2.16. We recognise that occasionally things go wrong. When this happens, we will resolve complaints quickly and use this as an opportunity to show our customers our commitment to taking responsibility. With ownership, we ensure a swift resolution to the customer's satisfaction. We currently resolve 88% of complaints in one day. Our target is to turn every complaint into a 'thank you'.

An external view on our performance

Figure 2.3
International Engage Awards 2020

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."

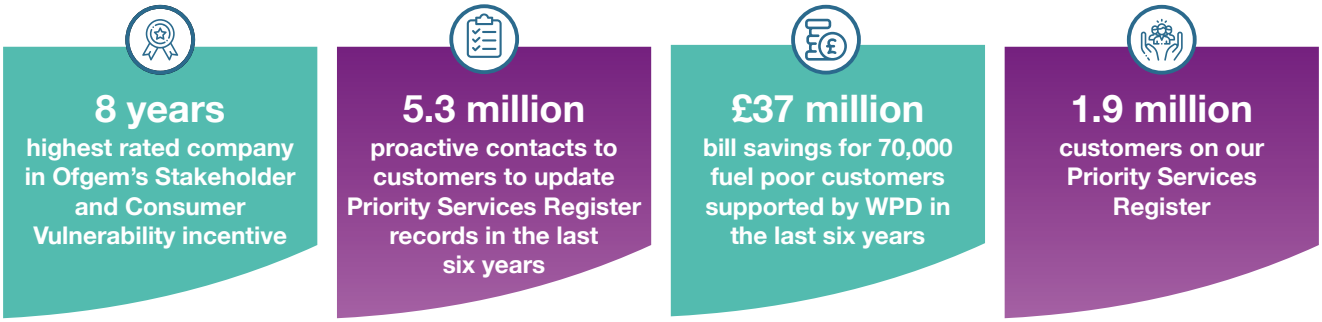
A track record of industry leading social commitments

2.17. We are committed to supporting our diverse regional communities. We have invested £12 million since 2015 to support our vulnerable and fuel poor customers, continually expanding our activities to meet their needs.

2.18. We have taken significant steps to improve our understanding of customer vulnerability during RIIO-ED1, expanding our leading Priority Services Register (PSR), customer mapping and engagement strategies. Our highlights can be seen in figure 2.4.

2.19. In February 2021, our efforts specifically to deliver an industry leading approach to maintaining high quality PSR data, providing hundreds of thousands of proactive power cut updates, spear heading data sharing with water and gas companies and the largest fuel poverty support programme in the sector, saw WPD receive Utility Week's Customer Vulnerability Excellence Award.

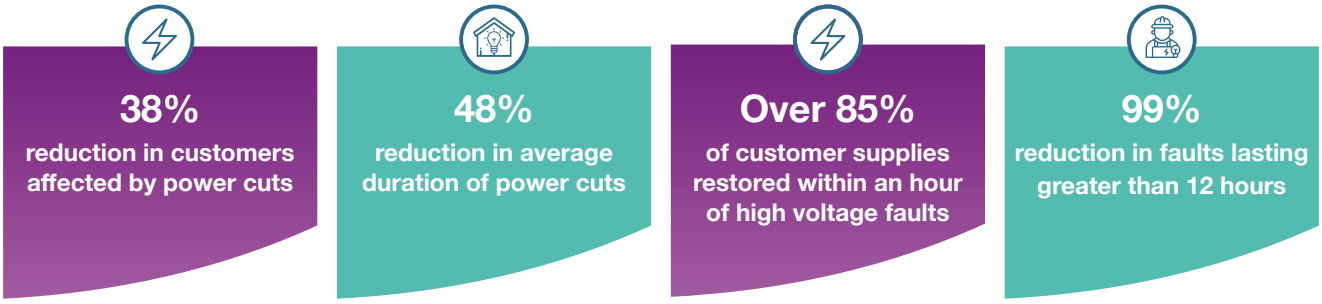
Figure 2.4 Highlights of our social obligations performance during RIIO-ED1



Network performance improvements

2.20. Our customers rely on us all day, every day and we are aware of the unique and critical role we play in their lives. A growing reliance on electronic equipment, the move to electric vehicles and heat pumps, and an increase in home-working makes that reliability more vital than ever. Our customers tell us that network performance is a high priority and that it makes a real difference to their lives. We have a proven track record of improving network reliability and have made further progress throughout RIIO-ED1 (see figure 2.5).

Figure 2.5 Highlights of our reliability performance during RIIO-ED1



Management of asset health

2.21. The network is made up of several million assets and we have routine programmes of work to ensure that the assets remain reliable. Our strategy is to replace assets that are in poor condition and we collect data during inspections and maintenance to help us to prioritise which assets are removed.

2.22. In RIIO-ED1, the main measure for delivery of asset health related activity are targets for Network Asset Secondary Deliverables. These use asset risk measures and the targets represent the risk reduction delivered as a result of investment activities. We have been very focused on the delivery of the asset replacement work programmes and we are ahead of target with more than 75% of the required risk reduction being delivered in the first five years of RIIO-ED1.

2.23. The risk measures allow reprioritisation across different types of assets. This has allowed us to rebalance our delivery between lower overhead line activity and increased levels of work on switchgear, transformers and underground cables.

2.24. We have high confidence that the full targets will be delivered during the remainder of RIIO-ED1.

Proven safety record

2.25. The safety of our staff, contractors and the general public is always at the top of our agenda. We strive to achieve the highest safety standards and to nurture a strong safety culture. This is reflected in both our strong track record of keeping our staff and customers safe, and our commitment to community education as highlighted in figure 2.6.

Figure 2.6 Highlights of our safety performance during RIIO-ED1

Proven reduction of our environmental impact

2.26. During RIIO-ED1, we have led the way when it comes to environmental obligations as can be seen in figure 2.7. We have focused on reducing our business carbon footprint and protecting the environment from the impact of any of our activities. We regard this as an even higher priority going forwards.

Figure 2.7 Highlights of our environmental performance during RIIO-ED1

Enabling increased volumes of low carbon technology connections

2.27. We have experienced seismic changes in the way that electricity is generated and consumed by our customers over the course of RIIO-ED1. As a result, the scope of WPD's activities has developed beyond the commitments made in our RIIO-ED1 Business Plan, and we have gone even further to meet the needs of our communities and their changing habits and expectations.

2.28. The work we are delivering today supports our ability to achieve a decarbonised network for our customers in the future. By starting the work well ahead of RIIO-ED2, we have already made improvements to our network which will accelerate the achievement of net zero carbon emissions in the UK by 2050.

The Distribution System Operator leader

2.29. We were the first DNO to react to develop our Distribution System Operator (DSO) capability. This enabled us to operate the network more flexibly, balance sources of supply and demand in real time and, where possible, avoid the need for costly network reinforcement by our 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. In June 2019, WPD became 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 and is now updated every six months. Figure 2.8 shows the highlights of our achievements.

Figure 2.8 Highlights of our DSO activities impact.

Producing Distribution Future Energy Scenarios (DFES)

2.30. In 2015, we were the first DNO to publish a Distribution Future Energy Scenarios document, forecasting the volumes and regional distribution of low carbon technology uptake in our region. This used 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, forecasting potential network constraints before they arise.

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

Procuring flexible services

2.32. WPD 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 flexibility services, while remaining compliant with procurement law.

2.33. We were the first DNO to commit to a six-monthly procurement cycle for flexibility services through our customer-facing flexibility brand, known as 'Flexible Power'. We have also implemented weekly processes for identifying short term flexibility need and use an electronic, automated dispatch platform.

Sharing our network data with our stakeholders

2.34. The digitalisation of the energy system underpins our RIIO-ED2 strategy. It is key to building a smart and efficient energy system and forms a central tenet of our long term plans.

2.35. 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 increased the level of digital technologies on the network – from automation of switches on our network to monitoring equipment.

2.36. Key activities undertaken during RIIO-ED1 to support digitalisation in RIIO-ED2 are shown in figure 2.9.

Figure 2.9 Key activities supporting digitalisation during RIIO-ED1

- **Published a Digitalisation Commitment in December 2019**
- **Made data available via our Energy Data Hub on the WPD website**
- **Used a wide range of external data from developers, government and local authorities to produce future energy scenarios**
- **Investigated 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**
- **Allowed communities and energy service providers to access consumption data securely from their local distribution substation as part of our Open LV innovation project**
- **Launched the Carbon Portal to provide accurate real time historic and future CO_2 content for the actual electricity being delivered to our customers' homes.**

Supporting the green recovery and net zero

2.37. The UK's 2019 commitment to eliminate greenhouse gas emissions presented new challenges for us. We are committed to playing our role and developing our network to support, facilitate and achieve the government's net zero targets.

2.38. We have connected almost 10GW of distributed energy resources (including distributed generators and storage) to the network so far. We have radically re-engineered our network, designed to supply 14GW of maximum demand, to accommodate up to 24.8GW of distributed energy resources.

2.39. We have committed to spend up to £59 million in the remaining years of RIIO-ED1 to support the green recovery. We will invest into our extra high voltage network and 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

2.40. We recognise that the growing popularity of EVs and heat pumps will change our business significantly, altering daily load profiles and increasing the amount of power used.

2.41. Recognising early the challenges to come, we were the first DNO to introduce an EV Strategy. This describes our plans to support the development of 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 (see figure 2.10).

2.42. Looking ahead to future energy trends, we 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.

Figure 2.10 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.

Innovation in RIIO-ED1

2.43. We are continually innovating, to enhance the efficiency of our business and drive down costs for our customers. During RIIO-ED1 we undertook a wide range of innovation projects and recognise that the key to success is translating any learning into 'Business as Usual' efficiencies. We have also developed a culture where staff not only see the benefits of making changes to improve our performance but are also empowered to take action. Examples of how we have harnessed innovation to boost efficiency can be found in figure 2.11.

Figure 2.11 Innovation activities undertaken during RIIO-ED1

Innovation activities	Benefits
Adoption of 'Agile Auditing'	Quicker delivery of key audit findings to enable business manager to act on opportunities as soon as possible.
Launched bespoke services for deaf and hard of hearing customers – Interpreter Now, including video remote interpreting for engineers on site.	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 communicate directly with 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, gives 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 and improved data quality.
Vegetation management from LiDAR data.	Improved business efficiency, digitalisation, data quality.
LV network investment forecasting tool.	Quicker LCT connections and improved business efficiency, data quality, digitalisation.
Customer enquiry tracker.	Improved customer service, business efficiency, replacement of legacy system.
Hazardous waste app.	Improved regulatory compliance, business efficiency, digitalisation.
LV Connectivity Model.	Enables users to simulate electrical traces on the network, simulate feeder changes and associate customers to feeders and load analysis. It also supplies circuit based data to other products - e.g. LVConnect, that are essential to DSO operations.
Introduced geographic information systems data to the helicopter camera equipment.	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 Active Network Management (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. Reduces carbon footprint with less travel required to office sites and increases work efficiencies.
Introduction of 'WhatsApp' & '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 reporting 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 7,700km of linear assets. All 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.	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. It is open-sourced for anyone to use and drive further innovation and partnerships, with ability to filter data by 28 different criteria.
IRIS - The new incident reporting information system (IRIS).	This replaces our old system 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 communications engineers for fault reports.	Fault reports are now updated 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.

Supporting community energy

2.44. Community energy groups offer an exciting opportunity to transition to a decentralised system of generation through collaboration and partnerships. Their ambition and passion will play an important part in achieving net zero. Their projects will enable future networks to be smarter and more flexible and pave the way for further innovation.

2.45. As part of our commitment to this during RIIO-ED1, we have undertaken key activities as shown in figure 2.12:

Figure 2.12 Key activities supporting community energy during RIIO-ED1

- **Launched 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 help communities to understand their energy use and increase their flexibility**
- **Created easily accessible online information for community energy customers covering a range of topics from connections to flexibility markets**
- **Enabled shared learning between community groups, including site visits**
- **Created a forum for stakeholders to discuss innovation project ideas and seek feedback.**

Our expenditure in RIIO-ED1

Total expenditure (Totex)

2.46. Our total expenditure includes capital investment in the network (e.g. building new network and replacing old assets) and operating costs including maintenance, fault repairs, planning and project management.

2.47. We invest the money we receive from our customers effectively and efficiently to make our network more reliable and secure. This investment also ensures that we have the capacity to meet future connection requirements.

2.48. In the first two years of RIIO-ED1, we spent more than our allowances to get ahead in our work programmes and deliver significant benefits for customers (see figure 2.13). Expenditure has progressively been brought in line and at the close of 2020/21, our expenditure was 2% below our Totex allowances for RIIO-ED1 to date as shown in the table below. Although the Covid-19 pandemic restricted some of our activities, we expect that most of this work will still be completed by the end of RIIO-ED1, as well as increased levels of reinforcement to aid the green recovery.

2.49. We are proud of our track record in RIIO-ED1 to date. We have been delivering the 76 commitments established in the RIIO-ED1 Business Plan and kept continued focus on delivering the core activities that are important to customers, whilst also adapting to emerging activities and challenges including DSO, responding to cyber threats, Covid-19 and the green recovery. We are proud of our achievements in innovation, which have driven real change. Our expenditure plans have adapted and we currently forecast that we will outturn just under our Totex allowances by the end of RIIO-ED1. Without the inclusion of the green recovery programme, we would have outturned at just under 1% of our Totex allowances.

Figure 2.13 Our Totex performance during RIIO-ED1

Totex									
2020/21 prices	2015/16 Actual	2016/17 Actual	2017/18 Actual	2018/19 Actual	2019/20 Actual	2020/21 Actual	2021/22 Forecast	2022/23 Forecast	RIIO-ED1 Total
Expenditure £m	1,117	1,166	1,004	933	959	1,026	1,111	1,081	8,395
Allowance £m	1,091	1,087	1,026	1,052	1,035	1,026	1,046	1,059	8,422
Variance £m	26	79	-21	-119	-77	0	65	22	-26
Cumulative variance £m	26	105	83	-36	-113	-113	-48	-26	
Cumulative variance %	2%	5%	3%	-1%	-2%	-2%	-1%	0%	

2.50. In Supplementary Annex SA-02: We keep our promises, we review the key activities in Totex and explain how these have contributed to our overall Totex performance in RIIO-ED1.

Proven efficiency in the cost of delivery

2.51. We were the only fast-tracked DNO in RIIO-ED1, highlighting our proven record of efficient and effective delivery.

2.52. 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 more than the cost of delivery and will continue to emphasise the importance of customer benefits in our decision making processes. Stakeholder engagement is extremely important to us and has led to the co-creation of our RIIO-ED2 plan.

2.53. We continue to lock in the efficiency improvements introduced through RIIO-ED1 and to benefit from them in the final part of the current price control period.

2.54. We will always flex the plan where necessary, investing where there is greatest value. We emphasise that delaying expenditure and not completing work does not equate to real 'efficiency' or real 'outperformance'.

2.55. Through this approach, we are the market leader in DSO and flexibility and this will continue into RIIO-ED2.

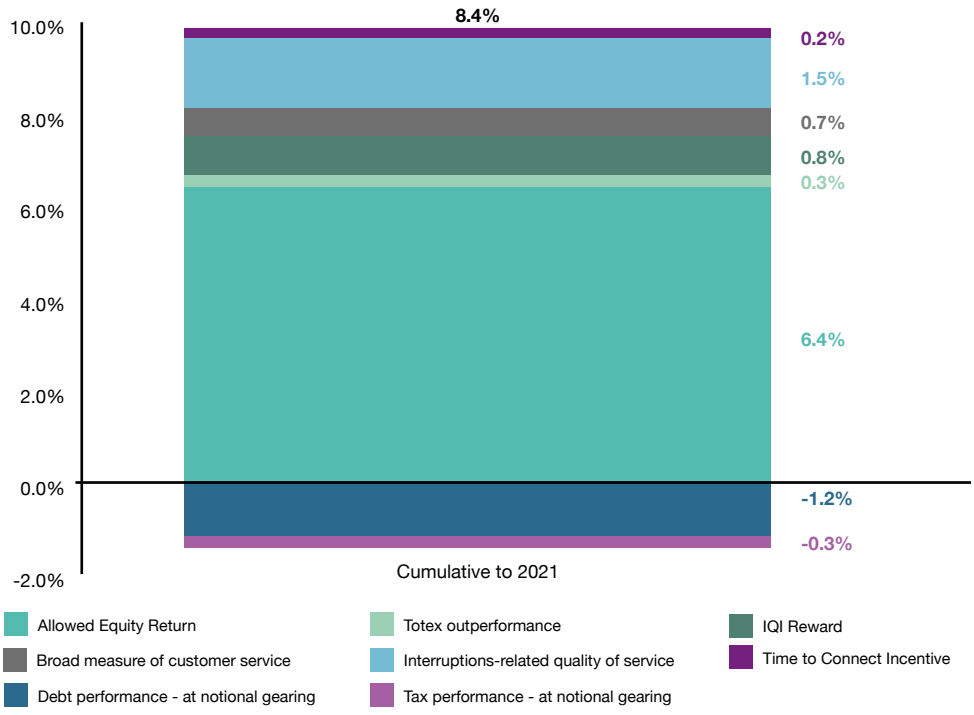
Return on Regulatory Equity (RoRE)

2.56. Ofgem assesses overall financial performance of network operators using a measure called Return on Regulatory Equity (RoRE). It is a key financial and regulatory performance measure used by Ofgem to assess overall financial performance of network operators against the price control settlement.

2.57. WPD was allowed a 6.4% cost of equity as part of its Fast-Track settlement. Drivers of RoRE include performance under the Totex Incentive Mechanism (TIM) and performance against output incentives. Totex underspends and incentive rewards increase network operators' returns, while overspends and incentive penalties decrease returns.

2.58. Figure 2.14 shows a provisional view of RIIO-ED1 to date RoRE, using 65% notional gearing, based on six years of actual data under RIIO-ED1.

Figure 2.14 WPD's RIIO-ED1 to date RoRE - notional gearing basis, including financing and tax



0.8%

Fast-track reward we were awarded for RIIO-ED1 Business Plan

0.3%

The RoRE impact of WPD's Totex outperformance

Note: Incentive on Connections Engagement, Losses Discretionary Reward scheme, network innovation and penalties/ fines have a value of less than 0.0% and are therefore not shown. Data source: WPD's draft 2020/21 RFPR submission.

2.59. The latest view of WPD's RoRE in RIIO-ED1 to date, including financing and tax on a notional gearing basis, is 8.4%. This represents the level of WPD's returns to shareholders. Ofgem's RIIO-ED1 allowed cost of equity is 6.4%, and the key drivers of WPD's returns above this level are the rewards for our performance under:

- Ofgem's Interruptions Incentive mechanism (1.5%);
- Ofgem's Time to Connect Incentive (0.2%); and
- Broad Measure of Customer Service (0.7%).

These reflect the excellent level of performance that our customers have benefited from. Further contributions to RoRE outperformance are:

- The fast-track reward that WPD was awarded for its RIIO-ED1 Business Plan (0.8%); and
- The RoRE impact of WPD's Totex outperformance (0.3%).

These are offset by:

- a -1.2% underperformance by on the Cost of Debt, partially due to Ofgem's use of a 10 year trailing average cost of debt index to calculate WPD's RIIO-ED1 allowed cost of debt, which differs from the Slow Track approach; and
- a -0.3% RoRE impact representing additional taxation WPD has paid that is not covered by Ofgem allowances.

2.60. Note that these are provisional values for RoRE and may change before we publish our Regulatory Financial Performance Report (RFPR) at the end of July 2021. These values will be updated in our December publication of the Business Plan.

Financial returns to shareholders

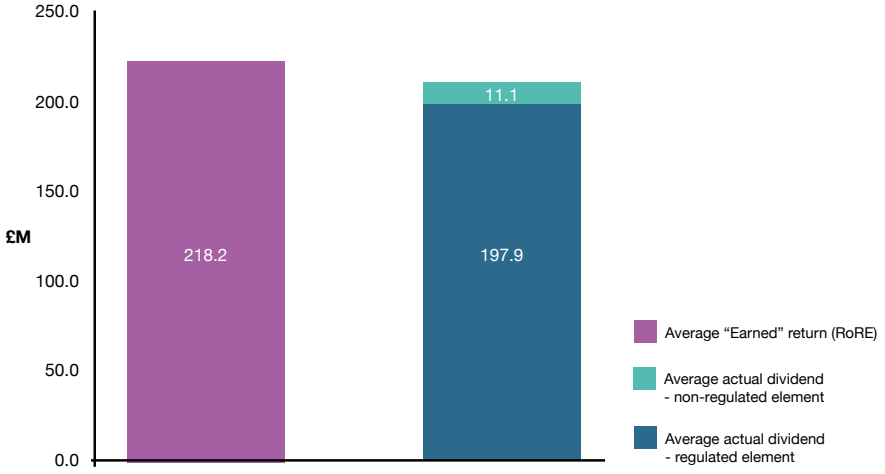
2.61. In its 2017 presentation 'A Fair Return', Ofgem stated that "In RIIO-ED1, with a 6% cost of equity a well-performing company could earn double digit returns"[1]. This statement echoed words from Ofgem's RIIO-GD1 Final Proposals[2].

2.62. Under the RIIO-ED1 Fast Track settlement, WPD was given a base level of return for equity investors of 6.4%. This return is earned on notional regulatory equity, which was set at 35% of the Regulatory Asset Value (RAV). WPD was also given a Fast Track reward ('IQI reward' in the chart above) of 2.5% of Totex, equivalent to an additional 0.8% of RoRE.

2.63. WPD then earned further rewards through our performance against the incentives outlined above. These incentive rewards reflect WPD's delivery of our network commitments, our high levels of customer satisfaction and the fact that WPD has consistently been number one for stakeholder engagement and customer vulnerability initiatives. It is clear from the chart in figure 2.14 that it is WPD's excellent performance that has driven returns higher than the allowed Cost of Equity. In a competitive environment, this would be commensurate with our excellent level of performance, and the excellent results WPD has delivered for customers.

2.64. Figure 2.15 compares the provisional average RoRE returns WPD has earned in RIIO-ED1 to date to the actual dividends paid to shareholders. So far, we have paid out an average annual dividend of £209 million compared to a provisional average annual RoRE return to date of £218 million.

Figure 2.15 WPD's average dividends earned and paid out in RIIO-ED1 (to 2020/21, £nominal)



[1] Ofgem, "A Fair Return" Stakeholder workshop slides, 24 October 2017: https://www.ofgem.gov.uk/sites/default/files/docs/2017/11/ensuring_fair_returns_workshop.pdf Note that the RIIO-ED1 slow track cost of equity is 6%.

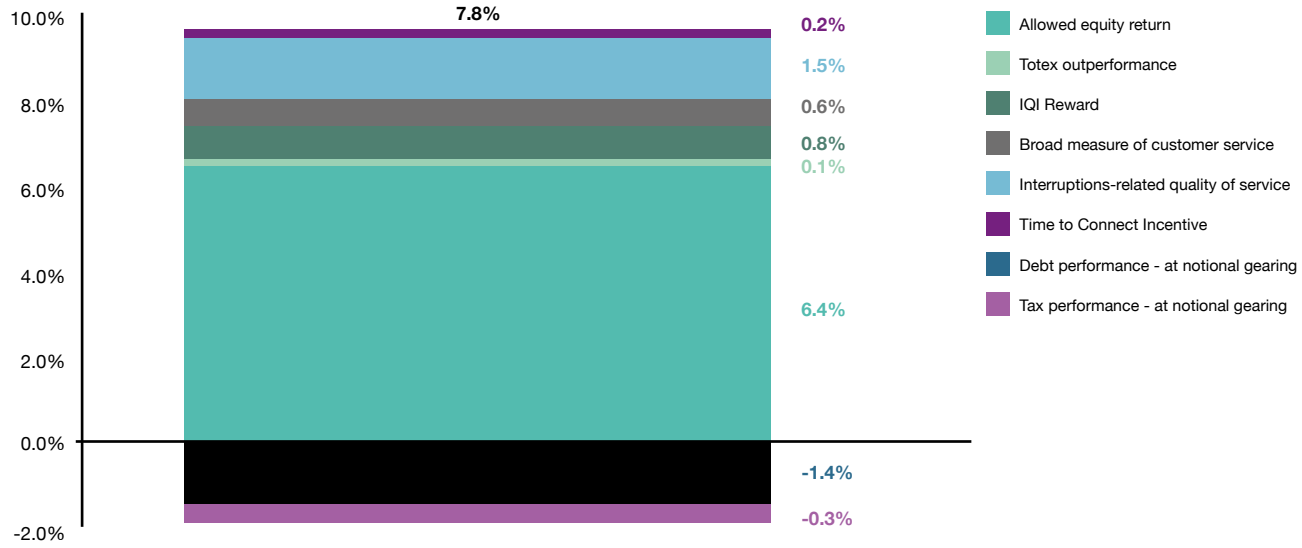
[2] Ofgem, RIIO-GD1: Final Proposals – Finance and Uncertainty supporting document, 17 December 2012. Paragraph 3.37, p.21 states: "...in RIIO price controls our intention is that companies should be able to achieve an upside return on (notional) equity in the low double-digits".

2.65. Ofgem's RoRE measure only considers regulated returns and it is therefore more appropriate to compare RoRE returns to the regulated element of dividends WPD has paid. Figure 2.15 presents RoRE returns and shows the element of dividends not related to the regulatory business, as reported in WPD's RFPR, separately. Note that the presentation of dividends in figure 2.15 also includes cash paid out to finance interest and debt maturities for loans taken out elsewhere in the WPD group.

Total RIIO-ED1 RoRE, including forecast years 2021/22 - 2022/23

2.66. Figure 2.16 sets out a provisional view of WPD's Total RoRE for the RIIO-ED1 period.

Figure 2.16 WPD's total forecast by the end of RIIO-ED1 - notional gearing basis, including financing and tax



Note: Incentive on Connections Engagement, Losses Discretionary Reward scheme, network innovation and penalties/ fines have a value of less than 0.0% and are therefore not shown. Data source: WPD's draft 2020/21 RFPR submission.

2.67. WPD's forecast RIIO-ED1 RoRE returns reflect:

- Our stable financing structure over the RIIO-ED1 period, with levels of gearing kept close to Ofgem's notional level of 65%. The average gearing for the WPD DNOs for RIIO-ED1 is forecast to be 60.5% over the RIIO-ED1 period.
- Our consistent investment in the network. WPD's RoRE returns above the 6.4% allowed return on equity are largely driven by rewards under Ofgem's performance incentives, rather than us not spending our cost allowances; at the close of 2020/21 our expenditure is 2% below our Totex allowances for RIIO-ED1 to date, and we forecast that Totex will remain slightly under the costs we included in our RIIO-ED1 Business Plan, resulting in a 0.1% RoRE benefit in figure 2.16.
- Our better than target network performance; our excellent network availability in RIIO-ED1 to date is reflected in our RIIO-ED1 total RoRE returns of 1.54% under the Interruptions related Quality of Service (QoS) incentive.
- Our voluntary return of £95.2 million of unspent forecast regulatory Totex allowances associated with curtailed rail electrification projects in RIIO-ED1, with a RoRE impact of -0.3%.
- The absorption of costs associated with WPD's establishment of a Distribution System Operator (DSO).
- The expenditure WPD has made supporting 92,000 fuel poor customers to make over £37 million of annual savings since 2015/16.
- The impact of WPD's cost of debt allowance being £174 million lower than the slow track equivalent, with a RoRE impact of -0.6%. As part of WPD's fast track settlement our cost of debt allowance uses a 10 year trailing average cost of debt index, which differs from the slow track approach.
- Further shortfalls on the cost of debt allowance. Further to the difference from the slow track cost of debt, even on a slow track basis, the cost of debt allowance is significantly below WPD's actual cost of debt. Over the RIIO-ED1 period, WPD anticipates a shortfall on its cost of debt allowance compared to actual cost of debt of £303 million.
- As a result of the underfunding of WPD's cost of debt, a significant proportion of WPD's total earned equity return is therefore being used to fund interest payments. The impact of this is that WPD's shareholders are funding £303 million of interest payments which should have been covered by Ofgem's cost of debt allowance.

Customer bills in RIIO-ED1

2.68. Our aim is to always 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 we are going significantly beyond these commitments. Our efficient approach to operating the business has enabled us to do so, while keeping customer bills at a consistent level throughout RIIO-ED1. Overall, our average domestic customers pay £98 a year for our service.

Chapter 3

Giving customers a stronger voice

Chapter 3 Contents

3. Giving customers a stronger voice

Summary

3.1. To shape the commitments we will deliver in RIIO-ED2, we have undertaken the most comprehensive and inclusive stakeholder engagement programme ever. More than 19,000 stakeholders have already had their say (over 6,400 via direct, in-person engagement) as part of a rigorous consultation programme that will continue up to the submission of WPD's final Business Plan to Ofgem in December 2021 and beyond. Insights from more than 50,000 bill paying customers and their representatives have also informed our approach and proposed commitments for RIIO-ED2.

3.2. Ongoing and rigorous stakeholder engagement has allowed us to:

- Accurately determine what is expected by the broadest range of stakeholders, both today and for the long-term.
- Deliver a first-class, widest ranging stakeholder engagement programme, in terms of:
  - Size and breadth of programme.
  - Scope of influence.
  - Engagement led by the experts and those responsible for delivery within WPD (to ensure discussions are as productive and meaningful as possible).
  - Ensure a range of accessible channels to meet the customer's preference for engagement – including in-person sessions, online forums, social media, webinars and surveys.
- Ensure every decision in the Business Plan is well justified and plans are entirely co-created with the stakeholders and communities we serve.
- 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 and promoting through all key channels.
- Ultimately deliver the most ambitious and efficient Business Plan possible, to achieve highest possible levels of service and performance for customers.

3.3. Further detail on our customer engagement is included in Supplementary Annex SA-03: Giving customers a stronger voice: Enhanced engagement.

Highlights of our stakeholder engagement

Figure 3.1 Highlights of our engagement with stakeholders

How we built our plan

3.4. Our extensive expertise and experience allowed us to anticipate some of the needs of our customers and some of the key focus areas we expected to see in our Business Plan. These included the impetus to deliver on government net zero ambitions, 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.

3.5. We are, however, careful never to assume what our customers expect from us which is why it is vital that we ask open, non-leading questions to understand stakeholder requirements. In several areas, stakeholders want us to build on our track record of delivery and achieve incremental improvement, but in others they want to propose entirely new ways of operating.

3.6. 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.

3.7. We then built our Business Plan in stages - collaborating with stakeholders throughout - in a process of 'co-creation'. We sought to establish long-term relationships with stakeholders, building their knowledge over time (at each round of our stakeholder workshops, a minimum of half of the attendees had previously attended a WPD event) in order to enable broader and deeper feedback on issues than the engagement achieved by our peers.

3.8. 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.

Overall RIIO-ED2 engagement process

3.9. 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.

3.10. By contrast, our Business Plan is built on a seven-stage engagement process, including consultation on two published drafts of our plan. Five of these stages will be completed prior to the plan's submission, with a further two to follow after.

Figure 3.2 Stages of our stakeholder engagement process for RIIO-ED2

Stage	Objective	Deliverables	Approx. timing
Stage 1: Preliminary engagement	Identify the high level outcomes WPD should commit to deliver. Identify initial, unprompted 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	Objective	Deliverables	Approx. timing
Stage 3: Business Plan development	Co-create early commitments with stakeholders. Develop initial costing for each commitment.	First 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.	Second draft of commitments. Updated costing for each commitment based on changes.	Oct 2020 – 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

3.11. Before commencing our engagement programme for RIIO-ED2, in 2018 we began by asking stakeholders to help shape and define what an 'enhanced engagement' process should look like for WPD (see figure 3.3). We aimed to extend stakeholders' influence by identifying the maximum range of Business Plan components they felt they could shape, and the level of support they would need to do this. 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.

Figure 3.3 Areas of our Business Plan stakeholders have indicated they would like to influence

	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					●	●	●
Uncertain mechanisms	5.0		●	●	●	●	●	●
Efficiency	4.8						●	●
Data assurance	3.5						●	●

● Input in RIIO-ED1 ● Desired input for RIIO-ED2

3.12. We also conducted a benchmarking exercise via an independent, research expert to "horizon scan" the best practice approaches adopted by a range of companies by water, gas, transmission and rail companies for their latest price control reviews, learn from best practice and identify opportunities to go further and deliver an industry leading stakeholder engagement programme. From our research, we learned that the majority of other companies traditionally deliver 'informative' and 'consultative' engagement, where stakeholders are asked to consider a range of pre-written commitments and options, but rarely had the opportunity to develop these with the companies 'from scratch'. We challenged ourselves to deliver a programme that moved significantly beyond these standards. We targeted maximum stakeholder input in our decision making, sought to deliver co-creation with stakeholders at every stage and to stretch beyond this to achieve new standards of reaching negotiated, collaborative Business Plan settlements with our stakeholders. Full details of our approach and the key deliverables from our engagement programme are set out in detail Supplementary Annex SA-03: Giving customers a stronger voice: Enhanced engagement.

Engagement timeline and key activities

3.13. Engagement on our plans for RIIO-ED2 has involved stakeholders spanning a range of knowledge and interest sectors under the headings of expert; interested; limited knowledge and future customers. Engagement carried out with stakeholders from specific sectors was never carried out in isolation. We shared the feedback collected with stakeholders from the other sectors, and used this feedback to inform the content of our future engagement.

3.14. An example of the way in which our engagement methods are tailored to stakeholder knowledge and interest level can be found in figure 3.4.

Figure 3.4 Core stakeholder engagement activities

Key - Stakeholder level

1 Expert 2 Interested 3 Limited knowledge 4 Future customers

			Total engaged				
Ref	Engagement method	Stakeholder expertise level	Stage 1: preliminary engagement	Stage 2: willingness to pay	Stage 3: BP development	Stage 4: BP refinement	Stage 5: Acceptance testing
1	Customer Panel	1	38	-	30	29	-
2	Topic specific bilateral/expert workshops	1	1,187	-	1,349	11	-
3	Connections Customer Steering Group/Distributed Generation Owner Operator Forum	1	128	-	122	98	-
4	Local authority local energy plan bilaterals	1	-	-	133	-	-
5	Co-creation workshops	1 2	330	-	393	222	-
6	Sprint workshops	1 2	-	-	-	88	59
7	Webinars	1 2	-	-	-	86	56
8	Local network investment and net zero workshops	1 2	229	-	206	-	-
9	ICP/IDNOs conferences	1 2	63	-	53	-	-
10	Social obligations conferences	1 2	53	-	57	-	-
11	EV conferences and workshops	1 2	-	-	550	-	-
12	Strategy development workshops	1 2	-	-	-	258	-
13	Written consultations	1 2 3	-	-	-	141	51
14	Online engagement portal	2 3	29	-	82	40	-
15	Online panel	2 3	82	-	142	-	-
16	Quantitative research surveys - Customers in vulnerable situations	3	100	-	1,628	-	-
17	Quantitative research surveys - Major connections customers	3	273	-	1,574	-	-
18	Quantitative research surveys – Distributed generation customers	3	64	-	384	-	-
19	Power cut follow up surveys	3	131	-	-	-	-
20	Social value/willingness to pay - qualitative workshops	3 4	-	48	-	10	-
21	Social value/willingness to pay - quantitative surveys	3 4	-	1,188	-	1,280	-
22	Multi-phase deliberative, qualitative focus groups – end users	3 4	50	-	68	96	-
23	Citizens panels	3 4	75	-	-	-	-
24	Social media surveys	3 4	509	-	-	1,487	892
25	Multi-phase deliberative, qualitative focus groups – future customers	4	-	-	54	-	-
26	Acceptability testing with customers	3 4	-	-	-	-	2,721
		Total	3,341	1,236	6,825	3,846	3,779

Synthesis and triangulation of stakeholder feedback

3.15. 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.

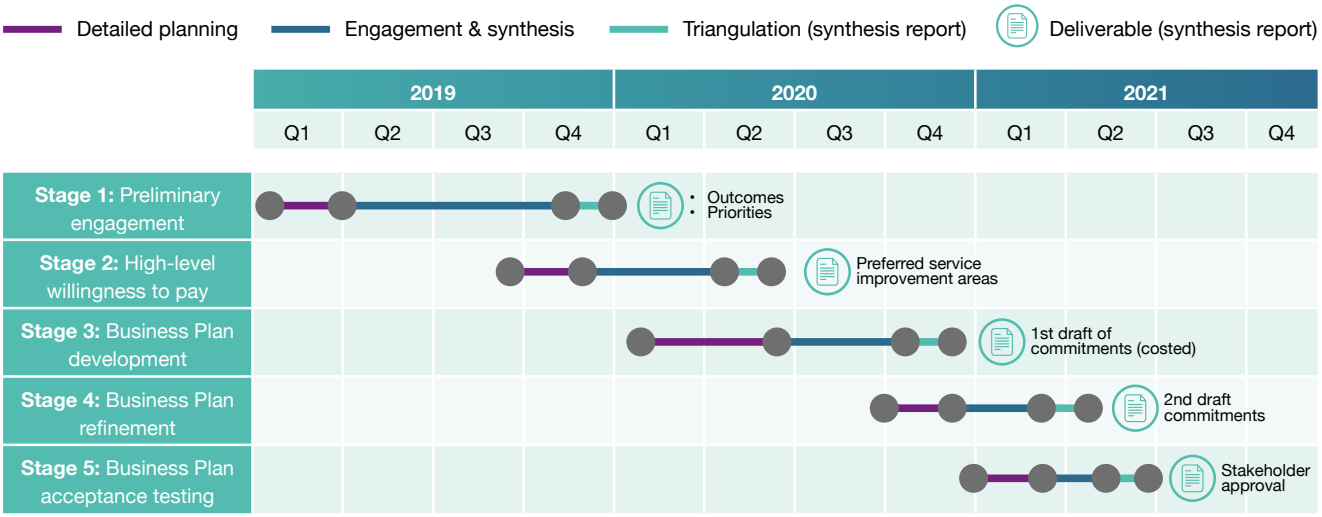
3.16. We have put systems in place to record and organise:

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

3.17. 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 combined feedback from each completed stage would shape the next stage of engagement. We used Sia Partners to independently compile synthesis reports and so help to avoid any unintended bias in interpreting what stakeholders were telling us. The reports 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. brainstorming high level priorities from a 'blank piece of paper' or signing off specific service levels).
- Our database and reports capture how viewpoints compared across different segments, with the synthesis reports setting out the consolidated, collected feedback that has been used by WPD to come to a final proposal.

Figure 3.5 RIIO-ED2 Engagement programme



3.18. 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.

3.19. We have then followed a robust triangulation process to bring multiple sources of evidence into effect in order to arrive at a final, agreed position with stakeholders. WPD's approach to triangulation has also been iterative. After each feedback stage, we reviewed evidence to establish the findings, identify any conflicts, and consider how the finding results compared to the initial questions and hypotheses. When discussing complex issues, conflicts are normal. Our engagement programme should aim to highlight these and then ensure that a measured compromise is achieved based on responses from all relevant parties. We have delivered ongoing triangulation using purposefully selected engagement methods that allow for debate resulting in a consensus and/or compromise opinion. This required stakeholders to raise their own priorities but to consider these in the wider context of priorities of others, with WPD purposefully playing back feedback received from other stakeholder groups and forums so that audiences can consider the wider spectrum of views we have received. Through discussions and negotiations we then sought to build consensus around key priorities that gained support from wider stakeholder segments than those originally proposing them, and in so doing help to enhance the justifications and acceptability of the commitments WPD has put forward to address these points.

3.20. A comprehensive list of conflicts we have managed is presented in Supplementary Annex SA-03: Giving customers a stronger voice: Enhanced engagement. Two key examples include:

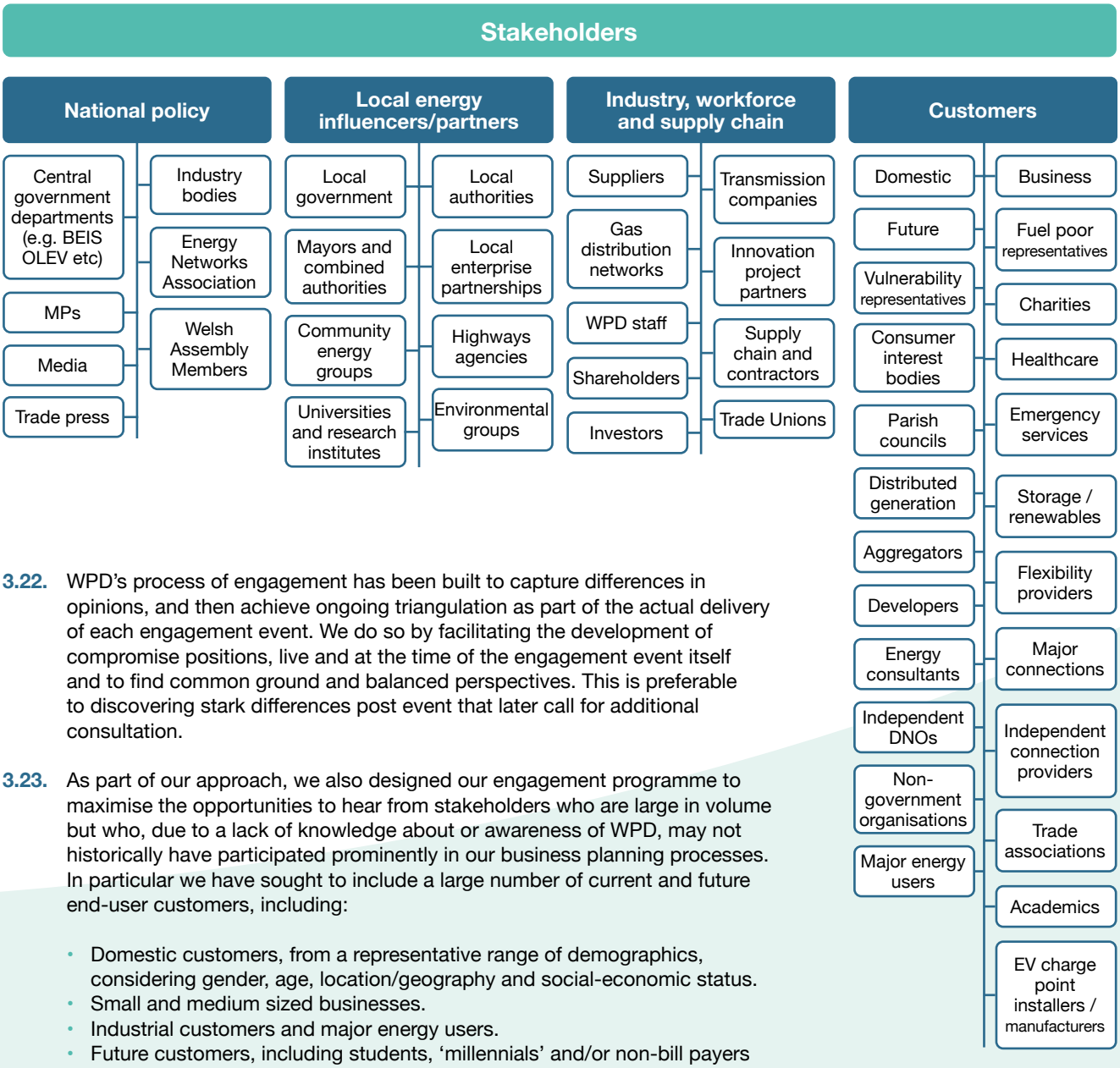
Figure 3.6 Examples of conflicts in stakeholder feedback that WPD has managed

Topic	Example conflict	Resolution
Fuel poverty	Within specialist stakeholder discussions, such as WPD's customer vulnerability conferences and surgery workshops, WPD was urged to play a central role in addressing fuel poverty in RIIO-ED2. Doing so is seen as a natural extension of our activities to support customers in vulnerable situations in relation to power cuts, with a considerable interconnection between the two issues, whereby customers living in cold homes are often more vulnerable in the event of a power cut. While the majority of wider stakeholders echoed this sentiment, business customers, developers and commercial industry disagreed, suggesting that fuel poverty should not be WPD's responsibility and should instead be addressed by energy suppliers, charities and local government.	Firstly, we presented the views of customer vulnerability representatives to this broader audience to explain their justifications for seeking action from WPD in this area. We also provided broader regulatory context such as the fact that fuel poverty was a baseline expectation with Ofgem's Business Plan guidance. At no point did WPD seek to influence stakeholders opposed to action in this area – we strictly focused on objectively playing back the viewpoints of these stakeholders. We then sought views from wider stakeholders on how if we were to retain a focus on fuel poverty, they would scope and refine it in a way that they were more comfortable with. They acknowledged the importance of this priority to others but emphasised that we must continue to be mindful not to go 'too far' and duplicate services others are better placed to deliver. As such, the compromise position ultimately agreed was for WPD to commit to establish a broad network of existing outreach organisations that we will work in partnership with to deliver fuel poverty support to customers, rather than seeking to deliver these services directly ourselves. Key to this is that WPD leverage in other sources of funding and facilitates customer access to these support services.
Environment	In relation to WPD's target to achieve net zero in our own business carbon footprint by 2028, some stakeholders debated whether WPD should use offsetting to reduce its carbon footprint. They argued that offsetting is just kicking the can down the road and should only be used as a last resort. But the majority of stakeholders supported the initiative and acknowledged that, due to technological limitations, offsetting will be required and is preferred to a less ambitious timeframe to achieve net zero without it.	Our objective to achieve net zero is very challenging in these timescales – 22 years ahead of the government target. We have established a plan to reduce everything in our business carbon footprint towards net zero that can be achieved in these timescales, based on the technologies available. Offsetting will be a last resort and only for items where there are unlikely to be practical, non-carbon options by 2028 (e.g. electric alternatives for WPD's larger vehicles). Stakeholders have also overwhelmingly urged WPD to set an ambitious target (of 2028) in order to demonstrate leadership and help to drive up the ambitions of others. WPD will be able to reduce more than two thirds of its carbon footprint to zero by 2028. In the meantime, as we await the technologies to address the remaining third, offsetting will achieve excellent additional benefits for our local region – demonstrably lowering carbon in the atmosphere. It will see us invest in the localised area via tree planting and the creation of new carbon sinks (via peat bogs etc) as well installing solar PV to allow others to reduce their emissions. We will not purchase carbon credits but invest in measures to benefit our local communities, via accredited schemes. Our commitment is focused on the outcome of reducing our net impact on carbon emissions to zero. The alternative would be to set a target for net zero in our operations alone by c.2043 without the added benefit of offsetting action. But we are instead proposing to drive additional environmental benefits in the meantime, at a cost of less than 1p on the average domestic customer bill.

An inclusive approach

3.21. Our ambition is always to engage with anyone who has an interest in or is affected by our operations. This can present its own challenges as each group brings a different perspective and set of priorities. The key to managing this has been to work closely with our stakeholders, balancing their various needs and reaching a consensus that works for everyone wherever possible. The types of stakeholder we serve are summarised in this table:

Figure 3.7 Types of stakeholders that have participated in WPD's engagement programme and contained in our database



3.22. WPD's process of engagement has been built to capture differences in opinions, and then achieve ongoing triangulation as part of the actual delivery of each engagement event. We do so by facilitating the development of compromise positions, live and at the time of the engagement event itself and to find common ground and balanced perspectives. This is preferable to discovering stark differences post event that later call for additional consultation.

3.23. As part of our approach, we also designed our engagement programme to maximise the opportunities to hear from stakeholders who are large in volume but who, due to a lack of knowledge about or awareness of WPD, may not historically have participated prominently in our business planning processes. In particular we have sought to include a large number of current and future end-user customers, including:

- Domestic customers, from a representative range of demographics, considering gender, age, location/geography and social-economic status.
- Small and medium sized businesses.
- Industrial customers and major energy users.
- Future customers, including students, 'millennials' and/or non-bill payers aged 18-24.

3.24. In relation to future customers we have sought robust engagement with them for two key reasons: firstly, because they are likely to become bill payers during the RIIO-ED2 period and therefore have a right to influence the plans that they will fund in the near-future; and secondly, and perhaps most importantly, they have vital insights that WPD and well established stakeholders do not have. Future customers bring unique views on the future (in particular the urgency of the achievement of net zero) and can therefore provide us with early warning of key issues and likely priorities, and entirely brand new expertise based on them generally being a highly technology-savvy audience (particularly in areas where our plans and understanding are relatively new, such as in relation to digitalisation). WPD's strategic intention throughout has been to draw in as many views as possible about the future of energy. Future customer perspectives are therefore vital not just to act as a sounding board to test and refine our proposals, but to provide a rich source of information to help enhance our understanding.

259 future customers and more than 7,000 domestic and business end user customers have been engaged to date (as well as representatives of these groups at our wider stakeholder events, including the likes of Parish Councillors, charities and trade associations), with customer input present in 19 of WPD's 26 engagement methods.

3.25. Our comprehensive stakeholder engagement strategy 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). It has also been subject to rigorous scrutiny from the Customer Engagement Group, via more than 140 meetings. Of these, more than 100 have been topic-specific sub group meetings, designed to deep-dive into specific stakeholder insights and resulting WPD proposals in granular detail across a wide range of Business Plan areas.

3.26. We co-created the Business Plan with stakeholders using an iterative process. 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 are designed to deliver for 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. We have identified new, emerging and increasingly local stakeholder groups, as well as changes in the needs of existing stakeholders. We used a wide variety of engagement methods to suit the audience, avoiding a 'one-size-fits-all' approach. The methods we select – including email, face-to-face and an online portal – are designed to suit the type of stakeholder, and make it as easy as possible for them to respond.

- **Transparent –** This means publishing all feedback we have received and the actions that have resulted from it. We have shared the findings from each individual engagement activity and have also produced a standalone synthesis report after each key engagement stage (see figure 3.8). These were produced by an independent third party to combine the feedback received objectively and to present the key findings in a single, comprehensive report.

- **Proactive –** We identify and reach out to stakeholders so they do not need to contact us. We proactively seek out views and will not exclude any group. We built trust by ensuring engagements include the full range of stakeholders and have demonstrated a lasting 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.

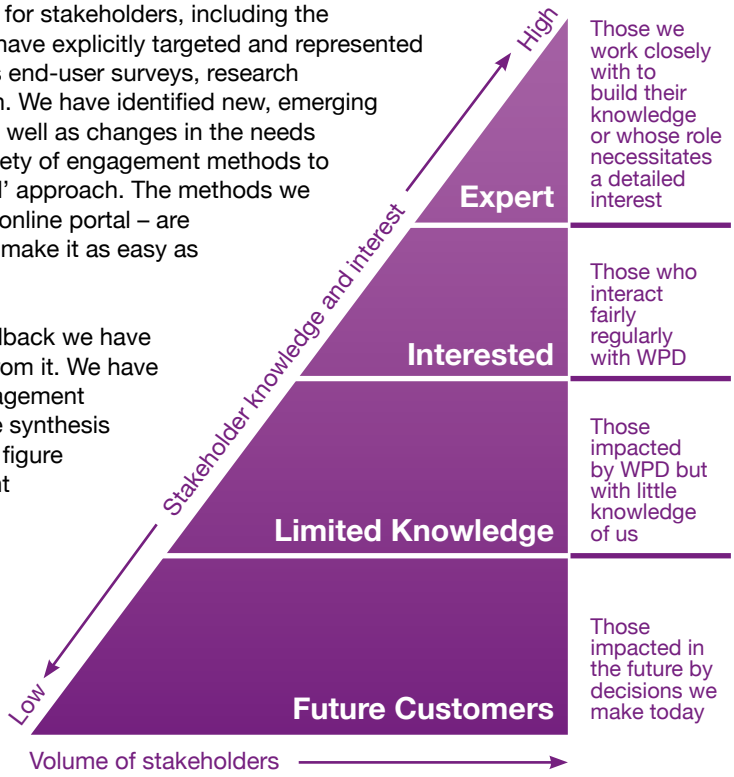


Figure 3.8 Knowledge and interest levels of our stakeholders

- **Purposeful –** The intention of every engagement is to learn, improve and involve stakeholders in the co-creation of our plans. We avoided 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 experts, with significant experience who have 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.

3.27. 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 will deliver real value and innovative change for customers, by addressing the priorities, expectations and evolving needs of our stakeholders.

3.28. Stakeholder engagement doesn't stop here. 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.

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

3.29. 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.

3.30. As set out in the sections below, we have so far engaged more than 19,000 stakeholders (6,400 of these were direct, in-person engagements) at more than 250 engagement events. 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.

3.31. The objective of the six sessions was for stakeholders 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.

3.32. 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.

3.33. 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 therefore 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.

3.34. 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:

Figure 3.9 Examples of recommended actions co-created by stakeholders under each key topic area

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 and support 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"
10. Safety and health	**13 aspects** to consider. e.g.	**120** 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.	

Building on initial feedback

3.35. We began our consultation programme for RIIO-ED2 in early 2019, in order to offer maximum time and opportunity for stakeholders to have their say in our planning process, from the outset.

First draft Business Plan consultation

3.36. In January 2021, 10 months before its final submission to Ofgem, WPD became the first Distribution Network Operator to publish its Business Plan. This was immediately followed by a 'Have Your Say' consultation on the first draft of the Business Plan (27th January 2021 - 28th February 2021) to further refine our proposals.

3.37. To arrive at our first draft, we engaged with 7,341 stakeholders (more than 4,500 via direct, in-person engagement) to co-create our proposals. We received 2,331 responses to aspects of our first consultation from a wide cross section of stakeholders across the four-week consultation period. This included a mix of qualitative and quantitative engagement methods.

3.38. Our first draft Business Plan is available on our website at: **https://yourpowerfuture.westernpower.co.uk/RIIO-ED2-Business-Plan-Jan2021**

3.39. Further details on our first draft Business Plan consultation document 'Have your Say' is available on our website at; **https://yourpowerfuture.westernpower.co.uk/RIIO-ED2-Business-Plan-Consultation-Jan2021**

3.40. In this first stage consultation, we set out 13 specific questions covering: WPD's core commitments, proposed expenditure, the accessibility of the plan, its overall acceptability, and actions to deliver a low carbon future. We asked about:

- Options for investment and the costs.
- The service improvement from each investment option.
- The impact on the average domestic electricity bill.

3.41. To explain our core commitments, we gave an overview of the stakeholder opinions which helped us to arrive at our initial 'current view' proposals, as well as a summary of WPD's current performance. 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 3.10
Our first draft Business Plan consultation

3.42. It was critical 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, with four introductory, contextual videos from the 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.

3.43. 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. We shared the consultation with:

Figure 3.11 Stakeholders invited to participate in our BP1 consultation

Audience/engagement mechanism	Information provided	Total stakeholders
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
Members of Parliament and Welsh Assembly Members	Sent BP1, consultation and an offer of a bilateral meeting, from WPD's CEO	181
Local Authorities and LEPs	Sent BP1, consultation and an offer of a bilateral meeting, from WPD's CEO	130
Key stakeholders (e.g. Citizens Advice, ENA, trade associations)	Sent BP1, consultation and a webinar/workshop invitation	460
Wider stakeholders	Sent BP1, consultation and a webinar/workshop invitation	8,000
Customer Engagement Group, Customer Collaboration Panel & Connections Steering Group	Sent BP1,consultation and a webinar/workshop invitation	94
Print, broadcast and online media Social media	National and local media; Phil Swift Utility Week interview. 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
WPD staff	Bespoke intranet page; surveys and response form; news and CEO bulletins	6,500

3.44. As well as achieving an excellent rate of direct responses, we ran a series of workshops to take stakeholders through our proposals, provide essential context and allow them to provide extensive qualitative feedback. An independent review of the first draft Business Plan consultation findings ensured all views were represented.

3.45. In total, WPD received feedback from 2,331 stakeholders, including 803 via direct, in-person sessions. We drove extensive participation from bill paying customers whose less detailed knowledge of the market can often leave them unrepresented in industry discussions like this. 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:

Figure 3.12 Respondents to our first draft Business Plan consultation

Engagement method	No. of stakeholders
Four stakeholder workshops (commitment creation and playback)	222
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
Bilateral expert sessions	11
Consultation 'sprint' stakeholder workshop (commitment options)	86
Five strategy workshops (including reviews of associated BP1 commitments)	257
Bill payer/customer surveys (commitment options)	1,487
In addition, feedback from:	**110 WPD staff**

3.46. Stakeholder feedback led to significant changes in the core commitments proposed in the second draft Business Plan. We:

- **Streamlined our core commitments to 58 (reduced from 67).**
- **Introduced four new core commitments.**
- **Increased the ambition of 35 of the core commitments (60%).**
- **Re-worded 11 core commitments to ensure they deliver clearer outcomes.**

First consultation – what we learned

3.47. The resounding verdict was that our first proposals accurately reflected the priorities of all our stakeholder groups and provided an excellent starting point for negotiating exact levels of ambition.

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

Figure 3.13 Percentage of customers who did not request changes or alternatives to the core commitments

Meet the needs of consumers and network users		Maintaining a safe and resilient network		Delivering an environmentally sustainable network	
Customer service	Customers in vulnerable situations	Network resilience	Business IT security and cyber resilience	Environment and sustainability	A smart, flexible network
90%	96%	88%	91%	77%	87%
Connections	Social contract	Safety	Workforce resilience	Innovation	Community energy
87%	93%	87%	94%	90%	86%

Base: 86 stakeholders at WPD's first draft Business Plan consultation sprint workshop

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

Second draft Business Plan consultation

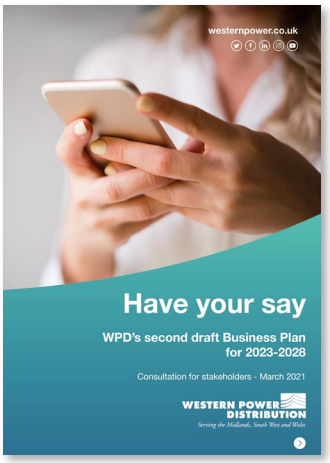
3.50. In March 2021, WPD published a second draft Business Plan with an accompanying stakeholder consultation, before many other DNOs had published a full plan for the first time.

3.51. Our second draft Business Plan is available on our website at: **https://yourpowerfuture.westernpower.co.uk/RIIO-ED2-Business-Plan-Mar2021**

3.52. Further details on our second draft Business Plan consultation document 'Have your Say' is available on our website at; **https://yourpowerfuture.westernpower.co.uk/RIIO-ED2-Business-Plan-Consultation-Mar2021**

3.53. Having made substantial changes as a result of our first consultation, including consolidating 67 initial core commitments to 58 and adding four entirely new commitments we wanted to provide stakeholders with full transparency and further opportunity to comment on these proposals, as we aimed to move towards a Business Plan with high levels of overall acceptability.

Figure 3.14
Our second draft Business Plan consultation



3.54. While the focus of the first consultation was largely on the core commitments and options for various levels of ambition, the second consultation asked stakeholders to comment on our overall plan, and therefore contained a 'summary in under 10 pages' of our overall plan. We set out 14 specific questions covering:

- Overall acceptability of the plan
- Potential bill impact
- WPD's Best View of future energy needs
- Our proposed expenditure for RIIO-ED2
- The presentation and accessibility of the overall Business Plan
- WPD's 58 core commitments at that time
- The four additional commitments (since our first draft plan)

3.55. Mirroring the successful methods used to share and promote WPD's first draft Business Plan and consultation, we again sent the second draft Business Plan to the same audience of around 9,000 stakeholders and invited them to participate in a follow up webinar and stakeholder workshops. In addition, an enhancement from our process for the first draft plan saw us run a targeted local media campaign including extensive coverage in regional newspapers with WPD's RIIO-ED2 Business Plan Manager. We also wrote to all of our 8 million customers inviting them to review our Business Plan online and to give us their views either via social media surveys or by responding to our consultation either via our online engagement hub or via email/post.

3.56. As a result, we significantly expanded the volume of stakeholders viewing and interacting with our Business Plan. A key objective of the Business Plan acceptability stage was to provide as many opportunities as possible for wider customers including end-user bill payers and future customers to have their say. In addition to the traditional stakeholder engagement mechanisms of webinars and workshops, we therefore achieved:

- **3,132** web hits on our second draft Business Plan
- **41** regional media articles published, with a readership of more than **500,000** people
- **672,000** people reached via content on 36 local radio stations
- **360,000** people reached via social media, generating **2,841** direct engagements with our content

3.57. To accompany the consultation, we ran a webinar and interactive Business Plan 'sprint' workshop to offer a live walk-through of the consultation via quick-fire presentations and stakeholder feedback sessions and capturing their responses to the 14 questions live and in-person.

3.58. As a result of these efforts, 64% of respondents to the full written consultation identified themselves as domestic customers, a significant increase from <20% achieved in our first consultation.

3.59. In total, WPD received 1,004 responses, which are broken down as follows:

Figure 3.15 Respondents to our second draft Business Plan consultation:

Engagement method	No. of stakeholders	Stakeholder types represented
Webinar	56	Typical full spectrum of stakeholders: domestic customers, local authorities, utilities, parish councils, charities, environmental groups, connections customers, developers, businesses, community energy groups etc.
Direct consultation responses – online & written	53	
Consultation 'sprint' stakeholder workshop	59	
Bill payer/customer surveys	892	End user customers

Second consultation – what we learned

3.60. The key headlines of the feedback received include:

- **Support for WPD's overall Business Plan was very high:**

Figure 3.16 Results from our second draft Business Plan consultation – overall Business Plan

Percentage of customers who did not express a desire for changes or alternatives to WPD's core commitments:			
The acceptability of:			
Business Plan overall content	WPD's overall expenditure proposals	Layout and structure of the Plan	Accessibility and ease of understanding
84%	80%	86%	90%

Base: 102 stakeholders at WPD's BP2 consultation sprint workshop and respondents to the written consultation.

- **Support for WPD's four new core commitments was high:**
  - 82% supported the statement: "I think WPD's new core commitments are appropriate and ambitious enough", while feedback specifically on each commitment broke down as follows:

Figure 3.17 Results from our second draft Business Plan consultation – new commitments proposed since first draft Business Plan

Core commitment:	Percentage of customers who did not express a desire for great ambition or an alternative commitment:
1. "Provide a same day connections' response for customers by introducing online self-assessment tools for individual low carbon technology applications."	78%
2. "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."	72%
3. "We will deliver service improvements to drive business innovative efficiencies to assist our customers to reduce overall energy costs."	74%
4. "Facilitate access to funding streams by providing support to community energy groups when making submissions to our calls for ideas."	73%

- **While support for a commitment on efficiency (# 3 above) was high, stakeholders felt that the current commitment should be more specific about the scale and materiality of the efficiencies that will be delivered.**
  - **In response, WPD revised the commitment in order to address this feedback and include a specific, quantifiable target.** The commitment now states: "We will make an efficiency saving of £53 million through RIIO-ED2 by improving the effectiveness of assets, operations and customer service by encompassing innovations into standard business practice that show a positive cost benefit and show a positive carbon impact."

- **While stakeholders strongly supported all of the commitments proposed, they felt that the number of core commitments should be further streamlined.**
  - **In response, WPD reduced our core commitments to 45 (from 58),** with previous actions re-categorised within our 100+ wider commitments.

- **Overall acceptability amongst responding stakeholders of WPD's package of core commitments increased,** most notably commitments in relation to 'environment and sustainability' increased from 77% to 92%.
  - **However, in relation to 'customers in vulnerable situations' satisfaction fell slightly,** despite WPD raising the ambition of all five commitments in this category between the first and second draft Business Plan, following responses to the first consultation. The reasons given were that stakeholders would welcome even greater ambition, particularly in light of the ongoing impact of the Covid-19 pandemic on the most vulnerable in society, and an expectation that these impacts will continue throughout at least the early years of the RIIO-ED2 period.
  - **In response, in addition to the five core commitments, WPD's Customer Vulnerability Strategy for RIIO-ED2 contains 39 additional commitments with a large number that will significantly exceed the baseline standards set by Ofgem for RIIO-ED2.**

Business Plan acceptability research

3.61. After engaging extensively with stakeholders to refine our Business Plan, it was essential that we sought to test the acceptability of the resulting plan with a broad, representative range of end-user bill payers. The full results and explanation of our methodology can be found in detail in Supplementary Annex SA-03: Giving customers a stronger voice: Enhanced engagement.

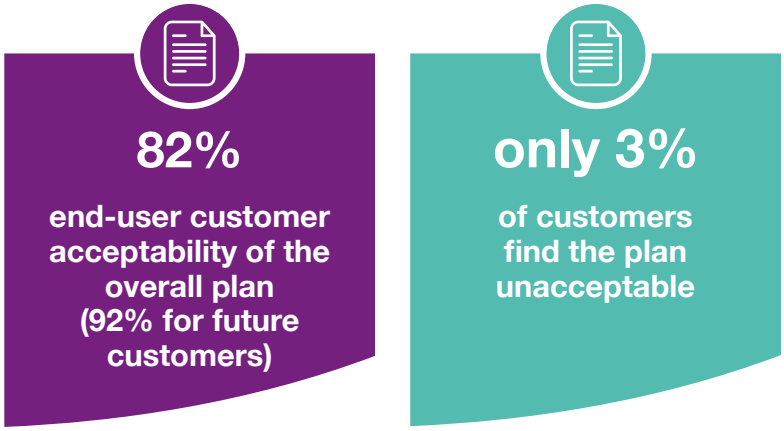
3.62. We commissioned an independent research expert to undertake an initial benchmarking exercise to understand best practice approaches in the utility sector to acceptability testing and then to design and deliver a comprehensive acceptability research activity. The objectives underpinning this acceptability research were to:

- Test uninformed and informed acceptability and affordability
- Identify any gaps and understand what factors are driving acceptability up/down
- Explore customer perceptions of the levels of ambition in the Business Plan

3.63. The best practice methodology designed specifically for this research took a three phased approach: 1) utilising WPD's enduring deliberative customer research panel to provide informed customer research; 2) deliberative research with uniformed customers to provide qualitative insights; 3) quantitative research with a full range of uniformed customer participants. We ensured a broad and representative sample of customers was surveyed including breakdowns by geography, age, gender, ethnicity and socio economic group.

3.64. Following robust acceptability research with **2,721 current and future end-user customers,** support for WPD's Business Plan was extremely high (see figure 3.18).

Figure 3.18 Headline results from our Business Plan acceptability research with customers



3.65. WPD's research also tested the affordability of the proposed bill level in our RIIO-ED2 plans. As part of the same quantitative research, customers we are asked whether they found the plan affordable.

3.66. This testing revealed that affordability of our plan is high:

- **Only 5.4% of customers found the plan to be unaffordable**, with a further 6.4% feeling unable to comment
- **Therefore 88% of customers did not express any dissatisfaction with the affordability of the plan**

The Customer Engagement Group

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

3.68. 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.

3.69. To find an effective, insightful and expert Chair, we appointed an external recruitment agency with expertise in CEO and Non Executive Director recruitment, resulting in a list of more than 40 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 standalone, 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. Our chosen Chair, Duncan McCombie, has extensive experience in the field, as the CEO of YES Energy Solutions and having held posts and Thames Water and the Energy Saving Trust (Wales and Ireland).

Figure 3.19 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.

3.70. The CEG includes experts in subjects including low carbon technologies, future energy scenarios and energy system transition, through to major users, vulnerable customers and the representation of local/regional interests.

3.71. A core 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 encompassing scrutiny of WPD as possible. The extensive expertise brought by the final 16-strong CEG (when including the Chair and Secretariat) is shown in figure 3.20.

Figure 3.20 CEG members knowledge and expertise

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 (including decarbonisation)	6
	Resilience	5
	Regulatory framework/price control planning	10
	Outputs and expenditure	6

3.72. 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:

Figure 3.21 CEG subgroups

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 and network resilience
Workforce Resilience	• Workforce resilience • Diversity	• Operational training

So far in total more than 140 individual meetings have been held and 31 challenges have been raised.

Scrutinising and informing WPD's engagement approach

3.73. From the outset, the CEG's feedback and scrutiny directly influenced and improved our programme. A comprehensive list is provided in Supplementary Annex SA-03: Giving customers a stronger voice: Enhanced engagement, but some examples include:

Figure 3.22 Examples of CEG scrutinising and informing our engagement approach

CEG scrutiny	WPD response
How will WPD ensure attendees are mindful of the spectrum of customers served by WPD, 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 consideration of 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 was redrafted and adjusted. • Inclusion of additional explanatory information helped to further improve the understanding of all participants. • 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 is not 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 with the assurance that WPD had accounted for all major stakeholder engagement feedback, had not overlooked any key items of feedback even if challenging to address and all WPD's outputs had 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 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.

3.74. The CEG considered and robustly challenged us in a number of areas, either raising formal challenges or clarification requests for further information. We have responded promptly to every intervention. As a result, WPD's Business Plan is significantly stronger and is set to deliver more wide ranging benefits for a wider variety of customers.

3.75. In total, there have been 31 challenges and 23 clarifications to date. Examples of these, with WPD's response and improvements, are set out in figure 3.23.

Figure 3.23 Examples of CEG challenges and clarifications across the whole planning process

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 digital that includes corporate functions.	• WPD's Digitalisation Strategy and Action Plan was released for consultation, asking for customers' input on whether their expectations and priorities are being delivered as part of the current approach.

Subgroup	CEG challenge/clarification	WPD response
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 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 Customers	• 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 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 15 and a stakeholder database was developed to capture all engagement activity across the business (for RIIO-ED2 and 'Business as Usual'). 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.

Ofgem's RIIO-ED2 Challenge Group

3.76. Ofgem has established a RIIO-ED2 Challenge Group to scrutinise 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 on 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.

Social value research

3.77. Our stakeholder engagement seeks to develop and deliver services that are valued by our customers. To achieve this, we had to first create 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 by our actions, combining social value proxies, social return on investment studies and bespoke social value research.

3.78. Where social proxy values do not currently exist, are out of date or do not reflect the specific outcomes WPD intended to deliver from 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 three reasons:

1. **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).

2. **To establish willingness to pay:** WPD's additional 'willingness to pay' research can therefore test options for the volume of 'units' we could deliver. Doing this helps to establish a preference for the level and scale of activities we deliver, which can then be applied to the already known social value to determine an overall benefit to customers from our specific action. We aren't 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. **To establish a value:** If a social value does not currently exist, this research can help to derive a social value.

3.79. 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.

3.80. 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.

3.81. 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.

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

Figure 3.24 Summary table of results – high level social value findings (September 2020)

Attribute Description	Mean social value (expressed as a proportion of their average annual domestic electricity bill)
Protect people who cannot afford to adequately heat their homes from being disadvantaged in the future	£2.00
Identify and help people who cannot 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 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-attack	£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 does not need replacing before 2050	£0.92
Proactively provide affected customers with relevant updated during power cuts	£0.90
Work 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

3.83. 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.

3.84. 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.

3.85. 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.

3.86. 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.

3.87. 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 measured 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 helped us to arrive at more specific commitments and performance targets, prioritising those with the highest intrinsic value to customers. The findings and how these have influenced our Business Plan commitments are set out in detail in Supplementary Annex SA-03: Giving customers a stronger voice: Enhanced engagement.

Dealing with change

3.88. As WPD's ongoing stakeholder engagement strategy outlines (see Supplementary Annex SA-03: Giving customers a stronger voice: Enhanced engagement), 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.

3.89. 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 in our Business Plan and 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.

3.90. 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 faster pace 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.

3.91. In addition to our final Business Plan, we will publish a standalone DSO Strategy (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.

Chapter 4

Our commitments

Chapter 4 Contents

4. Our commitments

Summary

4.1. This section details the ambitious programme of activity we want to deliver in RIIO-ED2. Our plans focus on delivering excellent customer service, harnessing the benefits of a smart future and driving industry leading sustainability plans, all while supporting our most vulnerable customers, tackling fuel poverty and ensuring bills remain affordable for everyone.

4.2. Our stakeholders have led us to identify 45 core commitments which we are committed to achieving over the five year period. A full list can be found in paragraph 4.25 of this chapter.

4.3. Our commitments are separated into three high level categories (see figure 4.1).

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

Meet the needs of consumers and network users	Maintaining a safe and resilient network	Delivering an environmentally sustainable network
WPD must deliver a **high quality** and **reliable service** to all network users and consumers, including those that are in **vulnerable situations**	WPD must deliver a **safe** and **resilient** network that is **efficient** and **responsive to change**	WPD must manage the **impact of its activities** on the environment and **enable the transition** towards a smart, flexible, low cost and low carbon energy system for all consumers and network users

4.4. Our performance against these commitments will be measured rigorously, to demonstrate to both our internal stakeholders and independent consumer groups that we are delivering on our promises. As well as reviewing our progress each year, we will establish an independent RIIO-ED2 Business Plan Delivery Challenge Group to hold us to account on behalf of our customers. This group will ensure that we remain on track to deliver our commitments and assess our progress at every stage.

4.5. We want to go further than ever before, so in addition to these promises, we have drawn up a number of wider commitments, which will enable us to transform the way we supply power to our customers, deliver excellent service and accelerate our journey towards decarbonisation.

4.6. We have already proven that we are dynamic and flexible in the face of industry change. We will continue to do this by engaging actively with our stakeholders throughout RIIO-ED2 and adapting our plan to address the needs of our communities.

4.7. Our commitments are required to fit into a regulatory framework as provided by Ofgem. There are three main regulatory mechanisms: Licence Obligations, Output Delivery Incentives and Price Control Deliverables (see figure 4.2).

Figure 4.2 Ofgem's regulatory framework mechanisms

Licence Obligations (LO)	Output Delivery Incentive (ODI)	Price Control Deliverables (PCD)
• Must do • Sets minimum standards • Failure leads to enforcement	• Penalties and/or rewards • Reputational incentives - League tables	• Consequences for non delivery of activity

4.8. Licence Obligations are a requirement under our Distribution Operating Licence and are therefore mandatory. e.g. Provide a 24/7 emergency service for customers to report power cuts and safety issues. (Standard Licence Condition 8).

4.9. There are two types of Output Delivery Incentives.

- **ODI Financial (ODI-F)** is a mechanism to financially penalise or reward a DNO if it under performs or out performs the target service level. e.g. Broad Measure of Customer Satisfaction survey.
- **ODI Reputational (ODI-R)** is where a DNO commits to deliver a specific activity and is measured against that delivery. There is no financial reward associated with this.

4.10. Price Control Deliverables are where a number of named units or schemes must be undertaken. If that number is not achieved, the DNO must repay a proportion of the allowance.

4.11. Ofgem specifies LOs, ODIs and PCDs for certain key activities which we undertake. However, where a commitment is additional to those specified by Ofgem, then we are able to propose a Bespoke ODI(F), ODI(R) or PCD. All of our 45 commitments fit into one of these mechanisms.

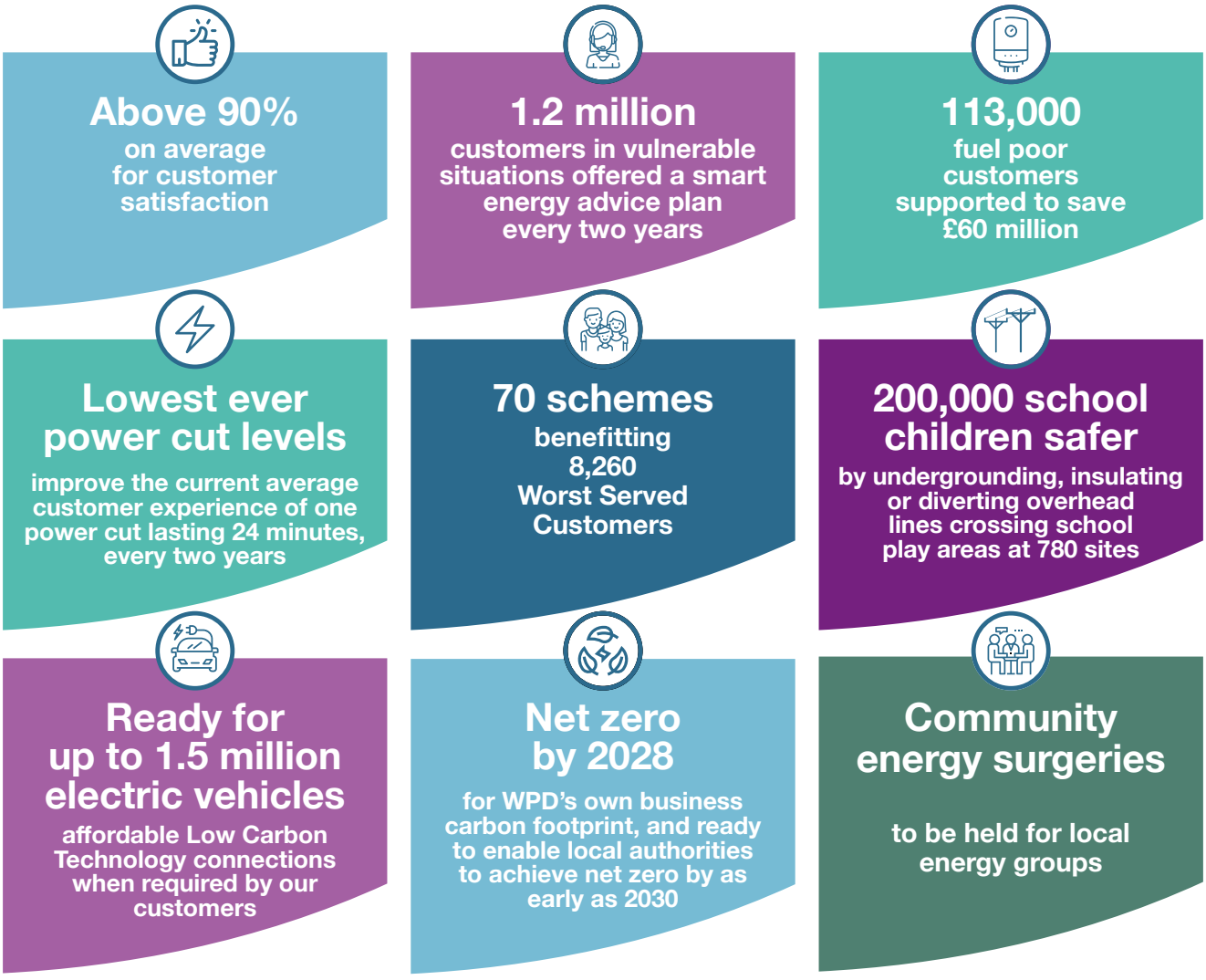
4.12. Also, where we can demonstrate that we have gone well beyond what is expected of a DNO, we can also apply for a Consumer Value Proposition (CVP) which, if sucessful, will allow us to secure a one-off award for our commitment.

4.13. Further detail on our commitments are included in Supplementary Annex SA-04: Our commitments.

RIIO-ED2 highlights

4.14. Figure 4.3 shows nine key core commitments out of the total of 45.

Figure 4.3 RIIO-ED2 key commitments



4.15. Our customers have told us they value the excellent levels of customer service we deliver. We will continue to build on this success and meet their continually developing customer needs; for example, by connecting their electric vehicles' chargers, offering them better access to our data and ensuring our service is affordable. To meet these changing expectations on our network as energy use shifts away from traditional models of use, we have set the ambitious target of achieving an average customer satisfaction rate of at least 9 out 10, across all areas of our performance including the entirely new services that will emerge as a result of the shift to a net zero future. We are committed to being the best today and as we look to an exciting energy future.

4.16. As our electricity system radically transforms, it is essential that we protect our vulnerable customers and support them to embrace low carbon technologies in order to make their bills more affordable. We already have 1.9 million customers on our Priority Services Register who benefit from additional support during power cuts. We proactively contact these customers every two years to check they are receiving the services they need from us and to ensure that our records are up to date. We want to do more. In the five years of RIIO-ED2, we will work with partner organisations to deliver bespoke support to 113,000 fuel poor customers, helping them to save more than £60 million.

4.17. We are here to keep the lights on and power flowing to every home and business in our regions. We will continue to improve on our current performance where on average our customers experience 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.

4.18. We are committed to supporting our communities and responding to their needs. The Covid-19 pandemic impacted everyone, with many people suffering hardship and uncertainty. It is our role to support them. We have already helped more than 565,000 customers in our communities through our £1 million 'In This Together - Community Matters' Covid-19 fund, enabling 871 organisations to reach out to those hardest hit by the pandemic. For RIIO-ED2, we are committed to allocating a minimum of £1 million a year to continue to support our local communities as they recover and rebuild.

4.19. Safety is of paramount importance and intrinisic to how we operate. As part of our commitments we will therefore divert, underground or fully insulate overhead lines crossing school playing areas. Although we have never had any reported incidents where our equipment has caused harm, we are committed to taking proactive action to remove any risk and keep our young children safe.

4.20. Cyber security is another important item for our stakeholders. We will conduct a continual assessment of potential cyber threats to ensure we have 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.

4.21. As we transition towards net zero, we must make sure our network is ready. We will support our customers with the connection of electric vehicle charging points, heat pumps and prepare our network to support more localised renewable generation.

4.22. As we accelerate towards decarbonisation, we will lead by example, reducing our own business carbon footprint (excluding network losses), reaching net zero by 2028 – that is 22 years ahead of government targets. We are already working towards a non-carbon fleet of vehicles, making our buildings more energy efficient and reducing our own electricity consumption, amongst other initiatives. We will also use greenhouse gas removal, including tree planting and offsetting initiatives such as support for local photovoltaic installation schemes for the fuel poor. These local projects will benefit communities as well as the environment.

4.23. Stakeholders have also asked us to continue our work to support the creation of community energy projects across our region. We will step up and support the next generation of local decentralised generation. We will hold accessible 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.

4.24. Key to our successful delivery is our dedicated and talented staff. We have a highly skilled workforce that 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 exceptional customer service, delivery of our commitments and recognising the role everyone has to play. We want our staff to be proud to be part of WPD.

Our core commitments

4.25. The following tables summarise our 45 core commitments, which are then described in more detail. These commitments account for about 95% of the £6.2 billion investment we will make in RIIO-ED2.

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

1. Meeting the needs of our consumers and network users

1.1 Customer Service						Stakeholder feedback	
	Core commitment	Commitment Type (ODI, PCD or CVP) if applicable	Current RIIO-ED1 performance	Change since First draft Business Plan (following stakeholder feedback)	Positive impact for customers	Response to our first draft Business Plan consultation*	Response to our second draft Business Plan consultation
1	Achieve an average customer satisfaction of 90% or higher across all key service areas with separate reporting for emerging technology customers.	ODI	>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.	Stakeholders discussed the overall package of commitments designed to meet the needs of WPD's customers and network users, and all of the recorded responses were positive, with praise for the breadth and detail of the consultation process, and the changes made in response to each stage of stakeholder feedback. Delegates were equally positive about the overall package of commitments under customer service, with 95% expressing no desire for changes or alternatives, of which 92% expressed full agreement that the proposals were acceptable. Some shared their positive experience of WPD's customer service, and any comments for improvement were around whether some of the response times were too ambitious: e.g. most felt that they could wait longer than five seconds for a telephone response.
2	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.	Bespoke ODI-R	2-4 seconds	No change	Customers get straight through to speak to a call agent on the telephone.	95% support for this commitment. No notable alternatives requested.	
3	Respond to social media enquiries within an average of five minutes and Webchat enquiries in an average of less than a minute, 24 hours a day.	Bespoke ODI-R	6-7 minutes	Increased ambition	Customers contacting us for a response on Twitter, Facebook and WhatsApp received 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.	
4	Provide greater insight on the planned work activity and interruptions on our network by creating an online viewer.	Bespoke ODI-R	New	No change	Enable customers 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.	
5	Resolve at least 90% of complaints within one day and resolve 99% of complaints within 25 days.	ODI	90% in one day and 99% in 31 days	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 achieved around one working week earlier than the Ofgem target of 31 days.	
1.2 Customers in vulnerable situations						**Stakeholder feedback**	
6	Proactively contact over two 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.	LO	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.	While 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.	See text overleaf

* Please note: where options for the level of ambition within our first draft Business Plan consultation 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						Stakeholder feedback	
	Core commitment	Commitment Type (ODI, PCD or CVP) if applicable	Current RIIO-ED1 performance	Change since first draft Business Plan (following stakeholder feedback)	Positive impact for customers	Response to our first draft Business Plan consultation*	Response to our second draft Business Plan consultation
7	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, gas distributor and telecommunications companies.	Bespoke ODI-R	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.	There was overall strong positive support for this package of commitments. 87% expressed no desire for changes or alternatives, while 68% expressed agreement that the proposals were acceptable. This was marginally lower acceptance than other areas. While it was acknowledged that WPD has raised ambitions from our first draft Business Pan in response to stakeholder feedback, some respondents urged WPD to go even further in the light of Covid-19, which has exposed previously invisible vulnerabilities. They wanted WPD to specify that it will divert resources to specialist organisations working specifically in the field of fuel poverty, as they were felt to have the requisite experience and trust in the community. Some wanted to see clearer pathways for people to emerge from fuel poverty as a result of WPD's actions. This feedback has been considered and addressed as part of WPD's separate vulnerability strategy.
8	Increase the number of customers registered on the Priority Services Register to 40% of total eligible customers including 50,000 hard-to-reach customers each year.	Bespoke ODI-R	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.	
9	Support 113,000 fuel poor customers to save £60 million on their energy bills over RIIO-ED2.	Bespoke ODI-R	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.	
10	600,000 Priority Services Register customers to be offered a bespoke smart energy action plan each year.	Bespoke ODI-R & CVP	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.	
1.3 Connections						**Stakeholder feedback**	
11	Achieve an average customer satisfaction of 90% or higher for all connection types (including major connections and low carbon technology connections).	ODI	>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.	The package around connections was widely endorsed, with 97% expressing no desire for changes or alternatives, while 86% expressed full agreement that the proposals were acceptable. The ambitious timescales were praised, and delegates felt that, as long as they were kept in the loop about extra capacity coming online, they would be able to make best use of the power. (Text continues overleaf)
12	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.	ODI	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 stakeholders felt this measure only focused on smaller customers and wanted it extended to larger customers, for whom timeliness rather than speed of the connection is key.	

* Please note: where options for the level of ambition within our first draft Business Plan consultation 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						Stakeholder feedback	
	Core commitment	Commitment Type (ODI, PCD or CVP) if applicable	Current RIIO-ED1 performance	Change since first draft Business Plan (following stakeholder feedback)	Positive impact for customers	Response to our first draft Business Plan consultation*	Response to our second draft Business Plan consultation
13	Provide a same day connections response for customers by introducing online self-assessment tools for individual domestic low carbon technology applications.	Bespoke ODI-R	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.	In relation to the new commitment (#13) the overwhelming sense was that stakeholders really welcomed the ambition and content of the commitment. 78% felt it was appropriate or if anything was too ambitious. The speed of a same day response was praised, with a key comment being: "As someone involved in persuading people to take up LCTs, the last thing you want is anything that might slow them down in this process".
14	Hold 90 local energy surgeries per year for local authorities, supporting them to deliver their Local Area Energy Plans.	Bespoke ODI-R	>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).	
15	Increase the number of flexible connection offers made by lowering the reinforcement cost threshold to >£75k per MW and works that will take more than 12 months to complete.	Bespoke ODI-R	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 was not clear and the purpose of action should be made clearer.	
1.4 Social Contract						**Stakeholder feedback**	
16	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.	Bespoke ODI-R	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 PLC and to identify improvements.	95% support for this commitment. Some felt that the purpose of the assessment could be clearer about what it measures.	92% expressed no desire for changes or alternatives, while 75% expressed full agreement that the proposals were acceptable. When discussing possible changes, respondents welcomed the creation of an employee volunteering scheme, but that once established the volunteering time may be too low, and WPD could then further raise the ambition.
17	Support local people in our communities via an annual £1m 'Community Matters' fund, funded entirely by shareholders at no cost to customers.	Bespoke ODI-R and CVP	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.	
18	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.	Bespoke ODI-R	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.	

2. Maintaining a safe and resilient network

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

2.1 Network resilience						Stakeholder feedback	
	Core commitment	Commitment Type (ODI, PCD or CVP) if applicable	Current RIIO-ED1 performance	Change since first draft Business Plan (following stakeholder feedback)	Positive impact for customers	Response to our first draft Business Plan consultation*	Response to our second draft Business Plan consultation
19	Deliver improved network reliability where on average power cuts are better than one interruption every two years lasting 24 minutes.	ODI	On average customers 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 with an average duration of less than 24 minutes per year.	92% support for this commitment. Stakeholders challenged WPD to quantify the improvements that will be offered.	When asked about the overall proposals for maintaining a safe and resilient network, stakeholders felt the package was detailed, ambitious, and complete, and were reassured that it had been improved through the consultation process. In relation to network resilience, a resounding 94% expressed no desire for changes or alternatives, of which 89% expressed full agreement that the proposals were acceptable. Digging down into the feedback, it was clear that stakeholders were most concerned about increased flooding and the impact of climate change. WPD's actions were therefore welcomed, but some want WPD's plan to include more numerical context around flood defences, so they can analyse WPD's proposal in greater detail. There was some debate around improving the length of average power outages, with some feeling that due to the impressive current performance levels, resources would be better spent on flood defences. Stakeholders felt that eliminating 'worst served customers' and reducing outages was vital work and a 'brilliant undertaking'.
20	Improve the service for at least 8,260 worst served customers by undertaking 70 schemes.	PCD	48 schemes	Increased ambition	Significantly improved supply reliability for customers who have experienced a significantly 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.	
21	Improve the overall health of the network by 22% with an investment of £210 million per annum.	Bespoke ODI-R	£202 million per annum	Clearer outcome	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.	
22	Reduce the flooding risk at key sites by undertaking 102 flood defence schemes and engage stakeholders to reduce the need for new assets in flood risk areas.	Bespoke ODI-R	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.	While 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).	
2.2 Business IT Security and Cyber Resilience						**Stakeholder feedback**	
23	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.	Bespoke ODI-R	As per commitment (Additional expenditure in RIIO-ED2 is proposed to respond to increasing threats)	No change	Personal customer data will be protected and the risk of power cuts as a result of cyber-attacks will be kept to a minimum.	96% support for this commitment. No notable alternatives requested.	Stakeholders reiterated the importance of WPD's commitments in this area, with many expressing anxiety that greater electrification would introduce greater vulnerability in terms of the security of the overall network. WPD's wider commitments should include conducting external reviews, with third parties assessing WPD's susceptibility to attack, as opposed to measuring the level of threat internally. Given the seriousness with which this topic was taken, many were glad to see it had been elevated in priority. (Text continues overleaf)

* Please note: where options for the level of ambition within our first draft Business Plan consultation 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						Stakeholder feedback	
	Core commitment	Commitment Type (ODI, PCD or CVP) if applicable	Current RIIO-ED1 performance	Change since first draft Business Plan (following stakeholder feedback)	Positive impact for customers	Response to our first draft Business Plan consultation*	Response to our second draft Business Plan consultation
24	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.	Bespoke ODI-R	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.	94% expressed no desire for changes or alternatives, while 75% expressed full agreement that the proposals were acceptable.

2.3 Safety						Stakeholder feedback	
25	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.	Bespoke ODI-R	62,500 per year	Increased ambition	Keep children safe around our electricity equipment and reduce 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.	On safety, many pointed out that greater undergrounding of cables, while expensive, would decrease the risks in many areas. Some felt that the proposed safety packages sent out to schools need to include digital and social media actions, such as compelling, well-made content on YouTube, or more interactive digital exercises and learning done in schools. Many saw the value in going into schools as a way to interest young people in electricity, the potential of renewables, and as a possible career pathway. 91% expressed no desire for changes or alternatives, while 83% expressed full agreement that the proposals were acceptable.
26	Increase the safety of around 200,000 children by delivering 780 schemes to underground, insulate or divert overhead lines that cross school playing areas.	Bespoke ODI-R	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.	

2.4 Workforce resilience						Stakeholder feedback	
27	Demonstrate exceptional and embedded employment practices by achieving gold accreditation with Investors in People by the end of RIIO-ED2.	Bespoke ODI-R	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.	Stakeholders reiterated the importance of WPD's commitments in this area. They saw the need to diversify the workforce with more women and younger candidates. They saw that the commitments encourage greater diversity sent a positive message for the future of the company and the wider industry. 97% expressed no desire for changes or alternatives, of which 88% expressed full agreement that the proposals were acceptable.
28	Achieve year-on-year improvements to the levels of diversity within the business and publish an annually updated Diversity, Equity and Inclusion Action Plan.	Bespoke ODI-R	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.	

3. Delivering an environmentally sustainable network

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

3.1 Environment and sustainability						Stakeholder feedback	
	Core commitment	Commitment Type (ODI, PCD or CVP) if applicable	Current RIIO-ED1 performance	Change since first draft Business Plan (following stakeholder feedback)	Positive impact for customers	Response to our first draft Business Plan consultation*	Response to our second draft Business Plan consultation
29	Achieve net zero in our internal business carbon footprint by 2028 (excluding network losses) and follow a verified science based target of 1.5°C to limit the climate impact of our activities.	Bespoke ODI-R & CVP	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.	Stakeholders were very supportive overall of the package of proposals under environment and sustainability, with 92% expressing no desire for changes or alternatives, while 81% expressed full agreement that the proposals were acceptable. The overall ambition and stretched zero carbon target were particularly praised, especially by those who had participated in consultation processes that had made this change a reality. Leaky, oil-filled cables were singled out for concern, and delegates asked whether there was a more proactive way to measure the infrastructure and assets that needed replacing. Within WPD's wider commitments, some stakeholders wanted to see WPD report clearly and transparently on the process of removing risks, and have a commitment to do so.
30	Reduce the volume of oil leaked 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.	Bespoke ODI-R	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 species across our region.	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.	
31	Deliver a 20% reduction in SF_6 losses from RIIO-ED1 and drive industry partners to develop technological alternatives to reduce overall volumes of SF_6 on the system.	Bespoke ODI-R	Leakage rate of 0.2% of the total SF6 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.	
32	Achieve zero waste to landfill by 2028 (excluding hazardous waste) and deliver an overall 30% reduction in tonnage waste produced.	Bespoke ODI-R	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.	
33	Remove up to 50km of overhead lines in Areas of Outstanding Natural Beauty.	Bespoke ODI-R	29km	No change	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, while 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 first draft Business Plan consultation 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						Stakeholder feedback	
	Core commitment	Commitment Type (ODI, PCD or CVP) if applicable	Current RIIO-ED1 performance	Change since first draft Business Plan (following stakeholder feedback)	Positive impact for customers	Response to our first draft Business Plan consultation*	Response to our second draft Business Plan consultation
34	Encourage the development of flexibility markets by implementing simple, fair and transparent rules for procuring flexibility services, undertaking a flexibility tender every six months and introducing a customer satisfaction monitor for flexibility services.	Bespoke ODI-R	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.	A resounding majority, 92%, felt that WPD's overall package of proposals under smart and flexible network were appropriate, with 97% expressing no desire for changes or alternatives at all. Stakeholders welcomed improved access to fresher, more granular data, especially around the low voltage network, to better enable connections for LCTs and flexibility. They also saw that better advice, support and consultation for customers in this area would be invaluable. Some suggested that even more investment will be required to transform the energy system into one that was smart and flexible, and that funding constraints should not be allowed to get in the way of net zero. The new commitment (#36) was broadly welcomed. 72% felt it was appropriate or if anything was too ambitious. Some delegates pointed out that not all local authorities were as prepared for net zero as others, and might need more hand holding and consultation, and others made it clear that WPD should work with local authorities to make it clear what capacity was available, and when, and critically, how to make best use of it, to minimise the risk of creating extra capacity that was not then fully utilised.
35	Maximise the utilisation of the network and keep costs to customers low by adopting a 'flexibility first' approach for assessing all load-related reinforcement decisions.	Bespoke ODI-R	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.	
36	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.	Bespoke ODI-R	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.	
37	Make it as easy for customers to connect LCTs ensuring WPD is able to connect up to 1.5 million electric vehicles and 600,000 heat pumps.	Bespoke ODI-R	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.	

* Please note: where options for the level of ambition within our first draft Business Plan consultation 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						Stakeholder feedback	
	Core commitment	Commitment Type (ODI, PCD or CVP) if applicable	Current RIIO-ED1 performance	Change since first draft Business Plan (following stakeholder feedback)	Positive impact for customers	Response to our first draft Business Plan consultation*	Response to our second draft Business Plan consultation
38	Improve the accessibility and usefulness of data, tailored to individual customer needs and in the format of their choosing by making 60% of WPD's network data available via an interactive Application Programming Interface.	Bespoke ODI-R	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.	A resounding majority, 92%, felt that WPD's overall package of proposals under smart and flexible network were appropriate, with 97% expressing no desire for changes or alternatives at all. Stakeholders welcomed improved access to fresher, more granular data, especially around the low voltage network, to better enable connections for LCTs and flexibility. They also saw that better advice, support and consultation for customers in this area would be invaluable. Some suggested that even more investment will be required to transform the energy system into one that was smart and flexible, and that funding constraints should not be allowed to get in the way of net zero. In relation to the new commitment (#36) this was broadly welcomed. 72% felt it was appropriate or if anything was too ambitious. Some delegates pointed out that not all local authorities were as prepared for net zero as others, and might need more hand holding and consultation, and others made it clear that WPD should work with local authorities to make it clear what capacity was available, and when, and critically, how to make best use of it, to minimise the risk of creating extra capacity that was not then fully utilised.
39	Align our low carbon technology forecasts with the energy plans of local regions and the Electricity System Operator (ESO), by updating WPD's Distribution Future Energy Scenarios every 12 months.	Bespoke ODI-R	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.	
40	Drive the development of local area energy plans by proactively engaging with all 130 local authorities each year, resulting in more accurate WPD forecasts.	Bespoke ODI-R and CVP	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.	
41	Identify opportunities for a minimum of three whole system collaboration schemes with other DNOs and the ESO to enable our customers to benefit from lower electricity network and system costs.	Bespoke ODI-R and CVP	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.	
3.3 Innovation						**Stakeholder feedback**	
42	We will make an efficiency saving of £53m through RIIO-ED2 by improving the effectiveness of our assets, operations and customer service by encompassing innovations into standard business practice and show a positive carbon impact.	Bespoke ODI-R	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.	94% expressed no desire for changes or alternatives, of which 83% expressed full agreement that the proposals were acceptable. Stakeholders welcomed more collaboration with other companies and competitors to drive innovation forward, and to see more innovative methods and technologies integrated as 'Business as Usual' across the sector as a whole. (Text continues overleaf)

* Please note: where options for the level of ambition within our first draft Business Plan consultation 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						Stakeholder feedback	
	Core commitment	Commitment Type (ODI, PCD or CVP) if applicable	Current RIIO-ED1 performance	Change since first draft Business Plan (following stakeholder feedback)	Positive impact for customers	Response to our first draft Business Plan consultation*	Response to our second draft Business Plan consultation
43	Create a low carbon technology energy advisory service for customers, providing a support service for people looking to switch to electric vehicles, heat pumps or solar PV.	Bespoke ODI-R and CVP	New	New commitment	Customers are able to contact us to receive introductory advice, on where to start when considering how to adopt low carbon technologies - making it easier for customers to connect these and benefit from the financial and carbon savings as a result.	N/A	Stakeholders felt that the new commitment #43, originally proposed as "delivering service improvements to drive business innovative efficiencies to assist our customers to reduce overall energy costs" needed more clarity. Respondents were unclear what was meant by 'service improvements'. As a result the commitment has been redrafted to be clearer on the actions we will take to support customers.
3.4 Community energy						**Stakeholder feedback**	
44	Support local community energy groups by holding 60 community energy surgeries per year and providing a dedicated WPD community energy representative who will assist with connection and flexibility offers.	Bespoke ODI-R	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.	The package around community energy was warmly received, with 97% expressing no desire for changes or alternatives, while 92% expressed full agreement that the proposals were acceptable. Regular surgeries were seen as very useful, particularly when bridging the gap between different levels of expertise. Once again, stakeholders who had endorsed the community energy plans in the first rounds of engagement around the Business Plan were pleased to see they had been listened to. The new commitment (#45) was welcomed. 73% felt it was appropriate or if anything was too ambitious. There were some requests for more clarity over what 'access to funding streams' meant in reality. 63% felt that this commitment was appropriate and ambitious enough.
45	Facilitate access to available funding streams for community energy groups.	Bespoke ODI-R and CVP	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.	

Price Control Deliverables

4.26. Price Control Deliverables (PCDs) are a key component of the RIIO-2 framework. Under the framework for PCDs, price control funding is linked to the delivery of outputs specified in the licence.

4.27. WPD is proposing the use of two bespoke PCDs in RIIO-ED2, explained in this section. The costs associated with these PCDs are included in our proposed RIIO-ED2 Totex.

89% of commercial van fleet to be non-carbon vehicles by 2028

4.28. We will spend £77 million in RIIO-ED2 to replace 89% of our small vehicle fleet with non-carbon alternatives. This will lower our annual transport emissions by 10,050 tCO_2e (tonnes of carbon dioxide equivalent).

Modernising WPD's radio based telecoms system

4.29. We will spend £45 million in RIIO-ED2 to replace our existing telecoms system with a Private Long Term Evolution network which provides the capability to monitor the entire distribution network from 132kV to LV to capture all of the data required to support the SMART roll out.

A summary of our RIIO-ED2 Consumer Value Propositions (CVPs)

4.30. WPD's key aim is to deliver an ambitious plan that reflects the changing and increasing expectations of customers, while continuing to provide excellent value to customers. That is why we have gone beyond simply delivering a highly cost efficient plan, by making additional commitments that will generate significant extra value to consumers. We determine this value using a robust measurement and give priority to the proposals that are most important to our stakeholders. Figure 4.4 shows the list of eight CVPs we are proposing.

Figure 4.4 Our eight CVP proposals

CVP	CVP commitment summary	Core Commitments	Cost of delivery[i]	Number of customers benefitting[ii]	Social value per customer[iii]	Total social value delivered (£m)[iv]
1	**Ensure WPD is a net zero business by 2028,** and adopt a stretching science-based target of 1.5 degrees.	29	£85.14m	8m (indirect)	TBD	**TBD[v]**
2	**Proactively partner with every local authority in our region** to help them develop ambitious Local Area Energy Plans.	40	£2.25m	8m (indirect)	£4.85	**£36.89m**
3	**Establish Community Energy Engineers** to support the development and delivery of community-based energy schemes to drive the UK's achievement of net zero.	45	£1.26m	8m (indirect)	£1.55	**£11.37m**
4	**Create a National Energy Plan for Wales,** working in collaboration with the Welsh Assembly Government, National Grid and SPEN to ensure a joined-up approach to key enabling actions.	41	£3.43m	8m (indirect)	TBD	**TBD**
5	**Build decarbonised communities and local energy schemes** by funding solar PV on schools and community buildings in areas of high economic deprivation.	17	£2.25m	8m (indirect)	£0.64	**£3.21m**
6	**Offer 1.2 million PSR customers** a bespoke smart energy action plan every two years.	10	£5.00m	1.2m (indirect)	£4.75	**£33.75m**
7	**Deliver an annual £1 million Community Matters Fund**, funded entirely by shareholders, to achieve positive community outcomes in relation to vulnerability, environment and education.	17	£5.00m	0.18m (direct) + 8m (indirect)	£9.19	**£69.28m**
8	**Create a low carbon technology energy advisory service for consumers** to provide a first-stop support service for people looking to switch to electric vehicles, heat pumps or solar PV.	43	£1.00m	0.8m (direct)	£0.50	**£3.15m**

[i] This costs figure is non-discounted.
[ii] Where indirect, the benefits are realised by all of WPD's customers, mostly through carbon reduction.
[iii] This figure is gross present value (i.e. excluding costs and discounted), and measured over a 10-year appraisal period. It is then divided by the 8m figure to get a value per WPD customer.
[iv] This figure is a net present value (i.e. net of costs and discounted), and measured over a 10-year appraisal period.
[v] Figures for CVP 1 & 5 will be determined between BP3 and BP4.

Meeting the needs of customers and network users

Delivering excellence

4.31. Delivering great service 'First Time, Every Time' is the central thread running through the heart of WPD and is firmly embedded in our culture. Our continued excellent performance in the RIIO-ED1 customer satisfaction measures – with average satisfaction above 9.01 out of 10 – demonstrates this commitment. This is also supported by the views of our stakeholders and independent assessment.

4.32. It is equally important that we continue to improve, adapt and refine our customer service provision by using feedback from customers and measuring our performance against our peers.

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."

4.33. Over the last six years, we have seen a significant shift in customer expectations, driven in part by experiences in other sectors (for example, 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, more proactive contact and a wider range of channels to suit our customers' preferences. 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.

4.34. We will continue to drive innovation and work even harder to maintain our exceptional current levels of service and improve even further. For example, we expect customer expectations to continue to increase: the shift towards a net zero future, which stakeholders expect WPD to achieve significantly 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 1,600 connections a day for heat pumps and electric vehicles. As such, we will need to develop the knowledge, capacity 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.

4.35. The new services must deliver the same excellent experience for customers. That is why we need to measure customer satisfaction effectively, allowing us to identify opportunities for improvement and assuring our customers of our unwavering commitment to provide the highest levels of service.

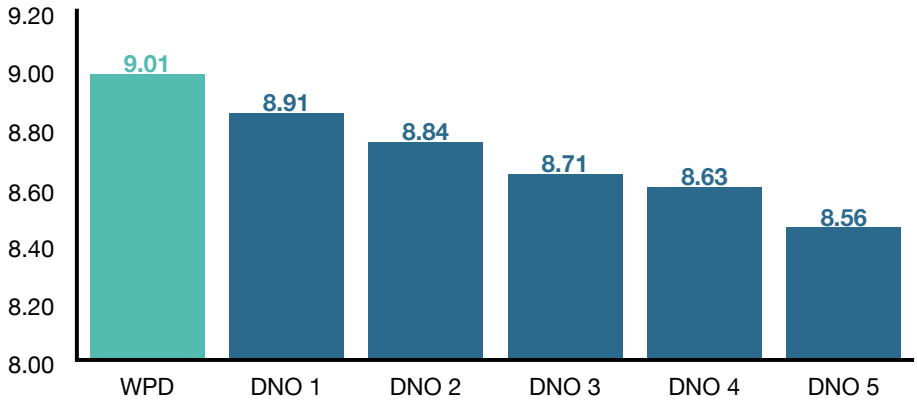
4.36. As we adapt the network to become a smarter system, it is essential that no customers are left behind, particularly those in vulnerable situations. We will develop new capabilities to deliver bespoke advice, support and services to enable customers to access smart energy services.

4.37. Our stakeholders need us to be their 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.

4.38. During RIIO-ED1, we have recorded the highest average customer satisfaction of all the DNOs in Ofgem's Broad Measure of Customer Satisfaction (BMCS) – see figure 4.5.

Figure 4.5 Broad Measure of Customer Satisfaction

BMCS - average RIIO-ED1 weighted score by DNO group



4.39. 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 six years is 9.01/10 (or 90.1%). In a separate index, the Institute of Customer Service (ICS) reports (January 2021) that their top-rated member companies in the UK for overall customer satisfaction are First Direct (85.5% or 8.55/10), John Lewis (85.1% or 8.51/10) and Marks and Spencer (84.1% or 8.41/10).

4.40. 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. Each year, an independent assessor carries out a rigorous audit to assess 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 2021, we achieved 46 out of 57 'Compliance Plus' ratings, the top UK performer out of 600 companies, with no instances of non-compliance.

Our customer service commitments for RIIO-ED2

4.41. Figure 4.6 shows the top priorities that our stakeholders told us from our workshops and extensive engagement programme. These priorities were then used to generate our core commitments.

Figure 4.6 Stakeholder top priorities for 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.**

Core Commitment 1	**Achieve an average customer satisfaction of 90% or higher across all key services areas with separate reporting for emerging technology customers.**

4.42. We must monitor changes in customer expectations and demonstrate adaptability in our service provision throughout RIIO-ED2. For example, we expect the long-term impacts of the Covid-19 pandemic may change customer expectations with regards to the timing of planned works activities (in light of an enduring increase in home-working), while entirely new services may emerge as a result of the transition to a smart energy future.

4.43 We will achieve full compliance with the Customer Service Excellence 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.

4.44. 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 will continue to be imperative.

Core Commitment 2	**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.**

4.45. Customers must be able to talk to us whenever they want and get the response they need. Stakeholders tell us that being able to speak to a call-taker in person is still a high priority. Our innovative in-house telephony platform prevents any calls from being 'dead ended' and means that callers are answered in an average 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.

4.46. When experiencing exceptionally high call volumes, we increase the number of advisers available by deploying trained staff from across the company. 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.

4.47. Our policy of answering calls quickly results in fewer than 1% of calls being abandoned before customers speak to an adviser.

Core Commitment 3	**Respond to social media enquiries within an average of five minutes and Webchat enquiries in an average of less than a minute, 24 hours a day.**

4.48. 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.

4.49. 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	**Provide greater insight on the planned work activity and interruptions on our network by creating an online viewer.**

4.50. Customers need timely and accurate information during power cuts. We will continue to provide restoration times and progress updates on every planned and unplanned outage using a range of communication channels.

4.51. We will also provide timely information on all network outages using our online power cut map and the WPD smart device apps, making sure that customers can access information via a self service option if they prefer, 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	**Resolve at least 90% of complaints within one day and resolve 99% of complaints within 25 days.**

4.52. Although we strive to deliver excellent customer service at all times, there are infrequent occasions when customers have a reason to complain. In these instances, it is very important that we act swiftly and that we are able to learn from these instances to avoid any future repetition.

4.53. During RIIO-ED1, we surpassed our target for resolving complaints in one day. We will continue our proactive approach to contacting customers and will now go further, promising to resolve 99% of customer complaints within 25 days which is six days fewer than the standard expected from Ofgem.

4.54. 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.

4.55. 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 the GSOPs.

4.56. Where we are aware of a failure, a payment will be made without the need for a customer to make a claim.

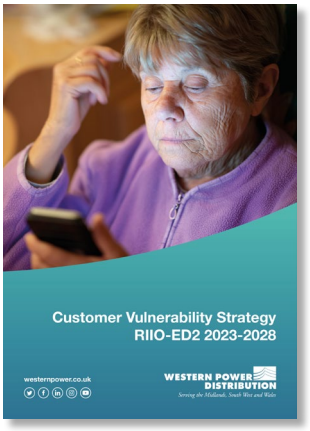
Customer vulnerability

4.57. For our vulnerable customers, the availability of power could be a matter of life or death. 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 must be a key priority.

4.58. 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 identify and provide help and support to those struggling with fuel poverty (see figure 4.7). We have significantly expanded the support we provide, and, by working with trusted partners, have been able to deliver significant savings of £37 million for more than 92,000 customers so far during RIIO-ED1.

4.59. 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, that no customer is left behind and that everyone benefits from a smarter future.

4.60. Our vulnerability 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, including a greater emphasis on addressing fuel poverty and protecting the interests of vulnerable customers during the smart energy transition.

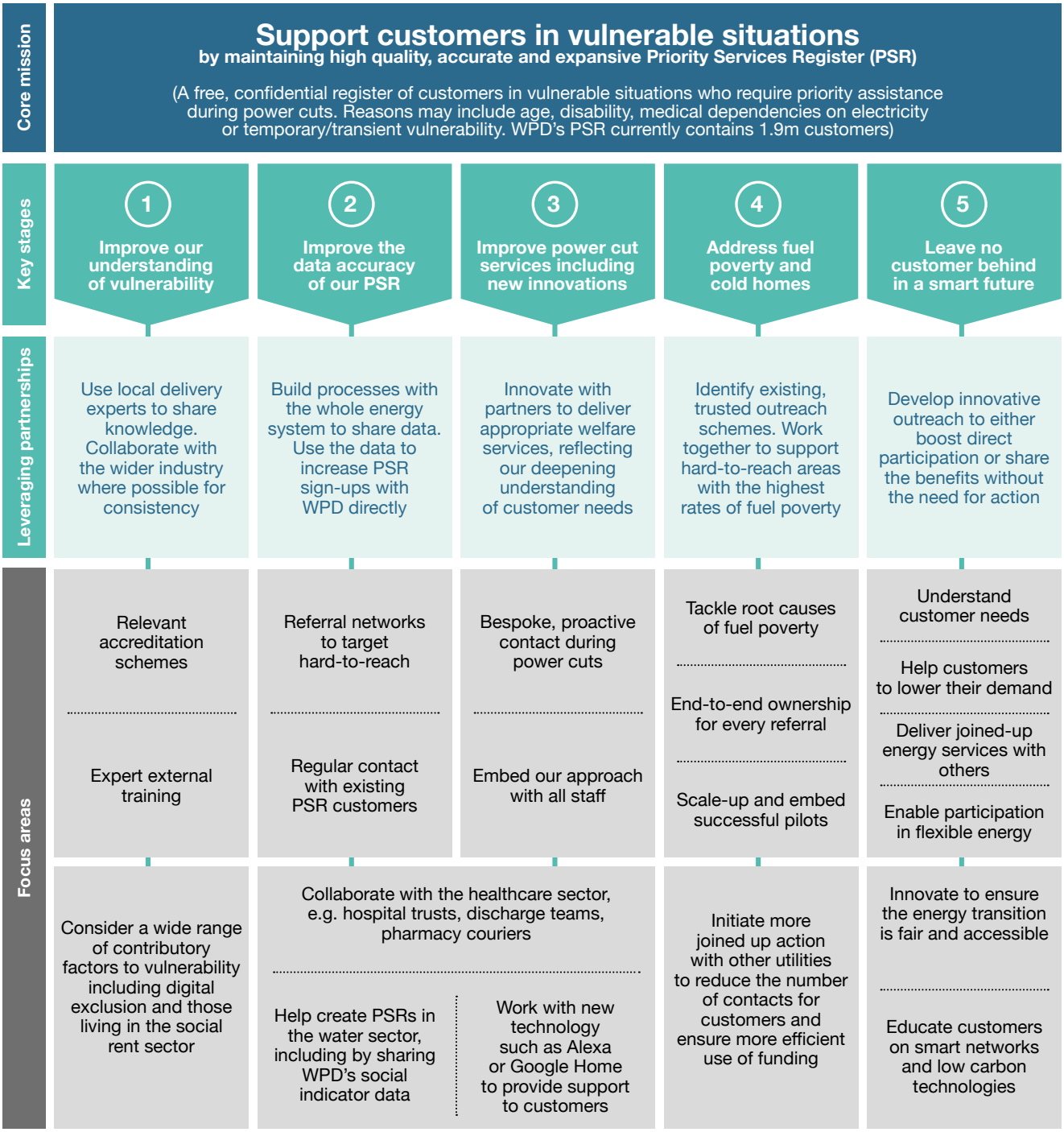


4.61. The clarity of our strategy ensures that it is understood and embraced by everyone at WPD. From field teams working on the network, to staff handling customer calls and innovation engineers delivering schemes for a low carbon future, we are all committed to supporting our most vulnerable customers.

4.62. We will continually scrutinise and update our plans, identifying and responding quickly to changes in customers' expectations and requirements. For full details of our approach to support customers in vulnerable situations in RIIO-ED2, see our separate Customer Vulnerability Strategy which contains what we will deliver, including actions which significantly exceeding the baseline standards set out by Ofgem.

4.63. Our Customer Vulnerability Strategy is available on our website at **www.westernpower.co.uk/RIIO-ED2BusinessPlan**

Figure 4.7 Supporting customers in vulnerable situations



Our customer vulnerability commitments for RIIO-ED2

4.64. Figure 4.8 shows the top priorities that our stakeholders told us from our workshops and extensive engagement programme for customer vulnerability.

Figure 4.8 Stakeholder top priorities for customer vulnerability

Stakeholder top priorities

1. Ensure 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.

Core Commitment 6	**Proactively contact over two 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.**

4.65. Our Priority Services Register is crucial to supporting 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.

4.66. The effectiveness of the PSR depends on its accuracy. Our dedicated PSR data cleanse teams proactively contact one million customers in vulnerable situations each year to maintain records and to proactively find hard to reach, vulnerable customers.

4.67. 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.

4.68. Stakeholders 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 consider it vital to hold a bespoke conversation to tailor advice to the individual needs of each customer, moving beyond an exercise simply to update records. It also gives us the 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.

Core Commitment 7	**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, gas distributor and telecommunications companies.**

4.69. Simplicity is crucial for our vulnerable customers. 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 providers. Thanks to a network of more than 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.

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

4.71. Our consumer vulnerability data mapping enables us to see where potentially high volumes of vulnerability align with gaps in our PSR take-up. It allows us to see the bigger picture and deliver targeted outreach. We will reach out to trusted local agencies which can help to extend our support to these areas, ensuring more comprehensive coverage.

Core Commitment 8	**Increase the number of customers registered on the Priority Services Register to 40% of total eligible customers including 50,000 hard-to-reach customers each year.**

4.72. To deliver the right services to the right people, 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.

4.73. Stakeholders tell us that the work we do with partnership agencies to identify those in need of support is vital. 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 even 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.

4.74. Covid-19 has undoubtedly increased 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.

Customer vulnerability action plan

4.75. Our Customer Vulnerability Strategy highlighting our commitment to vulnerable customers is already industry leading, but we have been challenged by stakeholders to go even further when it comes to identifying vulnerability. In response to this, we will work with expert stakeholders, including our Customer Collaboration Panel and existing 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.

4.76. We will 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

4.77. Vulnerable customers often need extra support during a power cut. 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.

4.78. We will provide crucial advice on what to do in a power cut, including promotion of the 105 power cut phone number. We will measure referrals to the PSR arising from these initiatives.

4.79. 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

4.80. Our stakeholders want us to continue to use our leading 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.

Core Commitment 9	**Support 113,000 fuel poor customers to save £60 million on their energy bills over RIIO-ED2.**

4.81. Our work to support those in fuel poverty through a network of referral partnership schemes has already helped 92,000 customers to save £37 million. However, stakeholders have asked us to do even more.

4.82. In RIIO-ED2, we have pledged to support more than 113,000 fuel poor customers to save £60 million. We will 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.

Core Commitment 10	**600,000 Priority Services Register customers to be offered a bespoke smart energy action plan each year.**

4.83. In the transition to a smart network and net zero carbon economy, we promise that nobody will be left behind.

4.84. 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.

4.85. Having 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 use our contact with PSR customers every two years, of which 60% will be attempted over the telephone. We will 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 long lasting 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.

4.86. We will deliver extensive and accessible education and support for consumers and stakeholders to encourage everyone to embrace the opportunities offered by the smart energy transition and low carbon economy.

4.87. 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.

Connecting to our network

4.88. A key responsibility for WPD 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.

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

4.90. 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.

4.91. Regardless of the type of connection, all our customers want to be able to connect to the network when they need to and meet their own operational requirements. To do this, the customer must have sufficient and appropriate information to help them understand and assess the connection options open to them.

4.92. We will continue to deliver the excellent service that our customers expect. This means a fast and efficient connections service from a customer's initial application, through to the final connection and energisation. Customers 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.

4.93. To counteract any significant delays or cost implications of network reinforcement, we have introduced alternative connection solutions (including Active Network Management) which enables connections to be made more quickly and at 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 are available to enable them to make an informed choice.

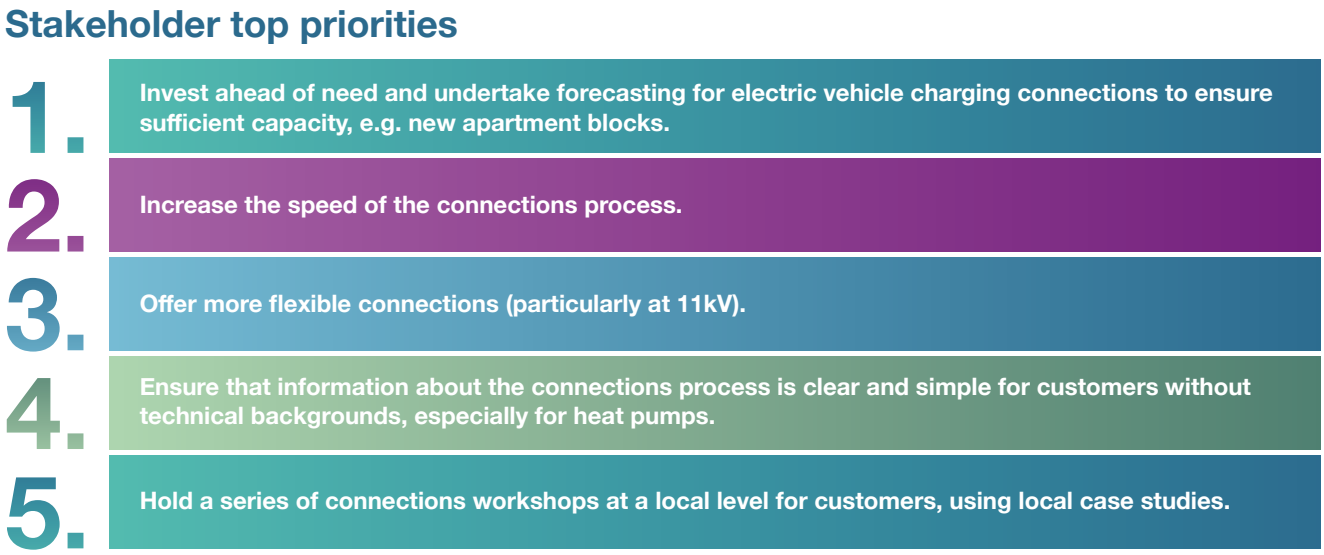
4.94. The continued roll out of competition in connections has seen an increase in the number of services provided by third parties over RIIO-ED1. There are now 13 Independent Distribution Network Operators (IDNOs) across Great Britain that own and operate distribution networks within our area. These 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.

4.95. 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.

Our connections service commitments for RIIO-ED2

4.96. Figure 4.9 shows the top priorities that our stakeholders told us from our workshops and extensive engagement programme for connections.

Figure 4.9 Stakeholder top priorities for connections



Connections to support net zero

4.97. We have a critical role to play in ensuring our network can support the growth of low carbon technologies (LCTs). This new period sees a shift in focus from low carbon generation connection towards the growth of LCT products including electric vehicles (EVs), 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.

4.98. The government has supported net zero growth through The Carbon Plan and more recently the Ten Point Plan and the Energy White Paper. Our role in decarbonisation is simple; we need to make sure 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, building on our strong foundations.

4.99. 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 more than 24.8GW of generation on a network conventionally designed for 14GW of demand.

4.100. In RIIO-ED2, we will see the focus shift from large scale renewable generation connections and towards high volumes of smaller LCT connections, such as community solar farms. Where we have previously experienced 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 our commitment to customer service remains the same, the volumes will necessitate a redesign to our business model in response.

4.101. Government figures forecast targets of 600,000 heat pump connections per year in the UK by the end of RIIO-ED2. In addition, all new cars will be electrified, leading to around 1,000,000 new EV connections every year. This means that we could see as many as 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.

4.102. 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 envisage flexibility being delivered through supplier tariff signals and aggregation offers. We do not expect to interact directly with our individual domestic customers.

4.103. 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.

4.104. We will use the innovation tools that we developed in RIIO-ED1 to power this change. Flexibility is now embedded in our system operation plans. Research from Electric Nation has shown us how we can connect more EVs to the 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.

4.105. To provide excellent customer service, we must make sure 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.

4.106. Stakeholders have told us that the connections information that we provide should be tailored to meet the individual customer's 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.

4.107. 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.

4.108. 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 11	**Achieve an average customer satisfaction of 90% or higher for all connection types (including major connections and low carbon technology connections).**

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

Core Commitment 12	**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.**

4.110. 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 WPD to ensure our network is ready to connect LCTs with speed and efficiency. Government forecasts mean we could expect to see more than 400,000 new connections per year in this sector alone.

4.111. We will continue to explore how to better deliver 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.

Core Commitment 13	**Provide a same day connections response for customers by introducing online self-assessment tools for individual domestic low carbon technology applications.**

4.112. It is important that we are ready for this increase in activity and put systems in place that will accommodate such high volumes and provide a smooth and simple customer journey through the process. 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.

Delivering for the future

4.113. During RIIO-ED2, we will continue with our strategy of stakeholder engagement to ensure we are delivering the service that customers need today and tomorrow.

4.114. 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.

4.115. We will continue to communicate with our stakeholders through well established channels including workshops, seminars and expert panels, understanding that face-to-face discussion is the best method of communication where this is possible. 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.

Local authority surgeries

Core Commitment 14	**Hold 90 local energy surgeries per year for local authorities, supporting them to deliver their local area energy plans.**

4.116. 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.

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

4.118. We will also work closely with major industry to understand their road maps to achieve net zero and ensure that we can enable the network to allow them to deliver on their strategy.

Powering better customer outcomes through close collaboration

4.119. We have fully embraced the concept of competition in the connections marketplace 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.

4.120. We provide an excellent and cost effective connections service and believe that customers should be free to choose WPD or 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.

4.121. 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 systematic and collaborative 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.

Increasing customer choice

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

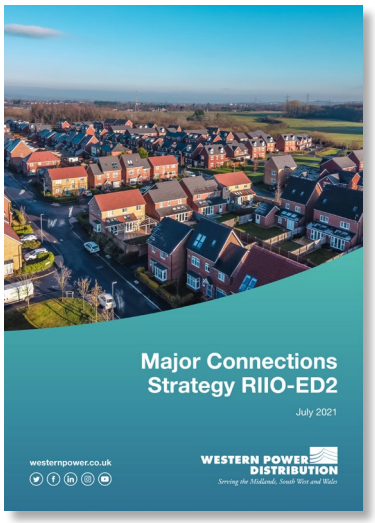
4.123. The advent of a smart grid and introduction of flexible connection solutions (including active network management) means it is no longer sufficient to give a customer only a conventional connection offer that may include network reinforcement, invariably involving significant cost and delays.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

Core Commitment 15	**Increase the number of flexible connection offers made by lowering the reinforcement cost threshold to >£75k per MW and works that will take more than 12 months to complete.**

4.124. 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 now widen the scope and lower the threshold for offering alternatives. This will allow more customers to choose between a conventional reinforcement solution or a lower cost and quicker flexible solution.

Delivering for our major connections customers

4.125. We know 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.



4.126. 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.

4.127. 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 meetings provide feedback on proposed initiatives and strategic direction and ensure that we address the priorities identified by our connection customers.

4.128. We have developed a Major 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. Our Major Connections Strategy covers all relevant market segments that have not passed the competition test and also all non-contestable connection activities.

4.129. Our Major Connections Strategy is available on our website at **www.westernpower.co.uk/RIIO-ED2BusinessPlan**

WPD's Social Contract

4.130. 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. 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.

4.131. We began consulting with stakeholders to co-create a robust 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. WPD's Social Contract will allow us to be held to account by our stakeholders.

4.132. Our stakeholders want us to provide a reliable electricity supply at an affordable 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 are making clear commitments to do so, going beyond the requirements set by regulation and legislation.

4.133. 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.

4.134. Our Social Contract is available on our website at **www.westernpower.co.uk/RIIO-ED2BusinessPlan**

How our Social Contract was built

4.135. We have developed an iterative process to co-create our Social Contract with stakeholders, playing back what we have heard after each stage to check our understanding before updating our approach and retesting our proposals. At different stages of progression, therefore, we have engaged various groups, ranging from expert and interested stakeholders to end customers with little prior knowledge of WPD or the concept of a Social Contract.

4.136. Figure 4.10 shows the top priorities that our stakeholders told us from our workshops and extensive engagement programme on the Social Contract.

Figure 4.10 Stakeholder top priorities for 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.

4.137. As well as taking part in co-creation workshops with stakeholders, we have been a key contributor to the 'Fair for 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.

4.138. Extensive benchmarking research has been conducted to establish best practice with regards to Environmental, Social and Governance (ESG) activities. This has enabled us to gauge how we are already performing and to identify areas for innovation and improvement.

Figure 4.11 The scope of the Environmental, Social and Governance assessment

4.139. We adopted a new approach to seek the insights of end customers, developing the expertise of 96 customers over two months of weekly research and deliberative discussions to provide informed feedback on specific areas of the Social Contract.

4.140. Co-creation with stakeholders resulted in the identification of 15 key focus areas to achieve these four overarching objectives (see figure 4.12):

Figure 4.12 Our Social Contract key focus areas

Transparent reporting	Diverse, responsible employer	Legitimacy for the future	Support communities
Industry leading performance	Responsible and transparent Board governance arrangements	Excellent environmental performance	A framework to engage local communities
Fair prices and returns/profits	Workforce welfare	Transparent mechanisms so customers can influence decisions	Local community investment
Clarity on tax affairs and dividend payments to shareholders	Workforce diversity	Innovation to meet social challenges (as well as regulatory/technological)	Community and environmental benefits
	Pay gap reporting	Methods for measuring social value of activities	Positive outcomes for customers in vulnerable situations

Provide transparent reporting (with clarity on returns and profits)

Core Commitment 16	**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.**

4.141. WPD is the highest ranking of any electricity network operator sector organisation in the UK for its Environmental, Social and Governance (ESG), rated by Institutional Shareholding Services Inc (ISS).

4.142. ESG criteria set by the ISS lay out standards for company operations that can be used by socially conscious organisations to screen potential investments, and by wider stakeholders as assurance of a company's ethical approach (see figure 4.12). 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.

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.
- Achieve independent, annual ESG assessment and target a minimum of an ISS 'B' rating every year or an equivalent rating by an alternative recognised agency.

Demonstrate WPD is a diverse and responsible employer

4.144. In RIIO-ED2, we will:

- Produce a robust and long-term Diversity, Equity & Inclusion Plan which states our aims and performance in this area.
- Report and monitor our progress in diversity across key under-represented sectors.

Evidence the legitimacy of our operations for the future

4.145. In RIIO-ED2, we will:

- Ensure full compliance with the Financial Reporting Council's Wates Principles for the corporate governance of Large Private Companies.
- Adhere to the 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.

4.146. To ensure the Social Contract itself remains relevant and fit for purpose, it will undergo an annual cycle of delivery, evaluation and improvement. To deliver this, we will:

- Achieve recognised external accreditations in line with the aims of the Social Contract.
- 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.
- Obtain expert scrutiny on our approach and performance.
- 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.
- Engage with employees on the Social Contract through satisfaction surveys and employee communication channels.
- Publish an annual report of actions and impact delivered by the Social Contract, as well as an action plan for the following year co-created with stakeholders.

Play an active role regionally and support vulnerable customers

Core Commitment 17	**Support local people in our communities via an annual £1 million 'Community Matters' fund, funded entirely by shareholders at no cost to customers.**
Core Commitment 18	**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.**

4.147. We pledge to continue long-term and impactful regional giving, by:

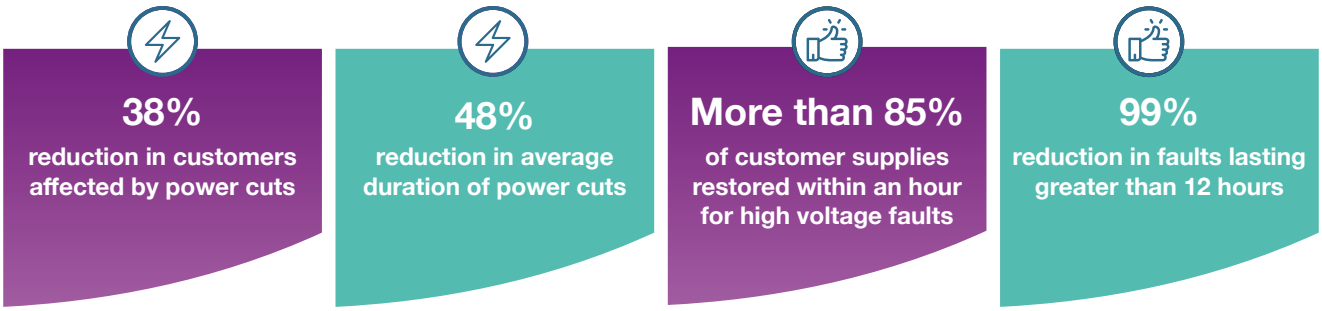
- Supporting 300,000 people in our communities through our annual £1 million 'Community Matters' fund to help vulnerable customers across our region.
  - In response to our first draft Business Plan consultation, of the 5 options presented, the greatest proportion of consultees (44%) supported this ambition 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 re-scope the commitment so that it will be funded entirely by shareholders and therefore at no cost to customers.
- Establishing a volunteering scheme encouraging staff to volunteer at local community projects. We will allocate 1,000 staff volunteering days every year during RIIO-ED2.

Maintaining a safe and resilient network

Improving network performance

4.148. Figure 4.13 shows the highlights of our network performance in RIIO-ED1.

Figure 4.13 Highlights of our current performance during RIIO-ED1



4.149. In RIIO-ED1, we placed significant 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. Customer dependencies on energy have increased during the recent Covid-19 lockdowns. That is why we are even more committed to making sure our network is reliable and that faults are resolved quickly.

4.152. We prevent faults through ongoing inspection, maintenance, defect repairs and vegetation management. During severe weather, our 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.

Our network performance commitments for RIIO-ED2

4.154. Figure 4.14 shows the top priorities that our stakeholders told us from our workshops and extensive engagement programme on the Social Contract.

Figure 4.14 Stakeholder top priorities for 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 WPD's scenario planning to this.

4.155. We are committed to investment targeted at preventing faults from happening.

4.156. During RIIO-ED2, we will deliver a range of activities aimed at ensuring we provide a reliable supply to our customers, including:

- 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 any poles 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 19	**Deliver improved network reliability where on average power cuts are better than one interruption every two years lasting 24 minutes.**

Going further to reduce the number of customers affected by faults

4.157. We are dedicated to reducing the number of customers impacted by faults on our network. We have installed remote controlled devices and automation technology to reduce the number of customers affected when a fault occurs.

4.158. 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.

4.159. 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.

4.160. 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.

4.161. During RIIO-ED1, we have targeted protection zones with more than 1,500 customers. In RIIO-ED2, we propose to go further, lowering the threshold 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.

4.162. 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 regardless of whether it affects a single customer or thousands of customers, has led to significant improvements in restoration times.

4.163. 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.

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

Tree clearance

4.165. We have already invested in Light Detection and Ranging (LiDAR) equipment for our helicopter fleet, which 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 length of an overhead span.

4.166. 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 by the use of LiDAR, we can instruct the contractors to clear specific spans, prioritising those in greatest need.

4.167. This approach is expected to make overall routine and resilience tree clearance on the HV and EHV networks more efficient and effective. Indeed, in RIIO-ED2, we will complete our resilience tree programme which involves a more rigorous tree clearance close to our EHV overhead lines.

Meeting a 12-hour restoration target

4.168. While our aim is always to restore power as quickly as possible, we occasionally deal with more complex faults where restoration takes longer than normal. In those circumstances, 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 more than 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 155 in 2020/21.

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 who are off supply for 12 hours.

Core Commitment 20	**Improve the service for at least 8,260 'worst served customers' by undertaking 70 schemes.**

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' were 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 definition, there were approximately 9,000 worst served customers (see figure 4.15) across the four WPD licence areas in 2020/21.

Figure 4.15 Worst Served Customer numbers for year 2020/21 based on the RIIO-ED2 definition

Number of Worst Served Customers (2020/21) – RIIO-ED2 Definition				
West Midlands	East Midlands	South Wales	South West	WPD Total
2,487	1,667	1,459	3,523	9,136

4.175. By addressing the causes of faults or reducing their impact, the overall network performance can be improved. This may be achieved by reconfiguring the network, replacing poor condition overhead lines, undergrounding overhead lines, refurbishing circuit components or installing additional switching points and protection zones.

4.176. While most of these 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.

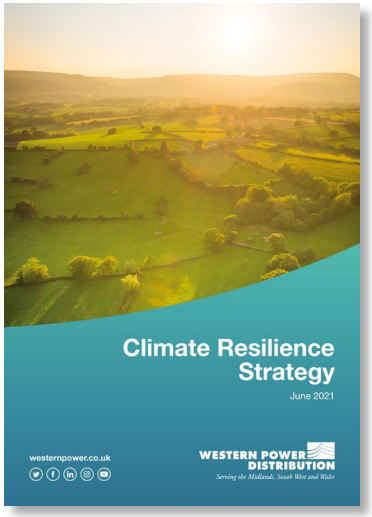
Core Commitment 21	**Improve the overall health of the network by 22% with an investment of £210 million per annum.**

4.179. We have an extensive 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. Further details relating to asset replacement is included in Engineering Justification Papers 042 to 069 inclusive.

Climate change resilience



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

4.183. Our Climate Resilience Strategy is available on our website at **www.westernpower.co.uk/RIIO-ED2BusinessPlan**

4.184. 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 rises and the changes in the pattern of rainfall.

4.185. We will continue to assess risks and impacts to our network associated with climate change.

Resilience to severe weather

4.186. 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.

Core Commitment 22	**Reduce the flooding risk at key sites by undertaking 102 flood defence schemes and engage stakeholders to reduce the need for new assets in flood risk areas.**

4.187. Flooding can also pose a risk to our assets and impairs our ability to keep the lights on. To mitigate this, we have installed flood defences at a number of substations which are at greater risk of flooding.

4.188. 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.

4.189. 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 102 sites to reflect updated data from the Environment Agency. Further details relating to these sites is included in Engineering Justification Paper 041.

Network safety programme

4.190. Stakeholders expect us to operate a safe network using our well established and effective safety processes. 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 and rectify defects using a risk based timescale, tracking the removal of these defects to ensure that the risks are eliminated from the network. During RIIO-ED2, we will continue to resolve defects, including addressing conductors with insufficient ground clearance and installing anti-climbing devices on poles with mounted equipment.

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

Cyber security resilience

4.192. As reliance on systems and technology has increased, so, unfortunately has the volume and sophistication of cyber-attacks.

4.193. The importance of electricity to individuals' lives and the economy is increasing massively especially with regard to heating, transportation and reliance to internet connectivity. Hence disrupting supply continuity is an increasingly attractive target for cyber terrorists.

4.194. Cyber terrorist sophistication has grown and we have observed real world examples of the impacts that cyber terrorism can have.

4.195. Our stakeholders are demanding more modern interactions with us including on-line and smart phone interaction and sharing of data. This increased overall connectivity between WPD and the outside world increases the risk of a cyber threat.

Figure 4.16 Cyber security principles

4.196. It is therefore 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. In order to do this we follow the four cyber security principles as shown in figure 4.16. Detailed plans and processes are also required to be able to respond and recover in the event of a cyber-attack.

4.197. 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 dedicated team now provides a variety of security controls and services throughout the business.

4.198. Continuing to deliver cyber secure, reliable and resilient business systems is a key part of the RIIO-ED2 Business Plan. Stakeholders say they want us to:

- 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.

4.199. 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).

4.200. 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.

4.201. OT is technology that communicates and interfaces with business systems and physical assets and includes systems such as our communications system which allows us to interact remotely with sensors and monitors on the physical distribution network.

Our Cyber Resilience IT Plan

4.202. Continuing to deliver cyber secure, reliable and resilient business IT systems is a key part of the RIIO-ED2 Business Plan. We will achieve this through further investment in, and enhancement of, our existing cyber security systems, controls and processes.

4.203. Business IT systems are 'Business as Usual' computer and telecommunications systems and applications.

Core Commitment 23	**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.**

4.204. 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.

4.205. Our approach to cyber security in RIIO-ED1 harnessed leading 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.

4.206. However we recognise that there is an ever increasing demand for information access, we will need to review these security principles.

4.207. 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.

4.208. 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. Further detail on our Cyber Resilience IT Plan is included in Annex SA-04 Our Commitments.

Our cyber IT resilience commitments

4.209. Figure 4.17 shows the top priorities that our stakeholders told us from our workshops and extensive engagement programme on the cyber resilience.

Figure 4.17 Stakeholder top priorities for cyber resilience

Stakeholder top priorities

1. Understand where the network may be vulnerable and work to put up barriers to 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 focus on network security to increase resilience.
5. Create, maintain and test incident recovery plans.

4.210. Our ambitious plans 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.
- Ensure that all customer data is kept secure and all General Data Protection Regulations are met.

Core Commitment 24	**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.**

Our Cyber Resilience OT Plan

4.211. Delivering cyber secure, reliable and resilient Operational Technology (OT) is a central requirement of the RIIO-ED2 Business Plan as networks become increasingly more digitised, interconnected and at risk of a cyber-attack.

4.212. 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.

4.213. As a result of the changing use of the electricity network, traditional boundaries between IT, OT and customer-owned devices are becoming more interconnected than ever. 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.

4.214. 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 to the OT cyber security attack risk as the threat level has been perceived to be relatively low.

4.215. 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 WPD place a greater emphasis on OT cyber security.

4.216. The work carried out so far by the newly established cyber security team has focused on IT security and 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.

4.217. 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. Further detail on our Cyber Resilience OT Plan is included in Annex SA-04: Our Commitments.

4.218. Our comprehensive 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.

Physical security

4.219. Since the start of RIIO-ED1, we have had two substation sites that are deemed Critical National Infrastructure (CNI). The sites meet all necessary requirements and will continue to meet the requirements within RIIO-ED2. Also any new CNI sites will also meet the requirements.

Workplace and public safety

4.220. The safety of our employees, contractors and the general public is of paramount importance. No harm should come to anyone who is either involved with, or affected by, our activities or equipment.

4.221. During RIIO-ED1, we have worked hard to maintain a safety performance which remains among the best in the industry, far outperforming 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 682 per 100,000 employees.

Our safety core commitments for RIIO-ED2

4.222. Figure 4.18 shows the top priorities that our stakeholders told us from our workshops and extensive engagement programme on the workplace and public safety.

Figure 4.18 Stakeholder top priorities for safety and health

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.**

4.223. 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 our health and safety programme 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.

4.224. We will build on the already strong safety culture which was acknowledged by staff feedback to our independent Safety Climate Survey in 2019. We will continue to seize opportunities to enhance this established safety culture.

4.225. The hazards associated with an electricity network call for 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, operational and specialist training for those working on the network. We are also developing new schemes to address the safety challenges linked to the adoption of Distribution System Operator techniques and practices.

4.226. We are continually improving 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.

4.227. During RIIO-ED2, we will continue to be a leading safety performer by reducing our average Accident Frequency Rate (AFR) by an additional 10%, from RIIO-ED1 levels.

4.228. Following the success of our first Safety Climate Survey in 2019, we will conduct two further surveys and follow 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.

Improving health and safety communication to staff and contractors

4.229. We lead and participate in many national working groups and initiatives related to health and safety. We will continue to work 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.

4.230. 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.

4.231. 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.

4.232. 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, effective and up to date.

4.233. 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.

Keeping the public safe

4.234. We know that some members of the public are not fully aware of the hazards involved in being around electricity, and that this can lead to the risk of serious injury or death. We provide information and education to minimise the risks.

4.235. In RIIO-ED1, we have:

- Educated more than 387,000 children about electrical safety.
- Distributed 948,000 safety leaflets to date.
- Installed enhanced security at over 960 substation sites.

4.236. 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 network.
- Ensure that we continue to raise general public awareness of the dangers of electricity.
- Ensure our assets remain fit for purpose.

Core Commitment 25	**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.**

4.237. By providing information and education about the hazards associated with electrical apparatus, we can reduce 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 more than a million customers by distributing safety literature and making greater use of social media to reach an even wider audience.

4.238. During RIIO-ED2, we will continue to educate at a national level to help people in other industries and businesses understand the dangers of working close to electrical networks. Safety videos, social media messaging, posters and media campaigns will be used as well as the safety leaflets which have already proved so effective. 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.

4.239. Our education programme provides information and education to children and young people, to protect them from 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. We will carry out school visits, hold sessions at our five permanent Safety Centres, continue Crucial Crew events alongside other emergency services, and have a presence at popular, family-focused exhibitions and shows.

Core Commitment 26	**Increase the safety of around 200,000 children by delivering 780 schemes to underground, insulate or divert overhead lines that cross school play areas, targeting the highest risk sites first.**

4.240. Our programmes of inspection, maintenance and refurbishment keep overhead lines in good condition and our work on overhead clearances ensures that lines are a sufficient height above ground. This means that our network is inherently safe and there is generally a low risk of failure and exposure to hazards. However, storms can cause damage to overhead lines and children may not be aware of the dangers. To remove any risk, we are proposing a new area of work, which involves undergrounding, insulating, or diverting overhead lines that cross school play areas. Further details relating to these schemes is included in Engineering Justification Paper 040.

4.241. 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.

4.242. 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

4.243. WPD's success is down 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.

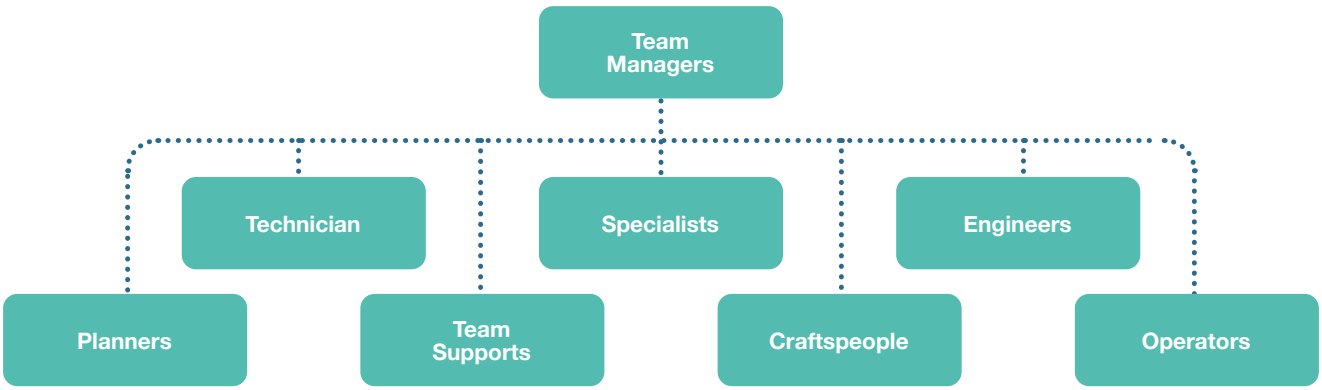
4.244. Our operational workforce consists of geographically based teams responsible for all activities in that area, complemented by a range of support staff. We operate a flat management structure, which makes decision making and problem solving much quicker and empowers employees to act within an agreed framework of authority.

4.245. 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. Figure 4.19 shows the structure of a team.

4.246. The team structure is supported by corporate functions including employee relations, finance, information technology, communications, and payroll and pensions, among others.

4.247. 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 42 years. During this period, our staff turnover rate has averaged 4.23% a year which is slightly higher than in previous years due to a higher proportion of leavers during RIIO-ED1.

Figure 4.19 Network Services' team structure



Some highlights in RIIO-ED1 include:

- 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.
- Our ratio of male/female staff has changed due to an increase of 190 female employees across many roles.
- We have also increased the ethnic diversity of our workforce, recruiting a further 30 employees from minority ethnic 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

4.248. Figure 4.20 shows the top priorities that our stakeholders told us from our workshops and extensive engagement programme on workforce resilience.

Figure 4.20 Stakeholder top priorities for workforce resilience

Stakeholder top 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.

4.249. 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.

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

4.251. 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 continually training and upskilling our existing employees.

4.252. We have developed two priority areas (see figure 4.21) as part of our Workforce Resilience Strategy which is available on our website at **www.westernpower.co.uk/RIIO-ED2BusinessPlan**

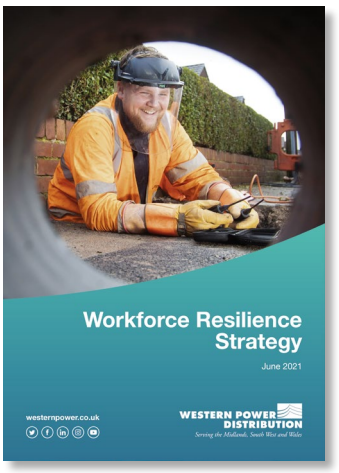
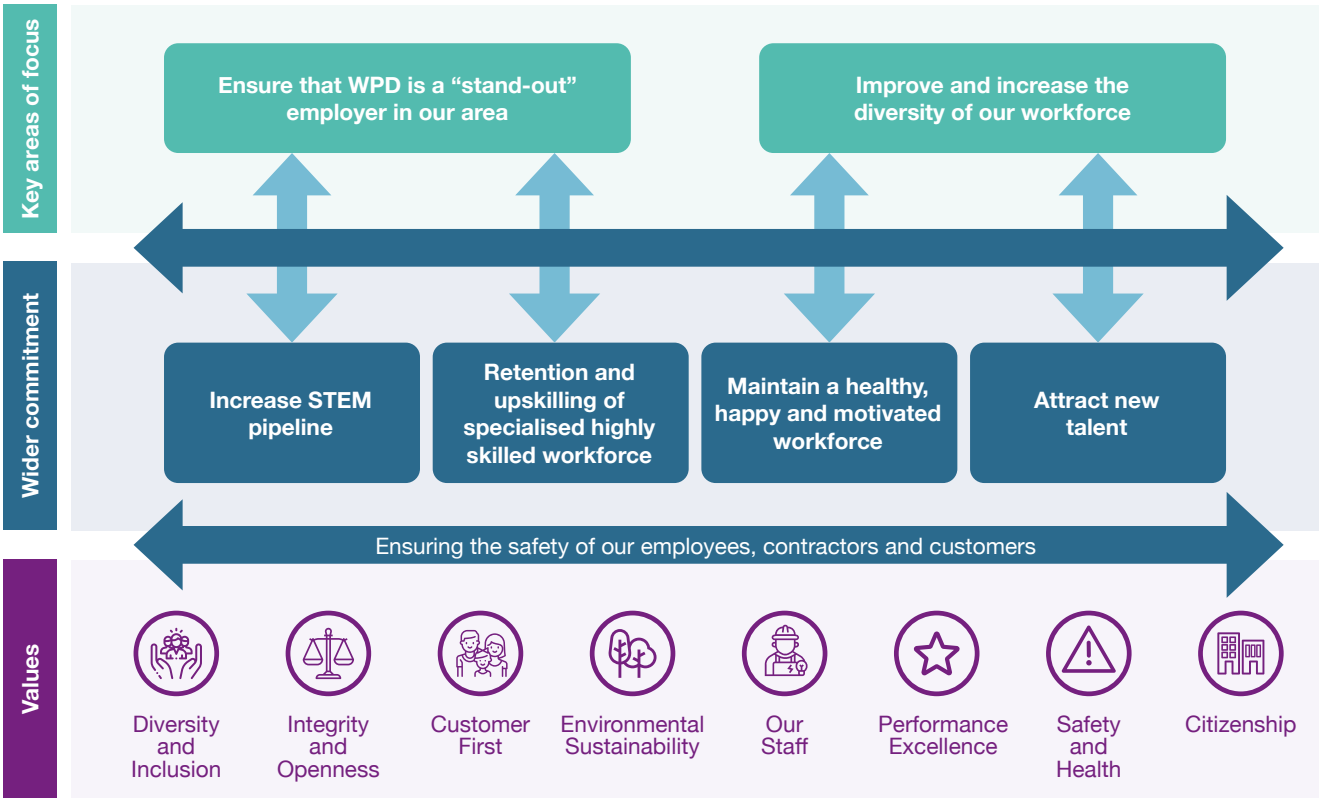


Figure 4.21 Workforce Resilience Strategy



Core Commitment 27	Demonstrate exceptional and embedded employment practices by achieving gold accreditation with Investors in People by the end of RIIO-ED2.

Priority 1: Promote WPD as an outstanding employer

4.253. We will promote WPD wherever we can to further increase our already strong reputation 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 remains attractive to new and existing employees from all communities.

4.254. We have trained more than 300 middle and senior managers in mental health awareness to provide support for our staff, along with 11 Trade Union representatives. We plan to train more Trade Union representatives as well as wider employees who have a desire to support mental health in the workplace.

4.255. We will achieve the Investors in People award, gaining at least gold accreditation. This will put WPD in the top 18% of all UK companies.

Core Commitment 28	Achieve year-on-year improvements to the levels of diversity within the business and publish an annually updated Diversity, Equity and Inclusion Action Plan.

Priority 2: Improve and increase the diversity of our workforce

4.256. We are committed to continuing our strong track record in creating a workplace in which employees from a diverse range of cultures and backgrounds feel 'at home'. Innovation is fuelled by a diverse workforce. It improves staff satisfaction and wellbeing, and ultimately allows us to deliver better outcomes for our customers.

4.257. During 2020, our CEO launched WPD's 'Respect Charter', confirming our commitment to working together to always:

- Act with integrity.
- Promote and champion fairness and inclusion for all.
- Respect and value differences.
- Treat everyone with courtesy and respect.

4.258. 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.

4.259. 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. At WPD we will ensure everyone is treated fairly and with respect and dignity.

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

Workplace wellbeing priorities in RIIO-ED2

4.261. We are committed to:

- Promoting wellness in the workplace.
- Reviewing working arrangements to allow for more flexible and agile working, which will attract a more diverse workforce.
- Providing competitive employment packages, benefits and career opportunities that attract candidates from diverse communities, using salary and benefits benchmarking within the sector.

4.262. 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

4.263. We forecast that our staff numbers will increase by 238 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.

4.264. We will continue to drive a 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 powering an environmentally sustainable network

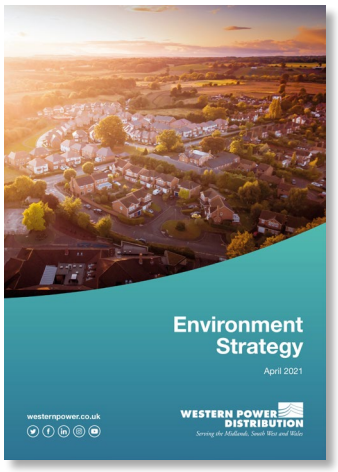
Our Environmental Strategy

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

4.266. We take our responsibility to respect and protect the environment and believe we should be a role model, inspiring others to follow our lead. We strongly believe we have a social obligation to respect and protect the environment in which we operate and this view is firmly supported by our stakeholders.

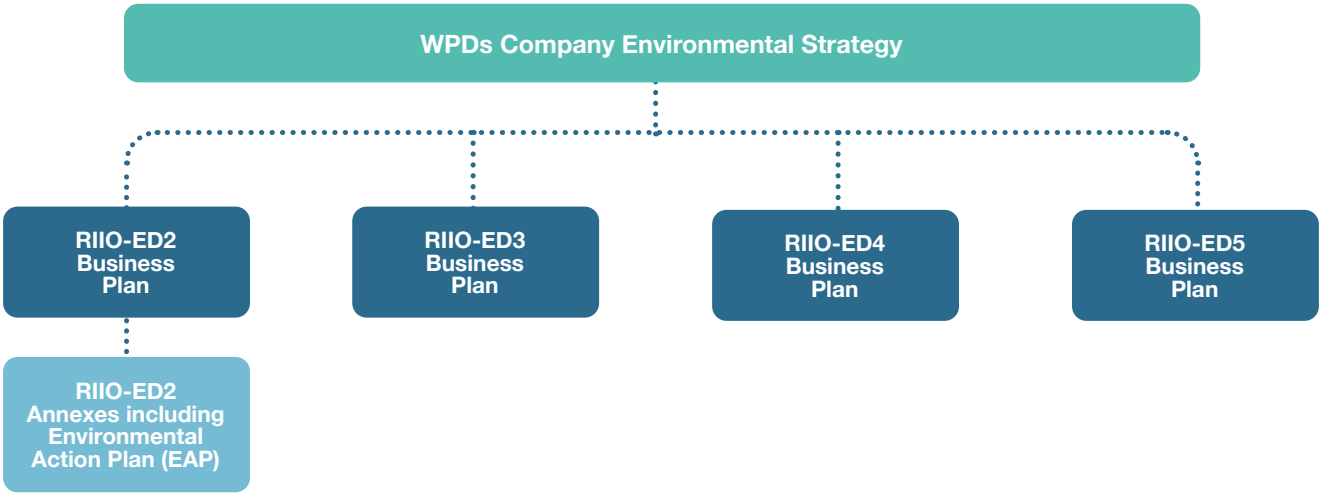
4.267. During RIIO-ED1, we moved towards a more proactive, performance-driven approach, managing the impact of our business activities on the environment. So far, we have achieved the following environmental Business Plan outputs:

- 27% reduction of our business carbon footprint.
- 83% reduction of the tonnage of waste from our operations being sent to landfill.
- 59% reduction in fluid leaked from fluid filled cables.
- Reduction of SF_6 gas leaks outperforming our 17% reduction RIIO-ED1 target based on like-for-like data.
- Replacement of 33km 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.



4.268. WPD's Environmental Strategy for RIIO-ED2 (see figure 4.22) details our commitment to become a net zero carbon organisation and to ensure that environmental responsibility remains a key part of all of our activities throughout RIIO-ED2 and beyond.

Figure 4.22 Environmental Strategy structure



4.269. In addition to WPD's Environmental Strategy which is available on our website at **www.westernpower.co.uk/RIIO-ED2BusinessPlan**

Our environmental commitments

4.270. Figure 4.23 shows the top priorities that our stakeholders told us from our workshops and extensive engagement programme on the environment.

Figure 4.23 Stakeholder top priorities for the environment

Stakeholder top priorities

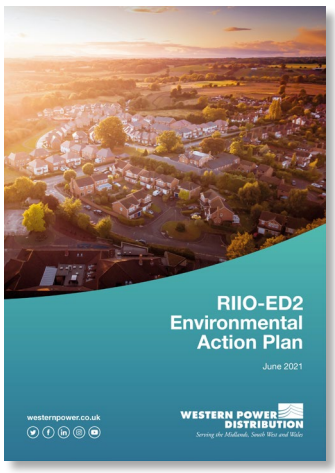
1. Set a target for zero carbon emissions from our fleet, for example, by 2030.
2. Replace smaller vehicles with electric vehicles and larger vehicles with biogas or hydrogen.
3. Monitor all transport associated with your business, using telematics, to reduce the number of miles travelled.
4. Eliminate 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.

Developing our Environmental Action Plan

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

4.272. 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) and contains further details on our planned environmental actions.

4.273. Our Environmental Action Plan is available on our website at **www.westernpower.co.uk/RIIO-ED2BusinessPlan**



Core Commitment 29

Achieve net zero in our internal business carbon footprint by 2028 (excluding network losses) and follow a verified science based target of 1.5°C to limit the climate impact of our activities.

4.274. We are committed to becoming a net zero carbon organisation 22 years ahead of the UK government's 2050 target. We will achieve this by:

- **Reducing our Operational Business Carbon Footprint (BCF):** Our annual BCF charts the carbon emissions from 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 (excluding network losses), we will remain on track to be a net zero carbon business by 2028.
- **Set Science Based Targets:** 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. Prior to the start of RIIO-ED2 we will engage with the Science Based Target (SBT) Initiative and set the more ambitious 1.5°C SBT ensuring that we limit our global temperature impact to well below 2°C.
- **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.

4.275. We ensure our activities do not have a harmful impact on the environment in which we operate. This is a key priority flagged 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.

4.276. 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. To do so 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 offices and depot 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.
- Increase use of small scale battery powered generation, where appropriate reducing reliance on diesel generation, helping to reduce our carbon footprint when restoring customer supplies.

Protecting our local environment

Core Commitment 30	**Reduce the volume of oil leaked 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.**
Core Commitment 31	**Deliver a 20% reduction in SF_6 losses from RIIO-ED1 and drive industry partners to develop technological alternatives to reduce overall volumes of SF_6 on the system.**

4.277. 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 the volume of oil leaked from fluid filled cable by 50% compared to RIIO-ED1 levels.
- 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.

Protect the local and regional environment from damage

4.278. During RIIO-ED2, we will ensure that our activities have as little negative impact on protected flora and fauna species as possible. 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.

4.279. 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 by the work we will be doing.

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

4.281. 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.

4.282. We will work with Natural England and 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.

4.283. We will 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

4.284. In the past six years, 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 eliminate 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.

4.285. 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 £ of total business expenditure.

Core Commitment 32	**Achieve zero waste to landfill by 2028 (excluding hazardous waste) and deliver an overall 30% reduction in tonnage waste produced.**

4.286. We currently produce 3.0 tonnes of waste per £1 million annual turnover (2020/21 figures). By the end of RIIO-ED2, we will reduce this by 0.96 tonnes (30%) to 2.04 tonnes of waste per £1 million of annual turnover. We will achieve this by avoiding waste production wherever possible and by following the waste hierarchy in figure 4.24.

4.287. 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. The benefits of doing so for customers will include:

- Reduced societal burden from waste.
- Reduced use of raw materials.
- Reduced carbon emissions.
- Improves sustainability, reducing the environmental impact of our operations.

Figure 4.24 Waste hierarchy

Core Commitment 33	Remove up to 50km of overhead lines in Areas of Outstanding Natural Beauty.

4.288. We have always been committed to working with the organisations responsible for National Parks and Areas of Outstanding Natural Beauty. In the next five years, we will aim to remove 10km of overhead lines every year and therefore 50km in total.

Reducing losses

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

4.290. 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.

4.291. In RIIO-ED2, we are committed 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.

4.292. 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

4.293. 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. We have also summarised our core commitments in this section.

Our smart and flexible network core commitments for RIIO-ED2

4.294. Figure 4.25 shows the top priorities that our stakeholders told us from our workshops and extensive engagement programme on smart and flexible networks.

Figure 4.25 Stakeholder top priorities for 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 to arrive at the most effective and efficient solutions.**

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

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

4.297. 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.

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

Core Commitment 34	**Encourage the development of flexibility markets by implementing simple, fair and transparent rules for procuring flexibility services, undertaking a flexibility tender every six months and introducing a customer satisfaction monitor for flexibility services.**

Core Commitment 35	**Maximise the utilisation of the network and keep costs to customers low by adopting a 'flexibility first' approach for all load-related reinforcement decisions.**

4.299. 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.

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

4.301. 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.

Neutral market facilitation

4.302. A neutral market for provision of flexibility is vital for participants to be confident that they will be treated fairly. Our approach to being a neutral market facilitator is to be open and transparent about the rules of engagement and decisions that are made.

4.303. We are transparent about the needs of the network in the data we publish about network constraints, as well as 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.

Assessing alternatives to conventional reinforcement

4.304. WPD has adopted a 'flexibility first' approach to resolving network constraints.

4.305. Where constraints are identified, we use the signposting and forecasting processes to give flexibility providers a clear picture of our 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.

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

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

Enabling low carbon technologies to connect

Core Commitment 36	**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 37	**Make it easy for our customers to connect LCTs ensuring WPD is able to connect up to 1.5 million electric vehicles and 600,000 heat pumps.**

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

4.309. WPD will proactively identify parts of the network that are heavily loaded and provide 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 LCT loads can be managed to make greatest use of existing network capacity, which may involve steps including controlling when electric vehicles are charged.

4.310. Together, these proactive actions will enable more LCTs to connect overall and in shorter timescales and at lower cost than if conventional reinforcement were required.

Sharing network data

Core Commitment 38	**Improve the accessibility and usefulness of data, tailored to individual customer needs and in the format of their choosing by making 60% of WPD's network data available via an interactive Application Programming Interface.**

4.311. 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.

4.312. 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.

4.313. 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 data sets. We anticipate that this access will be made through application programming interfaces.

Understanding the data needs of stakeholders

4.314. WPD has a strong track record of engaging with stakeholders to ensure that the services we provide meet their needs both today and in the long term.

4.315. As we expand the data available and the processes for accessing the data, we must ensure we continue to meet the needs of stakeholders. We will introduce a satisfaction survey to support our ongoing engagement interactions 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)

4.316. In 2015, WPD was the first DNO to produce and publish a DFES document and continue to do so every year. The DFES forecasts 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.

4.317. 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.

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

4.319. We will update the DFES each year so that we can use the latest information to inform our plans.

DFES stakeholder input

Core Commitment 39	**Align our low carbon technology forecasts with the energy plans of local regions and the Electricity System Operator, by updating WPD's Distribution Future Energy Scenarios every 12 months.**

4.320. As part of the DFES process, we regularly consult with local authorities about their ambitions for local developments and net zero related aspirations. Engaging with local authorities enables WPD to understand their local plans and factor these into our considerations of network constraints. At the same time we will help local authorities to understand some of the consequences of their proposals and to therefore refine their own Local Area Energy Plans.

4.321. Collaboration with the Electricity System Operator allows WPD to contribute to 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.

4.322. Together, these approaches to engagement allow the DFES to be refined and ensure they are more representative of likely future network needs. We will engage regularly with stakeholders on an ongoing basis to help to continually improve the DFES analysis.

Local authority engagement

Core Commitment 40	**Hold 90 local energy surgeries per year for local authorities, supporting them to deliver their local area energy plans.**

4.323. An important part of our engagement strategy is to work with different user types including local authorities (LAs). Working with LAs helps us to develop a range of compelling future energy forecasts and identify strategic investment options. We will hold discussions with all 130 of our local authorities and with 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.

4.324. 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. Some authorities therefore 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.

4.325. To help them with their plans, we propose to hold dedicated surgeries where more detailed discussions can take place with relevant WPD local network staff.

Whole system collaboration

Core Commitment 41	**Identify opportunities for a minimum of three whole system collaboration schemes with other DNOs and the ESO to enable our customers to benefit from lower electricity network and system costs.**

4.326. 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.

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

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

Innovation

4.329. Figure 4.26 shows the top priorities that our stakeholders told us from our workshops and extensive engagement programme on innovation.

Figure 4.26 Stakeholder top priorities for 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. **It was suggested that innovation research and case studies are a great vehicle to communicate opportunities for collaboration with partners.**

Core Commitment 42	**We will make an efficiency saving of £53 million through RIIO-ED2 by improving the effectiveness of our assets, operations and customer service by encompassing innovation into standard business practice and show a positive carbon impact.**

4.330. WPD has carried out industry leading innovation work for more than a decade. 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.

4.331. We want to ensure that the innovation work is always delivering a cost and/or carbon benefit, or a customer enhancement. For this reason, we carry out a cost benefit assessment to identify the potential benefits of all innovation projects. This may be a bespoke benefit arising from the project or a benefit that contributes to a wider innovation challenge.

Innovation ideas portal

4.332. The best ideas may be those we have not even thought of yet. To complement and boost our own innovative thinking, we work with third parties on forward thinking projects. To encourage more inventive thinking 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.

4.333. 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.

Supporting customers in the switch to low carbon technologies

Core Commitment 43	**Create a low carbon technology energy advisory service for customers, providing a support service for people looking to switch to electric vehicles, heat pumps or solar PV.**

4.334. During RIIO-ED2, we will use our contact centre team to contact customers to advise them on how to switch to electric vehicles, heat pumps or solar. This service goes beyond our commitments to vulnerable customers and the services we provide for them as this will be provided for all of our customers. This initiative is another element of our strategy to ensure that no-one is left behind in the take up of low carbon technologies.

Community energy

4.335. Community energy has the potential to make a significant impact on how we achieve our net zero goal.

4.336. The delivery of community-led renewable energy, energy demand reduction and energy supply projects is moving us away from the traditional centralised models of generation. These projects are exciting and may be wholly owned and/or controlled by communities or through a partnership with commercial or public partners. They 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.

4.337. Figure 4.27 shows the top priorities that our stakeholders told us from our workshops and extensive engagement programme on community energy.

Figure 4.27 Stakeholder top priorities for community energy

Stakeholder top priorities

1. Stakeholders want us to support community energy projects as one of the highest priorities in relation to driving innovation and new services.
2. Community energy groups state they are often interested in developing low carbon technologies or renewable connections but tend to be slow to react to opportunities around flexibility, which stakeholders felt we should try and influence.
3. The importance of WPD providing education and support to stakeholders was raised as it was felt some groups may lack the knowledge and expertise in relation to the energy network.
4. The importance of community energy projects as a base for innovation was discussed 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 support their neighbours as trusted advisors.

Core Commitment 44	**Support local community energy groups by holding 60 community energy surgeries per year and providing a dedicated WPD community energy representative who will assist with connection and flexibility offers.**

4.338. To help unlock the potential in our communities, we have provided support to the communities and their representatives through well-received and 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.

4.339. Taking this a step further, we will introduce community energy surgeries where we can sit down and talk through ideas and the details.

Core Commitment 45	**Facilitate access to available funding streams for community energy groups.**

4.340. To help community and local energy organisations develop new projects, we need to partner with them and support their ideas. We have done this previously on several network innovation projects and will continue to look for opportunities. However, our community energy groups have also requested that we support them to access any available funding streams which could support them to establish a project.

Chapter 5

Delivering a smart and flexible electricity network

Chapter 5 Contents

5. Delivering a smart and flexible network

Summary

5.1. We are passionate about operating our business in an environmentally responsible way and making sure sustainability shapes our thinking and decision making at all levels.

5.2. We are continually finding better ways to do business by tackling our own carbon footprint, conserving resources and protecting natural habitats and green spaces across the regions we serve.

5.3. This chapter outlines how we will meet our environmental ambitions in the most cost effective way. We will develop our network to enable low carbon technologies (LCTs) by responding to changes in volume, by making capacity available and by sharing our network data to allow stakeholders to develop their own strategies and plans for a net zero future.

5.4. Further detail on smart and flexible network activities are included in Supplementary Annex SA-05: A smart and flexible electricity network.

Electricity system to support net zero

5.5. The government's net zero plan is clear - the UK can only meet its environmental targets by decarbonising heat and transport through low carbon electricity generation. This means that DNOs like WPD are pivotal to net zero success and play a vital role in the speed with which it is achieved. For our stakeholders, we have heard loud and clear that the need is urgent.

5.6. During RIIO-ED1, we transformed our network to connect low carbon technologies and low carbon generation. A mixture of flexible connection and modelling based more prominently on energy volumes than maximum demands helped us connect more than 24.8GW of generation on a network conventionally designed for 14GW of demand.

5.7. In RIIO-ED2, our focus will shift from large scale renewable generation connections to high volumes of smaller LCT connections, including the mass connection of electric vehicles and heat pumps with capacities in multiples of 7kW. We now need to transform our business once again, from one that delivers lower volumes of individual highly complex engineering solutions to one that delivers high volumes of less complex standardised engineering solutions.

5.8. The task is significant: government figures forecast the connection of 600,000 heat pumps a year in the UK by the end of RIIO-ED2. What's more, all new cars will be electric, leading to around a million new EV connections every year. WPD serves around a third of the UK, which means we are likely to see more than 400,000 new connections every year – the equivalent of 1,600 connections every working day. These fast increasing levels of demand will mean that we need to employ a predominantly automated approach to ensure a consistent, quality service for our customers, backed by staff with considerable expertise to provide further support and hand-holding where required.

5.9. Our market leading automated approach will not only deliver a consistent and reliable service to the customers we serve; it will 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. For this reason, 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.

5.10. To implement innovative new solutions, we need to collect and analyse increasingly detailed network data. As maximum demand based modelling gives way to energy volume modelling, our smart network will harness digital technology, including monitoring equipment, communication networks and automated remote control, to analyse the network and optimise the running of our network.

5.11. Smart meters will power our first steps into real-time monitoring on our low voltage network. In the past, we successfully used templates and pre-set profiles to model the network but as the number of smart meters grows, we will replace that with more accurate smart meter derived load profiles. 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.

5.12. Open data will open the door for organisations which have not previously participated in our sector to create solutions to benefit customers and support net zero. We are leading the industry in data provision and will continue to do so over the next five years, powering long lasting and systemic change. Our data selection rules ensure that the maximum level of data is shared for others to develop.

5.13. 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, and we will continue to lead the way. Management of whole housing estates as pseudo power plants is another area where we expect growth, with benefits both for connected customers and WPD as the network operator.

5.14. 'Business as Usual' innovation has changed the service we provide to customers. As a result of our commitment to developing innovation tools during RIIO-ED1, flexibility is now at the heart of our system operation plans. Research from the WPD-led Electric Nation, the largest project of its type in the world at the time of its launch, has shown how we can connect more EVs to an existing network.

5.15. During RIIO-ED2, we will continue to innovate and develop in response to the changing demands of our customers. Our innovation team has extensive 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.

5.16. However, innovation solutions do not just come from our research, development and demonstration projects. We empower employees in any part of the business to think differently, take risks and power change. For example, we prototyped a solution that used 'superfast cables' to deliver three-phase electricity to new homes in Wales. This led directly to WPD now being the only DNO to install three-phase low voltage connections into new homes as standard – and customers who require a higher capacity connection now also receive our superfast solution.

A regional approach to net zero

UK government net zero target

5.17. As part of its net zero by 2050 plans, 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 now 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.

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

Welsh government net zero ambition

5.19. The Welsh government's 'Prosperity for all, a low carbon Wales' document looks at all aspects of decarbonisation and lays out plans to meet the target of a 95% reduction in greenhouse gas by 2050. It 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 wants to reduce the emissions of taxis and buses by 2028.

Local Area Energy Plans

5.20. Local authorities are preparing Local Area Energy Plans (LAEPs) to outline their own approaches to meeting UK net zero targets. 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.

5.21. We will work closely with local authorities to help them 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.

Electric vehicles and heat pumps

5.22. During RIIO-ED1, there was 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.

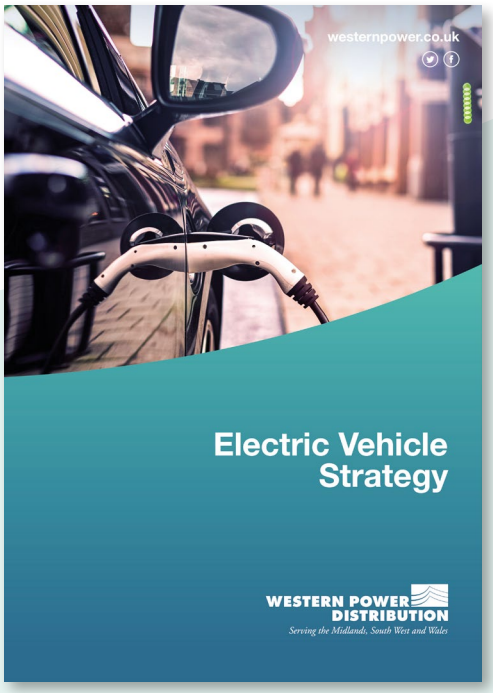
5.23. During RIIO-ED2, we expect further growth in distributed generation and storage, but by far the most significant changes to the way our network is used will be the exponential growth in electric vehicles (EVs) and heat pumps.

5.24. We created our Electric Vehicle Strategy as electric vehicle 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, always in close collaboration with existing and emerging stakeholders.

Electric vehicles (EVs)

5.25. The number of EVs is growing fast and is expected to increase even more quickly during the next five years. In December 2020, it was announced that the sale of new petrol and diesel cars and vans would end by 2030 – earlier than 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.

5.26. Our Electric Vehicle Strategy is updated annually and describes how we are preparing our network for millions of electric vehicle drivers who will want to charge their EVs at a time and place that suits them. The strategy explains the rationale behind our innovation projects and initiatives, as well as how we are incorporating solutions into our 'Business as Usual' activities.



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

Getting our network ready for EVs

5.28. Our customers' expectations are clear. The infrastructure for EV charging requires high volumes of energy and we must deliver that energy whenever and wherever it is needed. We will develop the infrastructure to charge vehicles at motorway service areas charging hubs, on-street and at people's homes.

5.29. 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 outside peak network use hours and minimise the need for reinforcement.

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

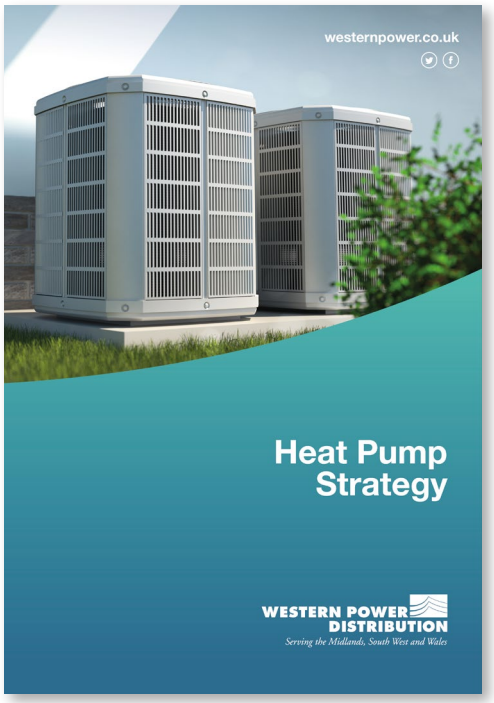
5.31. Motorway service areas are likely to see a significant change in electricity demands. As part of the UK government's Project Rapid, we are working with the government to model forecast demands at each service area. This expected demand is equivalent to the level of demand we would typically see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

Heat pumps

5.32. Heat pumps are a key component of the UK's plans to achieve net zero by 2050. 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.

5.33. We are leading the way in this area. In 2020, we became the first DNO to publish a bespoke Heat Pump Strategy document that is updated every year following extensive stakeholder input. 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.

5.34. It is available on our website at **www.westernpower.co.uk/smarter-networks/heat-pumps**



Getting our network ready for heat pumps

5.35. 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.

5.36. WPD is currently collaborating 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, providing 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 high volumes and will use this expertise to help us drive our work in this area.

5.37. In situations where LCTs 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

5.38. As well as the ground-breaking Eco Homes project in South Wales, we are also leading a redevelopment project at the Rugeley power station site which involves state-of-the-art home energy management systems. As more people become involved with home energy management, it will be an area of increasing importance for us. We will continue to build our solutions as the technology develops and demand grows.

5.39. We expect that the growth of storage, energy managed homes and domestic flexibility will help us 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.

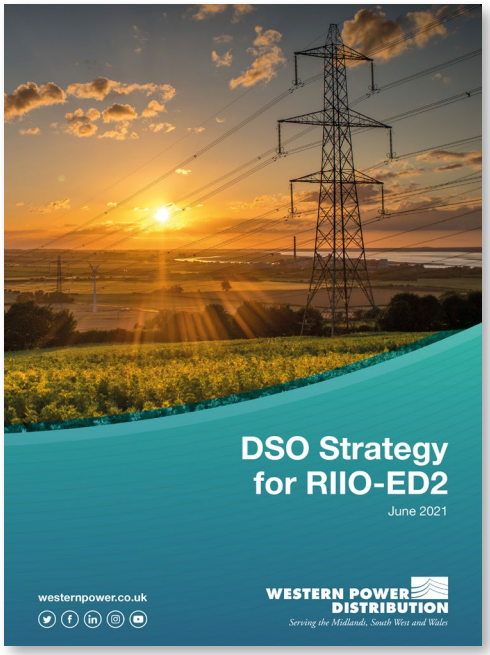
5.40. Our use of agile tariffs and price signals will be key to help us manage demands away from peak times.

District heating and heat networks

5.41. Heat networks will be straightforward 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 could also support our network.

5.42. We are monitoring ambitious plans for heat networks in the Cardiff Council area. We will analyse the demands of the heat network to understand how it will impact on the wider network. The crucial learnings will allow us to develop connection solutions for this technology.

Distribution System Operator (DSO)



5.43. Distribution system operation is crucial in driving network performance and efficiency and to ensure we can meet the future energy demands of all our customers. 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.

5.44. Central to establishing DSO capabilities will be understanding its 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 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.

5.45. These functions are a natural extension to the essential tasks we already perform – which is why we are best placed to execute the Distribution System Operator role throughout RIIO-ED2.

5.46. We have already radically adapted our network – designed for 14GW of demand – so that it can now accept a total of 24.8GW of embedded generation. Although most of this capacity has been provided through flexible connections, we have also contracted with 457MW of customer-provided flexibility services as the most efficient method.

5.47. We are ahead of the game in this area. We were the first DNO to publish a costed DSO strategy in 2017 which has been updated to reflect changing requirements and industry developments. The latest version is available on our website at **www.westernpower.co.uk/smarter-networks/network-strategy/dso-strategy**

Smarter flexible networks in RIIO-ED2

5.48. 'Flexibility first' is the guiding principle which informs our plans. Plans for network reinforcement during RIIO-ED2 promise that, when 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.

5.49. We will 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 our customers with a reliable, affordable and efficient electricity supply.

5.50. 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.

5.51. 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 gathering from the network, enhancing established processes, developing new systems and sharing more data.

Operating our network in RIIO-ED2

5.52. The changing way we use electricity, and the changing role of the network operator requires new data and processes to help us analyse what is happening on the network. We need 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

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

5.54. Our customers now have two options for flexible connections including a Timed Connection which provides 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

5.55. Flexible power solutions, or 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.

5.56. We have been pioneering the use of flexibility solutions during RIIO-ED1 and will continue to lead the way throughout RIIO-ED2 as more demand connects to the network.

5.57. There are four types of flexibility services:

- **Secure:** proactively managing peak demand.
- **Dynamic:** supporting the network in a coincident fault during network maintenance.
- **Restore:** reducing the stress on the network during fault situations, with flexibility providers responding within 15 minutes.
- **Sustain:** allowing customers to change their energy profile to reduce costs.

5.58. 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.

5.59. We will continue to make our services leading and accessible. We will develop 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.

Whole system solutions to benefit our customers

5.60. We will consider every possible option when developing our network to make sure we deliver the most cost efficient and economic outcome. This means close collaboration with other energy organisations to ensure our customers get the most cost effective solution to their energy requirements.

5.61. There may be opportunities for solutions to be delivered by other organisations, where this is the most cost effective result 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

5.62. Regional Development Programmes (RDPs) have been 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.

5.63. This analysis will help us to innovate and push the boundaries of current thinking even further with a 'design by doing' approach to resolving issues. It is possible to make faster progress by focusing on a specific case study where there is a pressing need to improve customer outcomes.

5.64. 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 economic short-term solution and that generation turn down products were needed to manage transmission constraints.

Other whole system activities

5.65. The Accelerated Loss of Mains Change project, delivered by National Grid, DNOs and IDNOs will speed up compliance with new requirements in the Distribution Code on behalf of the Distribution Code Review Panel. It will significantly reduce the risk of inadvertent tripping and reduce system balancing issues.

5.66. DNOs are required to request 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 of the Statement of Works process known as the 'Appendix G trial'.

5.67. We have been instrumental in trialling this new process and were the first DNO to have an Appendix G in place. This has slashed the time customers have to wait for the outcome of the process by more than half; from around four months to six weeks.

RIIO-ED2 whole system actions

5.68. WPD continues to explore activities that would benefit from whole system consideration. These may arise because of specific constraints on the network or from proactive coordination with other organisations.

5.69. We work with IDNOs, transmission operators, gas networks and our neighbouring DNOs to ensure we provide the most efficient and effective outcomes for our customers.

5.70. We will work with the Welsh assembly government to create a National Energy Plan for Wales, working in collaboration with National Grid and SPEN to ensure a whole system approach to key enabling actions.

Enhanced network monitoring

5.71. We deliver the capacity required for our customers – both today and for the future. Our deep understanding of smart electricity networks will allow our customers to realise their net zero ambitions and help us to operate the network in a cost effective, efficient way. To do this, we need sensors and measurement devices on our system to capture critical data and operate our network automatically.

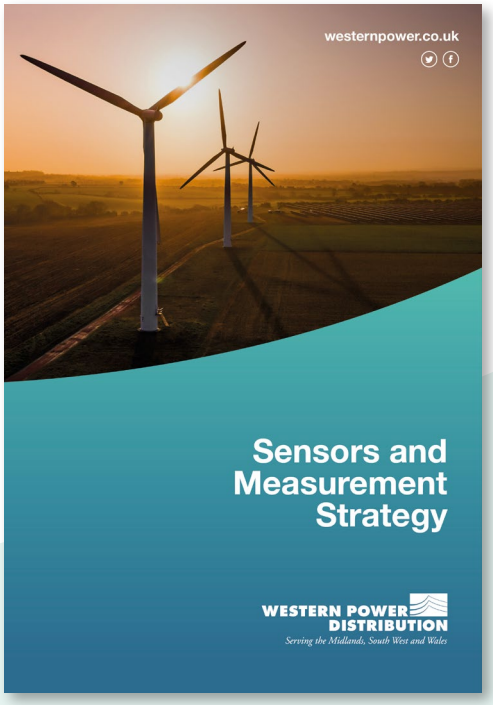
Our Sensors and Measurement Strategy

5.72. In April 2020, we published a Sensors and Measurement Strategy, which identifies the monitoring requirements we need to develop smart networks, improve network design and enhance network security.

5.73. It is available on our website at **www.westernpower.co.uk/smarter-networks/network-visibility-strategies**

5.74. The successful operation of these new systems requires good quality, reliable and timely data on the state of the network. We will carry out significant work to upgrade WPD's data acquisition capabilities.

5.75. We must be able to control the associated load to provide flexible connections. When the network is highly loaded and unable to accept the generator's full output, the network may need to restrict exports or use flexibility services to manage constraints. This means engaging with other connected customers who can operate flexibly and who can be contracted to change their generation output and/or consumption.



5.76. Whichever mitigation option we use, the need for accurate, network-wide, reliable real time data is crucial to enable real time analysis of the network.

Improving network design

5.77. The growth of distributed generation and low carbon technologies also has an impact on the information we need for network design purposes. In the past we needed little more than the maximum demand at a substation to ensure the adequacy of the network. We need to keep ahead of change and improve our measurement capabilities for planning and design activities.

5.78. In response, we will significantly upgrade our measurement capability by adding more sensors at all voltage levels within the network. On our 11kV and higher networks, we will spend around £35 million 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

5.79. By monitoring power quality continually, we can develop a better understanding of the impact that customer equipment, such as heat pumps, can have on our network. This is known as harmonic distortion. Having better knowledge will help us prevent damage to network assets and reduce the risk of faults and power cuts.

5.80. During RIIO-ED2, we will introduce or upgrade the power quality measurement at around 240 substations across the WPD network.

Enhanced network modelling – Our RIIO-ED2 projects

5.81. Figure 5.1 shows the projects we will undertake to support our enhanced network modelling programme.

Figure 5.1 Our RIIO-ED2 enhanced network modelling projects

Project title	Background	Project details
Distributed Energy Resource (DER) 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.	To gain a better understanding of reverse power flow and power factors, power flow monitoring equipment will be installed at all primary substations giving visibility of the 11kV network and higher voltages.
Extra High Voltage Monitoring for Smart Systems	WPD has been rolling out innovative 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 from erroneous operation resulting in significant load loss events.
Low Voltage (LV) Network Monitoring	To address the climate crisis, 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 that will coincide 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 on the LV network 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 which have been replaced more recently 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.

Harnessing the power of smart meter data

5.82. As outlined in our Smart Meter Strategy, we will harness the data provided by smart meters to further improve service delivery and prevent power cuts. 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 our planning.

5.83. Our Smart Meter Strategy is available on our website at **www.westernpower.co.uk/smarter-networks**

5.84. Up to now 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.

5.85. Smart meter data provides us with a view of aggregated LV network demands in 30-minute blocks, allowing us to get a better view and 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

5.86. Harnessing smart meter data well help us transform existing business activities including fault management, network planning and asset management. This data looks set to unlock further benefits as the number of smart meters increases.

5.87. To capitalise on the benefits, we have established interfaces with national smart meter data repositories that hold data from across the UK. We have also established data storage systems and have created procedures to help us understand and interpret data using WPD's own existing processes.

5.88. Most of our customers expect to have a smart meter installed by the end of 2024. During RIIO-ED1, we have developed many of the systems needed as a foundation to use the information effectively when it becomes available. We are now planning to do even more. 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 more quickly than LCT take-up which will provide us with early insight into where network reinforcement will be needed.

Improved fault response

5.89. Smart meters will be instrumental in alerting us to a loss of supply and allowing us to restore power quickly. We already use this information to indicate that a single property is without power.

5.90. Additional functionality means that we can check the energisation status of meters remotely, giving a clearer understanding of which customers are off supply and allowing us to determine the kind of fault that has occurred. This level of visibility, telling us how individual households and customers are affected, is unprecedented in the industry, and will transform our ability to respond to faults on the network.

5.91. 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 then 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.

5.92. The comprehensive roll out of smart meters in the next five years 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. We will be able to make a quicker and more appropriate response as a result.

5.93. When the fault is repaired, we can check that all supplies have been restored. This is vital during storms, for example, 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, therefore ensuring the best possible service for our customers, even in challenging circumstances.

Network monitoring – a proactive way to tackle faults

5.94. Smart meters measure both voltage and current. This data can be used to identify loading issues on the network.

5.95. Voltage data relates to the network rather than to the individual property 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 LV 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.

5.96. We can use this data as an early warning of potential issues on our network, allowing us to take proactive action against potential faults. It allows us to identify substations with predominantly high or low voltage levels 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

5.97. LV network planning uses load profile templates to determine whether reinforcement is needed. Smart meter data is being used to verify and refine these load profile assumptions.

5.98. Our estimates show that 80% of customers on a circuit must have a smart meter in order to give a reasonable representation of the network in that area. To check these estimates are correct, we are comparing smart meter data with data generated by the substation's monitoring equipment.

5.99. This will help us to refine the generic assumptions used for planning and open up the opportunity for further, tailored analysis.

Future applications

5.100. While working hard to enhance our services today, we are also continually innovating for the future. 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, which we must work to overcome. 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.

5.101. 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

Our market leading telecoms network

5.102. WPD operates an effective in-house telecoms network that delivers inter-office data communication, mobile voice communication, supervisor control and data acquisition (SCADA) between electricity assets and control centres.

5.103. Our proprietary service is more efficient, cyber secure and reliable than third party telecommunications services, and powers more effective and timely dialogue with our customers.

5.104. During RIIO-ED1, we started work to meet future network demands 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

5.105. In RIIO-ED2 we will need to meet significant challenges relating to the increase in the number of electricity assets to be monitored: Other key challenges include:

- Geographical coverage, connecting additional electricity assets to the telecoms network.
- Suitable bandwidth, preventing extra data collection congestion on the telecoms network.
- Ensuring that the high availability of the telecoms network is maintained as the network grows, remaining resilient to all types of events especially during a power cut.
- Providing cyber security controls on all parts of the telecoms network.

5.106. Our experience and expertise will allow us to meet these challenges, delivering uninterrupted service to the communities we serve.

Telecoms RIIO-ED2 deliverables

5.107. Our ambitious telecoms plans will see us focus on 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

5.108. Due to the increasing complexity and challenges of our localised grid, including reverse power flow and varying power factors, we will install power flow monitoring equipment at multiple and various voltage levels across the electricity network.

5.109. This expansion of data collection and communication requirements will require connection to WPD's telecoms infrastructure.

Communication for low voltage monitoring

5.110. WPD's responsibility for its 8 million customers and 180,000 distribution substations means that monitoring at low voltage will increasingly be required to measure the network's response to these advancing technologies. This data collection will require additional communication devices to be installed and linked into the telecoms network.

Private Long-Term Evolution network

5.111. The existing radio telecoms system used for the control and monitoring of the electricity network is becoming restricted. This is due to limitations in the number of connected assets and the small amount of throughput data it can handle.

5.112. A modernised Private Long-Term Evolution (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.

5.113. If regulatory consent is given, we will 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

5.114. Remote Terminal Units (RTUs) are microprocessor devices that are installed at substations to swiftly send critical messages from the equipment to the control systems. As electronic devices, RTUs have a relatively short life when compared to electrical equipment in substations.

5.115. During RIIO-ED2, we plan to modernise 2,000 substation RTUs that have reached the end of life.

5.116. Replacement devices will be completely cyber secure internet protocol (IP) enabled RTUs 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

5.117. Legacy telecoms equipment including Plesiochronous Digital Hierarchy (PDH) and Synchronous Digital Hierarchy (SDH) telecoms kit will not support a future electricity network.

5.118. To that end, we commit to replacing outdated devices, to enable remote operations to continue and manage the enhanced two-way data communicating to and from field based assets.

'Public Switched Telephone Network' switch off

5.119. Public Switched Telephone Network (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.

5.120. 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.

5.121. WPD will migrate these affected and essential telephone lines on to WPD's private network.

Fibre network expansion

5.122. WPD uses a combination of fibre optics and microwave for communications across our telecoms network. We will continue to use the combination but will increase the number of fibre optic installations, because they provide greater bandwidth.

5.123. 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.

5.124. This will enable new fibre connections to be made to electricity substations. This work will be an effective and 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

5.125. The expansion of data acquisition and control will require the construction of additional telecoms sites to enable communications coverage where it does not currently exist.

5.126. 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

5.127. 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.

5.128. Some devices on the network need to be upgraded because they are either no longer supported or require a cyber security enhancement.

5.129. In other cases, extending the reach of the telecoms network will also require additional backhaul telecoms links to be installed.

Powering community energy projects

5.130. Community energy encompasses the delivery of community-led renewable energy, energy demand reduction and energy supply projects. It is therefore a crucial part of tackling climate change. These projects may be wholly owned, or controlled by communities, or run in partnerships with commercial or public partners. We know that these projects deliver social, environmental and economic benefits to the local community helping to reduce fuel poverty, encourage engagement with energy issues, and generate community funds from renewable energy projects.

5.131. Our community energy organisations tell us that their determination to deliver community energy projects is motivated by social and environmental values, not profit. They want a fairer energy system that does not leave vulnerable customers behind and a network that connects new community-owned generation.

5.132. We have implemented a comprehensive net zero Communities Strategy which highlights our commitment to community energy and highlights the vital role of stakeholder engagement. During RIIO-ED2, we will assign dedicated community energy team members to support communities in their delivery of projects, powering this crucial part of industry progress.

Community energy innovation activity

5.133. We have already partnered with the communities we serve on several network innovation projects, helping community and local energy organisations to develop new business models and enabling us to build a clearer understanding of the best way to manage a decarbonised and decentralised electricity system.

5.134. Our extensive innovation programme has consistently ensured the delivery of a wide range of community energy focused projects (see figure 5.2).

Figure 5.2 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 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.

Engaging with community energy groups

5.135. Since 2014, we have been an industry leader in community energy engagement. Our hard work has resulted in collaboration with all 97 community energy groups across our four licence areas. That accounts for nearly half (43%) of all community energy groups in the UK, and has enabled the connection of 100MW of community-owned renewable electricity to our network.

5.136. Our approach to engagement is driven by collaboration. We rely on feedback from community energy organisations, to make sure we are delivering the support communities want, and find valuable. As a result, we have established a constructive, solutions focused relationship with many community energy organisations. So far in RIIO-ED1, we have delivered 40 community events for more than 1,381 participants.

Supporting community energy schemes in RIIO-ED2

Accessible and impactful support

5.137. 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 more than £9 million.

5.138. Some organisations require in-depth consultations with our teams of engineers. To meet this need, 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 operate efficiently and effectively.

5.139. As a result of climate emergency declarations, there has been a significant increase in the number of climate action groups and local authorities engaging with us. These new local energy stakeholders are working towards carbon reduction plans that will include new low carbon energy infrastructure. It is vital that our plans support them as well as existing community energy organisations.

5.140. Community energy organisations face many 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 have a dedicated community energy team member in each of our licence areas to act as a means of access and support.

5.141. This resource will provide a clear focal point and enable us to proactively engage with groups to deliver bespoke, tailored support to help communities develop and deliver their plans.

5.142. Community energy stakeholders have limited resources and may not be able to contribute to industry consultations which could place them at a disadvantage. To address this, we will proactively seek out their views and ensure their interests and requirements are represented in the responses we provide.

Innovation

5.143. Our innovation programme develops the solutions, skills and processes we need for a decarbonised and intelligent electricity distribution network, which is affordable for all our customers and leaves nobody behind. 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. This was achieved using solutions designed, implemented and successfully trialled as part of our innovation programme.

5.144. Our innovation ambition is to drive the transformation of the industry to enable the UK meet net zero affordably. This ambition underpins our strategic innovation plans for RIIO-ED2, shapes our priorities and defines our values. We will widen our successful RIIO-ED1 innovation programme to continue developing the solutions for a sustainable and intelligent network, as well as demonstrating new ways to support our vulnerable customers throughout the energy transition, ensuring that everyone can benefit from a smart, net zero future.

5.145. 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 RIIO-ED2 to continue our extensive innovation programme.

5.146. Our focus in the RIIO-ED2 period will be on using the skills, knowledge and experience we have built in previous price control periods to lead innovation within the business, deliver business innovation projects that can reduce costs, roll out successfully proven innovation and establish a business culture that celebrates innovation.

5.147. We will dramatically increase our innovation activities in the RIIO-ED2 period by delivering two innovation programmes instead of one. Our core innovation programme will deliver projects funded through external mechanisms such as NIA and SIF, while our new business innovation programme will consist of the roll out of proven innovations and projects that can improve the efficiency of our operations. Our business innovation programme will be funded through Totex.

WPD's Innovation Strategy

5.148. Innovation is the cornerstone of sustained growth and prosperity, ensuring the network is fit for purpose for future generations. It underpins everything we do, across all areas of our business. We are renowned as one of the most innovative and forward thinking companies in our sector, and we are committed to continuing to lead the way during RIIO-ED2.

5.149. Our ED2 Innovation Strategy provides detail on our innovation ambition, our values and priorities, our strategic plans for RIIO-ED2 and our approach to changing our culture to embrace and reward innovation within the business. Our RIIO-ED2 Innovation Strategy will be updated on an annual basis or more frequently if required, to reflect rapidly changing external factors including government policy, stakeholder priorities and incorporate learning.

5.150. Our Innovation Strategy is available on our website at **www.westernpower.co.uk/innovation/innovation-strategy**

Innovation programme delivery

5.151. Our innovation team is dedicated to working with our business experts, external partners and customers to identify their most pressing problems, find solutions and trial them through our innovation projects. To date, we have delivered more than 120 projects investing more than £80 million in innovation.

5.152. Team members are drawn from internal resources including employees of all levels, as well as external support 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.

5.153. To achieve our innovation ambition, we believe it is important to have clear values that align with our ambition. It is our values (see figure 5.3) that determine how we deliver our strategy and projects, how we interact with others, how we work as a team and how we manage our work.

Figure 5.3 Our innovation core values

5.154. We have developed a strong framework, documented within our Project Governance Guidelines, for creating and delivering our projects. This is based on internationally recognised project management methodologies (PRINCE 2) and has been applied to all projects we have delivered so far.

5.155. All projects include representatives from outside the Innovation Team to ensure that new solutions can safely be implemented on the WPD network and integrated into our current processes and systems. The representatives work alongside the project manager to develop policy, operating standards and practices to provide the framework for replication.

5.156. The approach to roll out is developed as part of the project and detailed in project closedown reports. Where a new solution requires staff training, this is identified, developed and trialled within the project.

5.157. 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 that align with our core or business innovation programmes. Where appropriate, we will make grants to individuals or groups to progress an idea through feasibility assessment and to create a high level project scope.

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 operating it to meet these demands.

5.159. We are committed to maintaining our industry leading standards of customer service, safety and reliability while keeping costs low for our customers and protecting the most vulnerable. We will harness innovation to achieve this 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

Core innovation programme

5.160. Our core innovation programme will deliver projects funded through external mechanisms such as Ofgem innovation funding, BEIS competitions, Innovate UK, calls and initiatives connected to the Energy Systems Catapult and other national and international schemes.

5.161. 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.

5.162. We will be requesting £35 million of NIA funding for the RIIO-ED2 period, which is at similar levels as our RIIO-ED1 allowance and continue to contribute at least 10% of the costs of all projects.

Business innovation programme

5.163. We will focus strategically on delivering 'Business as Usual' (BAU) innovation and roll out to accelerate cost efficiencies and the adoption of innovation.

5.164. We define business innovation, otherwise referred to as BAU Innovation, as lower risk innovation that cannot be funded though the Ofgem driven mechanisms but can provide benefits to our network and customers by reducing our costs and introducing efficiencies.

5.165. We will deliver business innovation projects through our new business innovation programme which will be funded through Totex.

5.166. Our innovation team will be supplemented by additional resources to support the delivery of these objectives.

5.167. We have already started preparing for the delivery of our new business innovation programme in RIIO-ED2, by updating our existing framework. We have even started applying that framework in the delivery of our first business innovation project, called PrimeEV, which is now in the delivery stage. This enables us to test our updated framework and identify further changes required before applying it to our business innovation programme in RIIO-ED2.

5.168. We recognise that driving business innovation and change throughout our organisation is not just about delivering projects. It is about changing perceptions so that innovation is not seen as complicated or difficult. It is about rewarding innovation, encouraging continuous improvement and embracing change. We will do that by embedding a culture that celebrates innovation.

5.169. We plan to drive business innovation and change our culture by rewarding innovation through internal performance metrics, creating a competitive spirit between our internal teams that encourages efficient delivery and adoption of innovation, sharing ownership of business innovation projects with the business area in which the project is delivered and appointing innovation ambassadors in each of our main business teams. Our detailed approach for this and the way we plan to overcome the expected challenges that could prevent innovation adoption are captured in our RIIO-ED2 Innovation Strategy.

Making our network data available to customers

Digitalisation Strategy

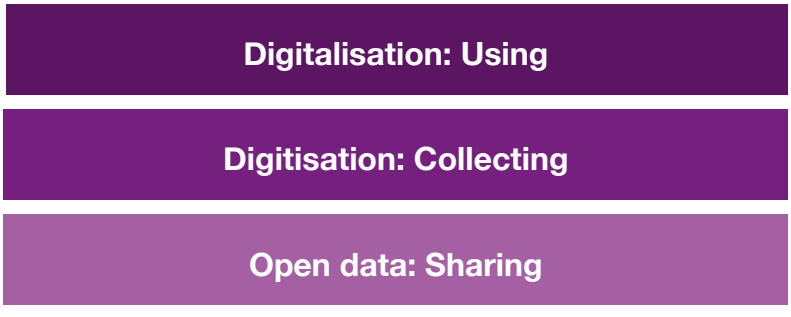
5.170. We have developed a comprehensive Digitalisation Strategy and associated Digitalisation Action Plan which have been central to our RIIO-ED1 plans for a smarter energy system and increased sharing of data. This will continue and increase as demonstrated in our RIIO-ED2 focused Digitalisation Strategy and Action Plan.

5.171. Our Digitalisation Strategy and Action Plan are available on our website at **www.westernpower.co.uk/smarter-networks/digitalisation-and-data**

5.172. To understand the scope of digitalisation, we must distinguish between digitalisation (using data), digitisation (collecting data) and open data (sharing data) as per figure 5.4.

5.173. We use the term digitalisation to mean the use of digital technologies to fundamentally change how we develop and operate the network to deliver an economic and efficient service for customers.

Figure 5.4 Digitalisation definitions



5.174. For open data, our starting point is that all data should be presumed open unless proven otherwise for privacy, security, commercial or confidentiality reasons.

5.175. Our core principles will continue to focus on 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

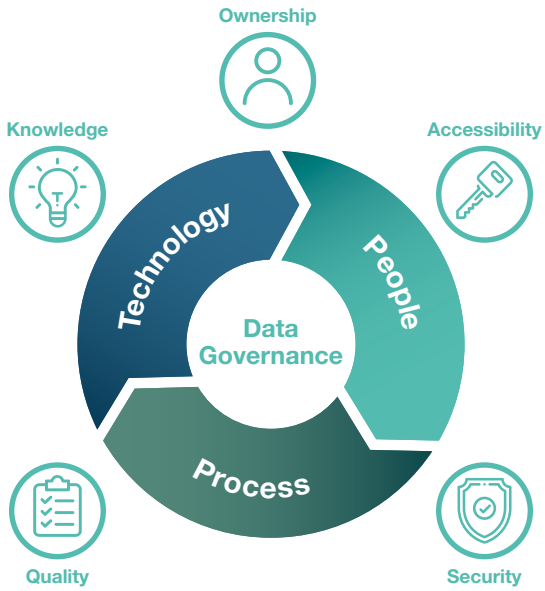
5.176. Our digitalisation programme is driven by our commitment to create a smarter energy system.

5.177. To deliver digitalisation and key data developments, we will focus on improved data management (see figure 5.5), 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.

5.178. Moving from a legacy analogue system to a modern, digitalised energy system is a critical step in enabling the UK's transition to net zero carbon emissions while keeping the lights on for customers. The availability and utilisation of good quality and accessible data is key. We are clear on the need to provide increased access to the right data at the right time within our organisation and through open access to our customers and interested stakeholders.

5.179. We have demonstrated significant improvements in our data management processes through targeted project activity to understand our data sets, length of network, and business and third party use. We have employed a consistent approach to data management, delivering standardised and effective processes to share data with other network licensees and wider customers and stakeholders.

Figure 5.5 Data governance



5.180. 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 British DNO to share its complete high voltage asset and connectivity data in Common Information Model format.

A comprehensive data governance strategy

5.181. Our data governance strategy focuses 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.

5.182. We have created a robust framework to ensure the confidentiality, quality and integrity of WPD's data and our customers' data which is essential to meet social and legal obligations, including regulatory compliance, data sharing and privacy policies. Continuing to increase oversight, ownership, visibility and management helps avoid the risk of data breaches or compliance issues. This framework will continue to enable the integration and consolidation of information from multiple systems historically managed in silos throughout the business into a single source of data providing economies of scale and making it possible to tie information policy and process to business strategy, delivery and efficiency improvements.

Improving data quality

5.183. Digitisation is powered by good data. We have seen evidence of this in our developing flexibility activity, where accurate and reliable data has underpinned improved solutions, which is why we are on a mission to continually improve the quality of the data we collect and use.

5.184. We have already made significant changes to data collection by developing a range of iPad applications for use by all our field staff. To make long-term improvements to data collection, we are increasingly replacing manual processes with automation supported by machine learning technology which can automatically request and collate data.

5.185. A data centric approach throughout our business will be implemented to drive data quality improvements. This includes changes to how we capture data at source, store the data and manage it. For our existing data we have largely relied on relatively manual processes for improving it. We will now focus on rules based improvements initially to enable a degree of automation supported by machine learning (ML) to provide improvement on an enduring basis.

Providing accurate data from a single source

5.186. We store our data using several 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.

5.187. We have implemented our Integrated Network Model (INM), which provides a consolidated data model by connecting directly to our three core asset data systems: enterprise asset management, network management and geospatial information systems. The INM identifies discrepancies in data between these systems and uses an automated machine learning process to create a single version of our network, assets and connectivity, driving consistency and confidence in data.

5.188. We will expand the initial implementation of our central data catalogue to provide regular and reliable single point access to trusted data in a timely and effective manner throughout the business. This will enable customers' 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.

5.189. Our innovation programme has already developed new solutions to enhance the operations of our network by having more data available. 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

5.190. WPD will increase the volume of monitoring and data capture on our network and make use of external data sets and services that can be used or combined with our data.

5.191. We already harness data, including weather forecasts to inform our operational decisions. We will make greater use of smart meter data to inform our processes, identify service improvements and minimise power cuts.

5.192. By sharing more data with third parties (while maintaining privacy and compliance), we will identify new improvements and consider using these third party services to benefit our network and customers.

Meeting stakeholders' requirements

5.193. The focus of WPD's Digitalisation Strategy and activity is on meeting the needs and surpassing the expectations of our internal and external stakeholders.

5.194. Ensuring our Digitalisation Strategy is focused on the right areas requires significant and ongoing engagement, both inside and outside WPD, to ensure our focus and priority areas meet current and future challenges as effectively and efficiently as possible.

5.195. Engagement is vital, whether this is to develop a data capture process from our field staff or implement a completely new system, such as an Open Data Platform. We will continue to harness both formal and informal engagement opportunities.

5.196. We are lucky enough to have responsive and engaged customers and stakeholders, who are able to 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, using our detailed data to support academic and research fields through to developing and delivering new energy market offerings.

5.197. We already engage extensively through our innovation team, system operator and our dedicated stakeholder engagement team. Our RIIO-ED2 engagement for digitalisation and data work will continue to build on this success. Our strategy details a number of externally focused digitalised developments, where these were driven either by direct stakeholder requests or as a result of our wider consultation process.

5.198. We understand that access to our data is vital to support the ongoing development of the electricity and wider energy system. It is used by a range of customers and stakeholders and therefore must be presented in different formats.

5.199. Our data triage process will ensure that all relevant data is assessed and given a data classification. These 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.

5.200. Our online Connected Data Portal is already home to numerous sets of network data and information and it will be further expanded in RIIO-ED2. 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. It must also be presented so that the raw data can be easily downloaded using application programming interfaces (APIs).

5.201. WPD is committed to making sure that data can be both discoverable and searchable. This means making it accessible outside of WPD and ensuring that we continue to collaborate with the wider industry to ensure data has consistent meaning, format and description, across all organisations.

5.202. 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 collected, housed and utilised, irrespective of a specific access point. Our implementation of APIs and client Uniform Resource Locators, which provide a direct link to an online data resource, will ensure that this is available and appropriate. Our work with the Energy Networks Association to create an energy digital system map for the UK demonstrates our commitment to make our data available for this purpose.

Boosting the value of data

5.203. We are committed to maximising the value of data from within WPD and using external data to inform and improve our decisions to increase and further improve our service to customers.

5.204. 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.

5.205. The table in figure 5.6 summarises some of the enhancements we have already made:

Figure 5.6 Summary of data enhancements made during RIIO-ED1

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 via 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	Open LV 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 trialled 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.

Meeting the needs of data users

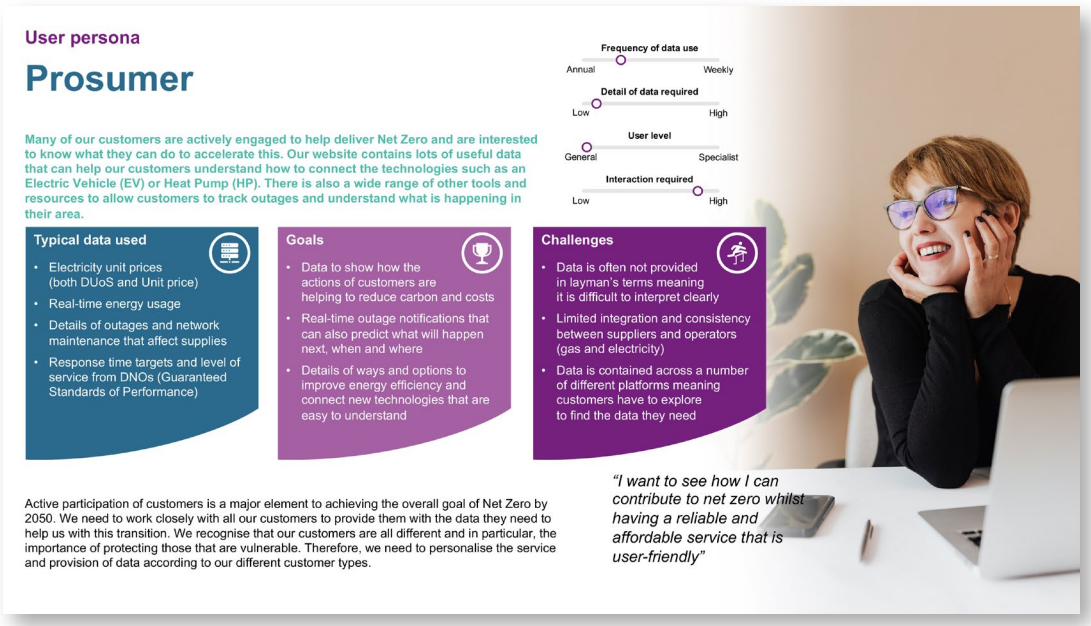
5.206. Our data and digitalisation activities are informed by extensive and ongoing engagement with data users, both inside and outside WPD. We take part in regular and relevant stakeholder engagement to understand what data is required, the most suitable format and how it can be used most effectively as part of digitalised solutions.

5.207. Our stakeholders have told us they have different needs and expectations for 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.

5.208. User personas provide even greater levels of insight into our data stakeholders, and help us to best meet their needs. 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 (see figure 5.7). Continuing to expand and review these will serve us and our stakeholders well.

5.209. 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.

Figure 5.7 An example of a user profile



Investing in technology

5.210. To support the transition to a fully digitalised organisation, we will rationalise and modernise our systems. This will include replacing and upgrading legacy applications, embracing and investing in new technologies, integration tools and common data platforms.

5.211. 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.

5.212. 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 solutions located at WPD sites will become cloud-based 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

5.213. We are committed to ensuring our data sharing 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.

5.214. WPD has 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) and a standardised Data Dictionary approach.
- Providing data in a discoverable and accessible form (including information maps, guiding users to key network and supporting information).
- First British DNO to implement an online Data Catalogue including routine application programming interfaces accessibility.
- Establishing data and governance roles.
- Implementing a data triage process.
- Utilising user personas to understand our data users' needs.

5.215. WPD is 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 stakeholders' needs and future planning for third parties as part of our 'Delivering Data Best Practice' document.

Delivering digitalisation

5.216. During RIIO-ED1, we have implemented several digitalised solutions that have allowed us, our customers and stakeholders to operate more effectively, drive insight and add value throughout the energy sector and beyond. We have identified several developments for RIIO-ED2, aligned to our Digitalisation Strategy, to further transform our business and continue to deliver value.

5.217. 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 engage stakeholders to co-create our strategies and action plans to address these.

5.218. Our digitalisation programme will be key to facilitating improvements throughout our business, from craft staff activities, to forecasting for our DSO elements. Our programme is built to ensure this organisational-wide approach continues in RIIO-ED2 and beyond. The currently proposed high level digitalisation projects for RIIO-ED2 are described in figure 5.8.

Figure 5.8 Digitalisation projects

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 RIIO-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 has been 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.

Forecasting future electricity use

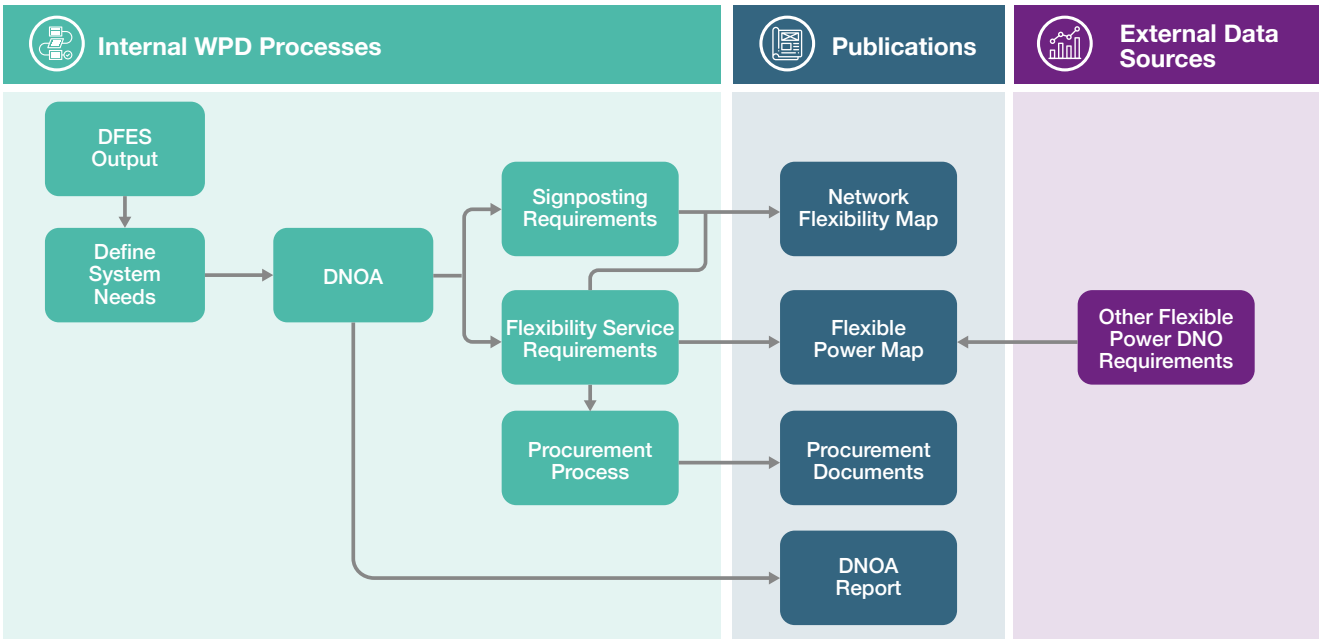
The route to success

5.219. Since 2015, we have been creating Distribution Future Energy Scenario (DFES) reports. From 2020, our System Operator team is producing reports annually to forecast rapidly-changing low carbon technology uptakes through 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.

5.220. 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 could lead to constraints. These are published in our Shaping Subtransmission document series.

5.221. A separate process called Distribution Network Options Assessment (DNOA) then compares the costs and benefits of potential different solutions using an industry agreed assessment tool to put forward an investment recommendation (see figure 5.9).

Figure 5.9 Flexibility service requirements



Stage 1: Scenario planning - Distribution Future Energy Scenarios

5.222. The first stage of the strategic network planning process is creating the Distribution Future Energy Scenarios (DFES). Using national Future Energy Scenarios (FES) forecasts produced by the Electricity System Operator (ESO), combined with local information, we are able to provide a comprehensive distribution view of the low carbon technology volume changes across DNO licence areas.

5.223. WPD has pledged to provide 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.

5.224. 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 local authority energy representatives to review the assumptions and projections.

Stage 2: Define a single WPD Best View

5.225. To define 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

5.226. 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.

5.227. All four licence area Shaping Subtransmission reports are available on our website at www.westernpower.co.uk/smarter-networks/network-strategy/strategic-investment-options-shaping-subtransmission (example shown in figure 5.10).

5.228. 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.

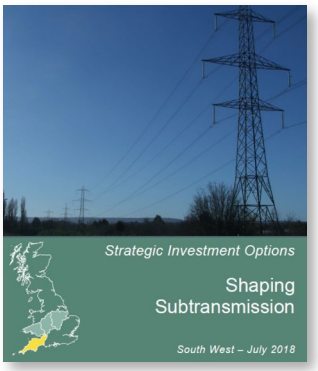


Figure 5.10 South West Shaping Subtransmission

Using WPD's Best View for the RIIO-ED2 Business Plan

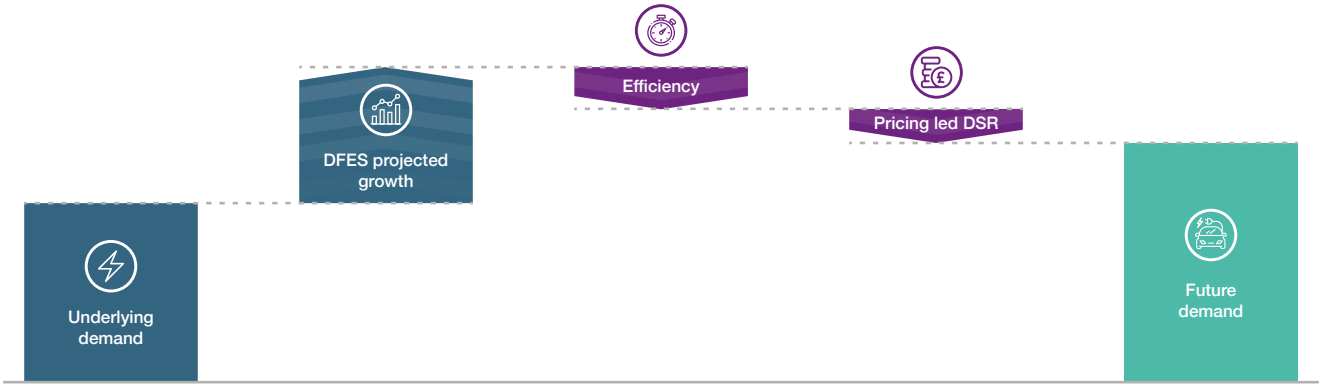
5.229. WPD's Best View scenario is processed in a similar way to the Shaping Subtransmission process, where electrical behaviour is applied to DFES volumes to determine demand and generation peaks. The WPD Best View growth projections are tempered with extra characteristics to account for future changes in consumer behaviour.

5.230. It is assumed that some of the projected growth will be offset by increases in energy efficiency. This will happen because 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 connections.

5.231. 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.

5.232. Figure 5.11 shows the forecast is based on three components: WPD Best View projected growth driving up demand; 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



5.233. 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.

5.234. 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.

Figure 5.12 WPD Best View at 2023

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 5.13 WPD Best View at 2028

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

5.235. 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

5.236. During RIIO-ED1, our DSO team has established flexibility markets that provide an alternative means of addressing network constraints. These harness the power 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.

5.237. We can use this flexibility 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

5.238. 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-ED2, we do not expect to make widespread use of flexibility services on our low voltage network constraints. 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. We will continue to be highly adaptive, however. As the volumes and density of flexible LCTs increase it may become economically viable to consider such solutions. Our current view, however, is that this is more likely in RIIO-ED3 or beyond.

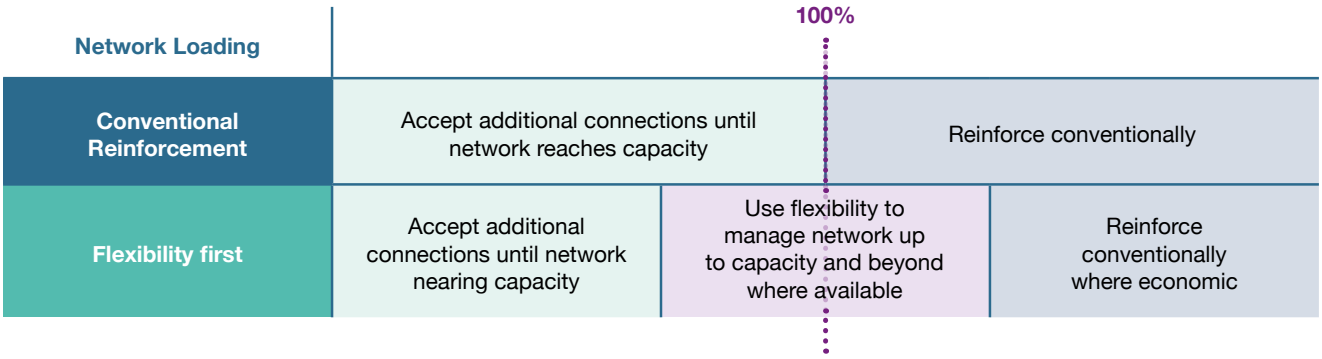
5.239. Flexibility can provide more granular increases in network capacity, better reflecting the annual requirements of network users. Flexibility can also help to manage capacity shortfalls economically and responsively until the need for conventional reinforcement is established. In some circumstances, 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.

5.240. 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.

5.241. By creating an investment trigger for flexibility, ahead of conventional reinforcement assessment, 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. This will give us time to assess if there is sufficient flexibility available and to carry out conventional reinforcement without delay where it is not viable.

5.242. Figure 5.14 shows 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 so that asset reinforcement could be completed just in time to accommodate the growth. Our 'flexibility first' approach makes the timing of the intervention less critical if sufficient flexibility is available and economic, as it will manage peak demand leading up to and beyond the capacity limit of the network. We will determine the extent to which flexibility is used using an industry standard cost benefit analysis.

Figure 5.14 Approaches to using flexibility to improve network utilisation



Using flexibility for new connections

5.243. As well as providing 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.

5.244. 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.

5.245. Connecting customers who are 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)

5.246. WPD's DNOA process provides a systematic methodology to recommend a single investment option.

5.247. If reinforcement is deferred by flexibility, this means ongoing payments must be made to flexibility providers to vary the levels of import or export of power to allow other customers, 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.

5.248. 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 option.

Opening up the flexibility market for RIIO-ED2

Providing market information for flexibility services

5.249. If customers change the times they use power, or adjust their export from onsite generation, this may change their requirements from WPD on an ongoing basis, so we must be responsive and flexible in our approach.

5.250. Flexibility markets allow these customers to earn a financial payment for the provision of specified flexibility services, and become flexibility providers. The type and amount of service required depends on the nature and scale of the network limits, which could be due to 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 that power capacity is required. It also includes 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.

Access to flexibility markets

5.254. Flexibility services are likely to 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. 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 Great Britain's first national 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 the procurement process.

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:

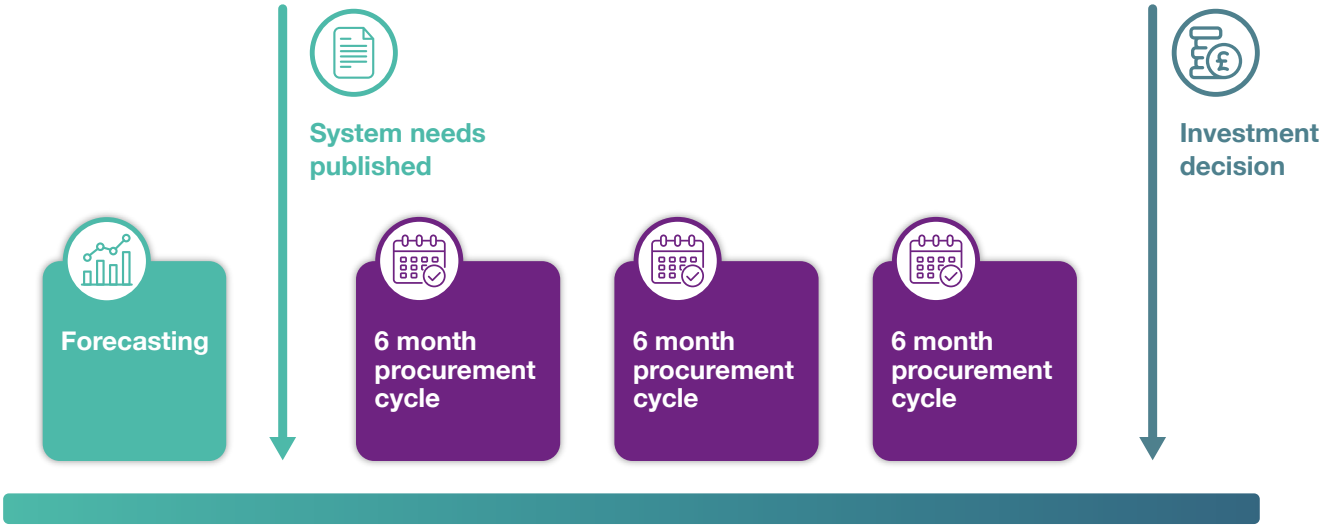
- Availability of geographical and postcode information for platforms to pre-qualify and validate flexibility assets.
- Standardisation of visibility and forecasting data for hosting on flexibility platforms (implemented).
- Improved sources of data for asset qualification, for example linking MPAN to 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.

Procurement process for flexibility services in RIIO-ED2

5.258. Since 2019, WPD has operated a multiple cycle approach to procuring flexibility (see figure 5.15). This 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.

Figure 5.15 Timetable for providing visibility of flexibility services requirements



5.259. Once registered, providers are then 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. WPD has altered the length of contracts to give greater certainty to market participants after feedback from flexibility providers. Since 2019, we have been allowing flexibility providers to choose their optimum contract length, between one and four years, and this arrangement will continue into RIIO-ED2.

Operating process

5.262. As soon as flexibility providers have accepted contracts and established the application programming interface they are available to provide 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.

Prioritising flexibility

5.263. Where competitive markets have developed, multiple flexibility providers are able to provide flexibility. 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. Transparency allows providers to deliver the best services and availability to meet our current and ongoing needs. As the market grows and matures towards full market-led pricing during RIIO-ED2, pricing submitted for each flexibility asset will become the dominant factor for consideration.

Reporting flexibility procurement and utilisation data

5.265. WPD publishes raw data on signposting and forecasting through our comprehensive and market leading Network Flexibility Map. This includes the availability windows and expected market volumes required for all the DFES scenarios for a five year period. Easy access to the data is available online through the mapping tool. The geographic dataset is also downloadable without registration.

5.266. Since 2018, WPD has published a results document within one month of each procurement cycle and contracts being awarded. Published infomation includes:

- Volumes of flexibility coming through the ‘invitation to tender’ stage.
- MW capacity and technology of assets being awarded contracts per CMZ.
- Pricing data bid into the procurement process.
- Prices of flexibility awarded in each CMZ.

Secondary trading of flexibility contracts

5.267. In RIIO-ED2, our DSO team will continue to procure flexibility by using bilateral contracts between WPD and third party flexibility providers.

5.268. All WPD flexibility contracts will be aligned to the latest version (at the time of contract award) of the national 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.

5.269. WPD will work with flexibility providers, market operators and platforms to develop practices and systems that allow visibility of the secondary trading of flexibility contracts.

Governance arrangements

Commitment to a competitive connections market

5.270. WPD has a strong track record of collaborating closely with other connection providers, to power innovation and developments across the industry. 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.

5.271. Our cooperation with ICPs and IDNOs to develop a competitive connections market demonstrates that we can act as a neutral facilitator and support the development of efficient markets that are in the best interests of customers.

Development of flexibility services

5.272. The development of WPD's flexibility services includes a commitment to extensive stakeholder engagement, publication of information and standardisation across the industry.

5.273. 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.

5.274. 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.

Independent decision making

5.275. To deliver the required network adaptions in a cost effective way, we use the Distribution Network Options Assessment process. This process helps decide the best investment option based on investigating the capital and operational costs of all technically viable possibilities. The same process is followed for all reinforcement, whether driven by general load growth or larger individual new connections.

5.276. Our DNO engineering teams use their network design expertise to decide how assets are installed, maintained and repaired, including identifying the applicable capacity ratings which can be delivered by these assets.

5.277. Our DSO team is responsible for understanding how the system operates and identifying potential capacity shortfalls or network limitations that require additional investment. They identify the flexibility needed to address system constraints and ensure sufficient information is published to help establish distribution flexibility markets.

5.278. The DSO team assesses all identified investment options and makes recommendations based on published criteria. These recommendations will also be published to ensure transparency and enable scrutiny.

5.279. If the investment recommendation is to use flexibility, the DSO will procure these services through the multiple flexibility markets to meet system needs. If the investment recommendation involves conventional reinforcement, the DSO function will instruct the DNO team to begin a conventional network design and build. The decisions behind these recommendations will be fully audited to ensure compliance with the agreed processes.

Chapter 6

Expenditure

Chapter 6 Contents

6. Expenditure

Summary

6.1. Our comprehensive expenditure plan is designed to help us deliver a network which meets current requirements and lays the critical foundations for the future. We will ensure we continue to deliver industry leading service levels whilst keeping bills low. We will also protect the most vulnerable in our community and tackle fuel poverty.

6.2. This chapter sets out our high level expenditure plans for 2023 – 2028 across all four licence areas. We explain the rationale behind our proposed spending in RIIO-ED2 and compare the values to those being incurred in the current price control.

Costs included in this plan

6.3. The costs presented and discussed are referred to as 'Totex', encompassing the licensee's total expenditure (with limited exceptions) on regulated business activities. 'Totex' includes both capital and operating expenditure items over within our control and funded through the price control. The information is presented in alignment with the cost categories we report to Ofgem.

6.4. The expenditure included in this document:

- Is stated in 2020/21 prices (current day prices) (excluding general inflation).
- 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.
- Is our base view, i.e. expenditure that we consider should be funded through ex-ante allowances and excluding expenditure which we consider is more appropriately funded under uncertainty mechanisms.
- Includes draft expenditure for 2020/21 actuals. These may change slightly and will be finalised in the December 2021 submission.
- Includes pensions costs (excluding established pension deficit repair payments), based on current actuarial projections.
- Includes Real Price Effects (RPEs) and Ongoing Efficiency (OE) at Totex level only (RPEs and OE are excluded from activity level forecasts).

6.5. There are some costs which we incur outside of 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 chapter of the Business Plan. More detail on these costs is included in Supplementary Annex SA-06: Expenditure.

6.6. There are some areas of our plan where the requirement is yet to be decided through government and regulatory policy. Since the requirements are largely unknown, no cost forecast has been included. For example, this applies to areas including the requirement for enhanced Black Start capability and diversions associated with railway electrification. These areas are further discussed in Chapter 7: Managing uncertainty.

A summary of Total expenditure (Totex)

6.7. Figure 6.1 compares our forecast annual average and total Totex costs for RIIO-ED2 against our annual average costs for RIIO-ED1.

6.8. We propose to spend £6.2 billion during the five years of RIIO-ED2 which is our 'base view'. This is an 18% increase on the annual average expenditure in RIIO-ED1 and increases are seen in all four licence areas.

Figure 6.1 Our Totex expenditure

Totex					
£m, 20/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	320	317	158	255	1,049
RIIO-ED2 Annual Average (forecast)	350	367	199	322	1,237
RIIO-ED2 Total (5 years)	1,748	1,835	994	1,609	6,186

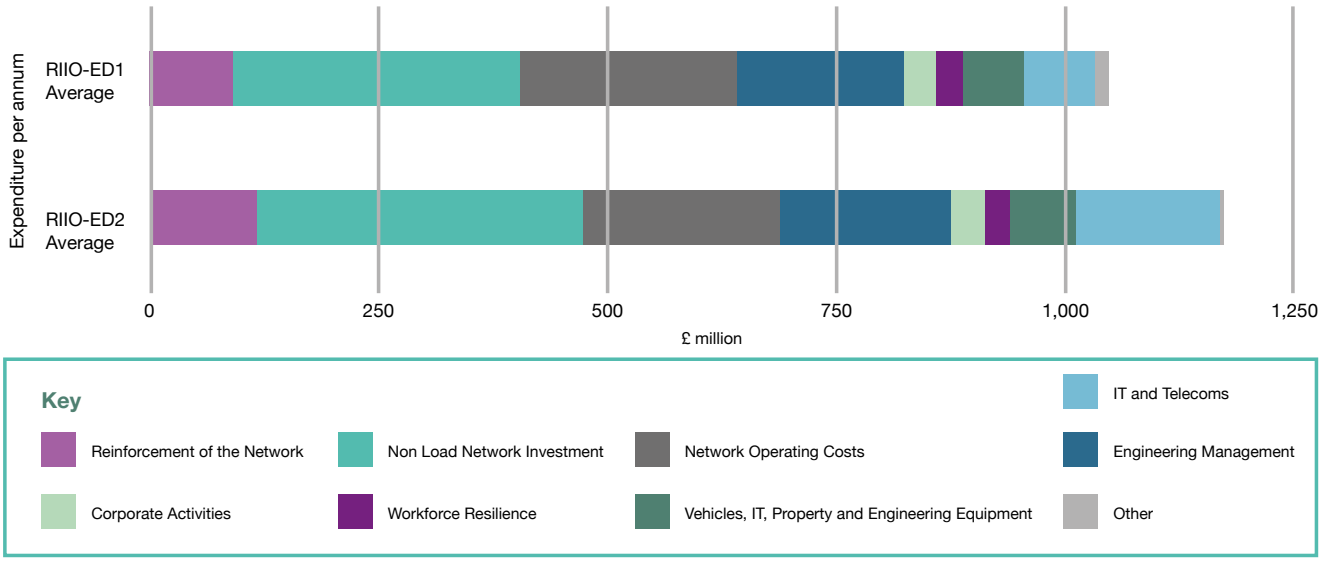
6.9. During RIIO-ED1 we have focused on delivering on our promises, whilst also addressing new requirements. Through careful and detailed planning, we expect to end RIIO-ED1 with expenditure in line with RIIO-ED1 allowances.

6.10. We have achieved this despite needing to deliver activities outside of our RIIO-ED1 Business Plan proposals, which were not foreseen at the time of writing. These have included dealing with significant growth in distributed generation, establishing a Distribution System Operator capability, producing the Distribution Future Energy Scenarios, adopting flexibility as an alternative to conventional reinforcement and developing projects to contribute towards a green recovery.

6.11. Our investment proposals for RIIO-ED2 continue to cover the delivery of essential core activities (including asset replacement and resolution of faults), while also providing more network capacity to accommodate growth in low carbon technologies and establishing enhanced DSO functions. Expenditure plans incorporate the utilisation of flexibility to minimise the need for higher cost 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.

6.12. Figure 6.2 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 6.2 Average annual expenditure (RIIO-ED1 vs RIIO-ED2)



6.13. 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

6.14. Cost accounting uses direct booking of time and materials to specific activities for staff who work directly on delivery of projects or cost allocations for salaried staff. As salaried staff do not complete timesheets, but can work on activities outside of Totex, part of their costs is reallocated outside the price control.

6.15. Delivery of our 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 non-price control work including service alterations that 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 and accurately 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.

6.16. There are certain staff, covering engineering and corporate functions, who do not complete timesheets. This includes: engineering management, including locally based project management and clerical support; centralised engineering teams carrying out studies for the development of the network; and corporate activities including human resources. Some of these indirect staff support activities that 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 allocate part of our indirect costs to this work outside of the price control. This allocation is subject to an internal methodology, which has been fully reviewed and updated for RIIO-ED2.

6.17. 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 corporate costs are included before a part of these is allocated outside the price control).

6.18. Corporate functions including finance, IT and other activities such as the control centre and contact centre, are operated as shared activities across WPD licence areas, in order to be as cost effective as possible. Shared costs have been allocated across the four licensees using an approach that is consistent with our processes in RIIO-ED1. This allocates the shared costs using the following proportions:

- 30% West Midlands.
- 30% East Midlands.
- 15% South Wales.
- 25% South West.

WPD total core expenditure forecast

6.19. Figures 6.3 to 6.7 show the high level activity breakdown of the expenditure forecast to deliver our proposed Business Plan commitments and activities. The activity costs are shown before allocations to activities outside the price control. Allocations and adjustments, as well as the values of real price effects (RPEs) and ongoing efficiency (OE), are shown separately to determine the Totex values.

6.20. The information is shown for WPD in total, as well providing details for each of the four licence areas. (see figures 6.3 to 6.7)

WPD's core expenditure forecast

Figure 6.3 Total WPD RIIO-ED2 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	92	119	96	125	118	117	138	595
Non Load Network Investment	316	357	340	347	378	355	363	1,784
Network Operating Costs	240	223	230	230	219	220	218	1,117
Engineering Management	232	243	243	243	242	243	242	1,213
Corporate Activities	49	51	51	51	51	51	51	254
Workforce Resilience	30	31	30	30	32	32	31	154
Vehicles, Property & Engineering Equipment	81	89	99	106	96	81	62	443
IT and Telecoms	78	170	173	162	187	162	167	850
Network Innovation Allowance	1	1	1	1	1	1	1	4
Atypicals	12	0	0	0	0	0	0	0
TOTAL EXPENDITURE	**1,132**	**1,283**	**1,263**	**1,295**	**1,324**	**1,261**	**1,271**	**6,414**
Indirect Allocations	-65	-88	-92	-89	-87	-87	-85	-440
Totex Adjustments	-18	-15	-15	-15	-15	-15	-15	-75
TOTEX (Excluding RPE & OE)	**1,049**	**1,180**	**1,156**	**1,190**	**1,221**	**1,159**	**1,172**	**5,898**
Real Price Effect (RPE)	0	68	42	58	72	79	90	340
Ongoing Efficiency (OE)	0	-11	-3	-7	-11	-14	-18	-53
TOTEX (Including RPE & OE)	**1,049**	**1,237**	**1,194**	**1,241**	**1,282**	**1,224**	**1,245**	**6,186**

West Midlands' core expenditure forecast

Figure 6.4 West Midlands RIIO-ED2 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	31	31	26	32	31	30	34	153
Non Load Network Investment	91	101	88	91	105	99	120	503
Network Operating Costs	75	65	67	67	64	65	63	326
Engineering Management	73	76	76	76	75	76	75	379
Corporate Activities	15	15	15	15	15	15	15	76
Workforce Resilience	8	8	8	7	8	7	7	38
Vehicles, IT, Property & Engineering Equipment	22	23	27	27	22	22	18	116
IT and Telecoms	23	46	48	44	50	43	45	231
Network Innovation Allowance	0	0	0	0	0	0	0	1
Atypicals	4	0	0	0	0	0	0	0
TOTAL EXPENDITURE	**343**	**364**	**356**	**361**	**372**	**357**	**378**	**1,822**
Indirect Allocations	-20	-28	-30	-29	-27	-28	-27	-141
Totex Adjustments	-4	-3	-3	-3	-3	-3	-3	-16
TOTEX (Excluding RPE & OE)	**320**	**333**	**323**	**329**	**341**	**326**	**347**	**1,666**
Real Price Effect (RPE)	0	19	12	16	20	22	27	97
Ongoing Efficiency (OE)	0	-3	-1	-2	-3	-4	-5	-15
TOTEX (Including RPE & OE)	**320**	**350**	**333**	**343**	**358**	**344**	**369**	**1,748**

East Midlands' core expenditure forecast

Figure 6.5 East Midlands RIIO-ED2 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	39	42	32	43	45	44	48	212
Non Load Network Investment	86	96	96	94	98	99	93	481
Network Operating Costs	73	68	71	71	67	67	67	342
Engineering Management	72	74	75	75	74	74	74	373
Corporate Activities	15	15	15	15	15	15	15	76
Workforce Resilience	9	10	9	10	10	11	11	50
Vehicles, IT, Property & Engineering Equipment	22	25	27	30	27	24	20	127
IT and Telecoms	23	51	52	48	56	49	50	256
Network Innovation Allowance	0	0	0	0	0	0	0	1
Atypicals	2	0	0	0	0	0	0	0
TOTAL EXPENDITURE	**342**	**383**	**377**	**386**	**393**	**383**	**378**	**1,917**
Indirect Allocations	-19	-29	-30	-29	-29	-28	-28	-143
Totex Adjustments	-5	-5	-5	-5	-5	-5	-5	-23
TOTEX (Excluding RPE & OE)	**317**	**350**	**343**	**352**	**360**	**350**	**345**	**1,750**
Real Price Effect (RPE)	0	20	12	17	21	24	27	101
Ongoing Efficiency (OE)	0	-3	-1	-2	-3	-4	-5	-16
TOTEX (Including RPE & OE)	**317**	**367**	**354**	**367**	**378**	**370**	**367**	**1,835**

South Wales' core expenditure forecast

Figure 6.6 South Wales RIIO-ED2 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	8	21	19	30	16	17	26	107
Non Load Network Investment	51	55	56	57	62	51	51	277
Network Operating Costs	35	34	35	35	33	33	33	168
Engineering Management	34	37	37	37	37	37	37	186
Corporate Activities	7	8	8	8	8	8	8	38
Workforce Resilience	6	5	5	5	6	5	5	27
Vehicles, IT, Property & Engineering Equipment	16	15	19	19	16	11	9	74
IT and Telecoms	12	30	30	29	33	29	30	151
Network Innovation Allowance	0	0	0	0	0	0	0	1
Atypicals	2	0	0	0	0	0	0	0
TOTAL EXPENDITURE	**172**	**206**	**209**	**219**	**211**	**191**	**197**	**1,028**
Indirect Allocations	-11	-13	-14	-13	-13	-13	-13	-66
Totex Adjustments	-3	-3	-3	-3	-3	-3	-3	-14
TOTEX (Excluding RPE & OE)	**158**	**190**	**193**	**202**	**195**	**176**	**182**	**948**
Real Price Effect (RPE)	0	11	7	10	11	12	14	54
Ongoing Efficiency (OE)	0	-2	-1	-1	-2	-2	-3	-8
TOTEX (Including RPE & OE)	**158**	**199**	**199**	**211**	**205**	**185**	**193**	**994**

South West's core expenditure forecast

Figure 6.7 South West RIIO-ED2 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	13	24	18	21	26	26	31	122
Non Load Network Investment	88	105	100	105	113	107	100	524
Network Operating Costs	58	56	58	57	56	55	55	281
Engineering Management	52	55	55	55	55	56	55	276
Corporate Activities	12	13	13	13	13	13	13	64
Workforce Resilience	7	8	8	8	8	8	8	39
Vehicles, IT, Property & Engineering Equipment	21	25	26	31	30	25	15	127
IT and Telecoms	20	42	43	40	47	41	42	212
Network Innovation Allowance	0	0	0	0	0	0	0	1
Atypicals	4	0	0	0	0	0	0	0
TOTAL EXPENDITURE	**276**	**329**	**321**	**330**	**348**	**330**	**319**	**1,647**
Indirect Allocations	-15	-18	-19	-18	-18	-18	-17	-90
Totex Adjustments	-5	-5	-5	-5	-4	-4	-4	-23
TOTEX (Excluding RPE & OE)	**255**	**307**	**298**	**307**	**325**	**308**	**297**	**1,535**
Real Price Effect (RPE)	0	18	11	15	19	21	23	89
Ongoing Efficiency (OE)	0	-3	-1	-2	-3	-4	-4	-14
TOTEX (Including RPE & OE)	**255**	**322**	**307**	**320**	**341**	**325**	**315**	**1,609**

Cost and workload forecast considerations

6.21. WPD has consistently led the way in the electricity distribution sector with a proven business model that delivers effective, efficient, reliable and affordable services for our communities. However, we must continue to develop and change in line with the shifting environment, most pressingly the UK's drive towards net zero. Other developments, including the move 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

6.22. 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 Ten 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.

6.23. These sources provide a series of scenario projections that have been consolidated to inform a WPD Best View, which has then been used to develop our comprehensive 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 increased levels of network reinforcement in comparison to previous levels of expenditure.

6.24. The current version of the WPD Best View and associated costs is based on the DFES published in 2020. Our forecasting models have been compared to the scenarios Ofgem asked us to consider in the Business Plan Guidance and are favourably aligned, recognising there is a wide range of potential pathways which need to be covered by our investment plans.

6.25. Within this Business Plan, the WPD Best View covers the total costs and volumes of investment we expect to be required on the network to fully deliver on government and local authority objectives. To ensure the ex-ante portion of our Business Plan relates to investment requirements with a high confidence, we have identified the investment triggered within the WPD Best View under all three net zero compliant future energy scenarios. This investment forms our "Certainty View". We are mindful that the approach to how these costs will be funded is still to be determined by Ofgem.

6.26. We are proposing to subdivide the network reinforcement costs associated with the WPD Best View into a proportion to be funded through the ex-ante allowances that will be provided at the start of the price control for requirements with high confidence and a proportion to be funded through uncertainty mechanisms for activities that are likely to be required, but may not arise. As we anticipate the majority of the expenditure being allocated to uncertainty mechanisms will be required, we do envisage utilising the proposed uncertainty mechanisms during RIIO-ED2.

6.27. We recognise that a range of different proposals are being considered to manage the uncertainty of these costs. Our preference would be that uncertainty mechanisms are based on volume drivers as these adjust allowances mechanistically, reducing the amount of regulatory burden for both Ofgem and licensees. The uncertainty mechanisms should also recognise that the amount of reinforcement work required may exceed the WPD Best View should government policy and customer demand lead to greater demands on the electricity network. The range in the potential levels of investment required between different future energy scenarios is too wide to be covered by an upfront allowance with margin, and instead will need agile uncertainty mechanisms to be set out within the price control.

6.28. This Business Plan presents the high level costs which we consider should be funded through the ex-ante allowances. It is this base 'Certainty' view that is presented in all expenditure tables through this chapter.

6.29. WPD has identified a portfolio of volume drivers which will enable additional investment to be funded when required and evidenced through measured outputs, resulting in an agile price control that can adapt to deliver the full range of forecast futures. These are discussed in Chapter 7: Managing uncertainty.

Access Significant Code Review

6.30. Ofgem is working on ongoing refinement of the charging methodology policy for connections, the Access and Forward-Looking Charges Significant Code Review (Access SCR).

6.31. Following the government's legally binding decision to deliver net zero by 2050, WPD shares the ambition to deliver net zero at the lowest cost to customers and as early as possible. This was identified as a priority by our stakeholders as part of the feedback we have received to date during the development of our RIIO-ED2 plan. We welcome clarification on Ofgem's latest position to be set out in their minded to position on the Access SCR. Given the timing of Ofgem's minded to position we have not been able to factor this latest thinking, and potential market response, in this Business Plan.

6.32. Given the significance of the potential changes, along with the timing of Ofgem's final policy decision, we are proposing an Access SCR uncertainty mechanism for RIIO-ED2 to enable us to update our Business Plan, once we have further clarity on the final Access SCR decision. WPD will work with Ofgem to develop an effective uncertainty mechanism to facilitate the inclusion of any additional outputs and recovery of any additional associated revenue in RIIO-ED2 once we have further clarity on Ofgem's final decision which is expected towards the end of 2021.

6.33. Therefore, at this time, our RIIO-ED2 cost forecasts have been prepared on the basis of no change.

DSO and digitalisation

6.34. To meet the demands of a rapidly changing environment, we are building upon our traditional role of Distribution Network Operator (DNO) to incorporate Distribution System Operator (DSO) roles and functions. 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.

6.35. 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 our capabilities further during RIIO-ED2. We commit to 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.

6.36. 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 essential functions we already perform successfully, putting us in a strong position to fulfill the role of Distribution System Operator.

6.37. 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 marketplace 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 and support 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

6.38. We have an extensive network of assets, spread across a large geographical area, providing essential supplies to 8 million customers. We are committed to keeping the network in good working order to prevent the assets failing and ensuring uninterrupted service to our customers. We regularly inspect and maintain our assets, gathering information about their condition, as part of the process of managing the network. Where necessary, assets in poorest condition are replaced to reduce the risk on the network.

6.39. 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 are based on 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.

6.40. Without intervention, the overall risk to the network will increase as the network deteriorates over time. 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 it is acceptable to allow the risk to increase, while a network with many older poor condition assets requires more work, which could lead to a lower resultant risk.

6.41. 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. The resultant network risk will reflect this programme and is summarised in figure 6.8 below.

Figure 6.8 NARM risk change in RIIO-ED2

NARM Risk Change in RIIO-ED2					
	Start of RIIO-ED2	End of RIIO-ED2 (no interventions)	End of RIIO-ED2 (with interventions)	Risk Reduction	%age improvement
WMID	2,022,124,994	2,630,619,924	2,102,220,274	-528,399,649	20%
EMID	1,579,380,929	2,119,429,357	1,713,653,822	-405,775,536	19%
SWALES	1,069,331,343	1,416,666,780	1,055,273,689	-361,393,092	26%
SWEST	1,892,129,046	2,508,083,833	1,883,425,594	-624,658,239	25%
WPD	6,562,966,311	8,674,799,894	6,754,573,378	-1,920,226,516	22%

6.42. To derive the NARM data, WPD has implemented and used the latest version of the industry's Common Network Asset Indices Methodology (CNAIM v2.1) and has used condition information available at 31 March 2021. This means that the latest data and most up to date methodology have been used.

Our proven delivery record

6.43. WPD's established and effective organisational structure is key to our proven track record of successfully delivering excellent 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.

6.44. We know that using in-house regional resources is crucial to cost effective, efficient delivery. Our local staff know the area, the local network and local developments, enabling us to provide efficient, high quality customer service based on in-depth knowledge. The organisational structure is flat, with devolved decision making and minimal bureaucracy, powering a culture that delivers innovative thinking and collaborative working. This structure and ethos will continue to be a core part of our delivery model for RIIO-ED2.

6.45. The biggest change to our organisational structure will be an increase in the staff and systems needed to deliver increased levels of activity and our DSO and digitalisation objectives. We will apply the same principles of minimal bureaucracy and a culture of delegated personal responsibility, when introducing these developments.

Resourcing strategy

6.46. We recognise that an increased amount of activity requires increases in resources to deliver the work. Where appropriate we will seek to do so via internal resources.

6.47. Our experience shows that having in-house specialists enables fast resolution of issues and encourages greater ownership and enthusiasm for innovative developments. As we enhance and develop our DSO functions we will require additional specialist resources to create new systems, processes and better ways of interacting with customers and flexibility providers.

6.48. There are, however, certain aspects of the increased workload where alternative approaches may be more appropriate for delivery of the work. For example, where there is some uncertainty about the volumes of activity or where different working arrangements are required we are proposing to use contractor resources. This will allow us to deal with short term increases, while determining a more appropriate sustainable level of ongoing resource requirement. It will also allow us to look at alternative ways of working (e.g. weekend and out of hours working) for high volume low cost activities such as cut out inspections and unbundling of services.

Innovation

6.49. Innovation runs through everything we do, allowing us to introduce new techniques, improve the way we operate the network and develop new services for vulnerable customers. We are continually harnessing innovative thinking to identify efficiencies and provide value for money to our customers.

6.50. We will continue to collaborate with third parties and will fully participate in Ofgem's Strategic Innovation Fund and Ofgem's Network Innovation Allowance. We will also support other research, development and demonstration projects, which fall outside the scope of these innovation mechanisms.

Purchasing strategy

6.51. Contract and material tendering is the most frequently used method of purchasing goods and services throughout WPD. Tenders are conducted in line with appropriate legislation by our purchasing team, which is fully embedded within the business.

6.52. Our purchasing strategy is to multi-source goods and services, not only to protect the business from the failure of a single point of supply but also to encourage competition. Where appropriate, we tender goods and services through lots which are applied across all four licence areas or split into smaller geographical areas. By using this approach, we can procure the most economically advantageous contracts that deliver best value for customers.

Regional factors

6.53. 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.

6.54. As a result of this there are a number of regional factors we consider, including:

- Each location has its own challenges and calls for a bespoke approach. 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.
- 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.
- 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.

6.55. On balance, we consider the mix of differences within WPD at a group level does not necessitate any specific regional or company-specific factor claims in our plan or in Ofgem's assessment of efficient costs.

6.56. However, we do observe and incur 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. We would expect Ofgem to acknowledge these differences in cost assessment, which is inherently conducted at a DNO level (not group). Differences in other areas, including payments related to the operation of different pension schemes (especially older schemes), are also included in our plans. Where there are differences in unit costs between our four DNOs, these are explained in Supplementary Annex SA-06: Expenditure.

6.57. We do not foresee the need to make any other specific locational or regional adjustments to our expenditure plan.

6.58. We expect Ofgem to take into account factors outside of our control. We will continue to participate in ongoing discussions with Ofgem to determine how these are best addressed. An example is the cost of street works. In most local authority areas in England, permit schemes are in place but may impose different working practices in different areas. That may call for some benchmarking adjustments across company plans by Ofgem. This plan has embedded costs where these schemes are already in operation (or about to begin), but has not yet accounted for new lane rental schemes or any such schemes in Wales. We expect that the costs associated with new schemes will be covered by an uncertainty mechanism.

Pensions

6.59. All costs stated in this Business Plan include pensions costs. The costs forecasted for pensions in Totex are based on current actuarial projections. They relate to ongoing pensions contributions and incremental deficit repair payments. These are included in all activities of Totex where there are labour costs.

6.60. There are other pension costs relating to established deficit repair payments. These are subject to a separate allowance and so are not included in our projections of Totex in this plan.

6.61. Further explanation of our pensions costs are included in Chapter 9: Financing our plan.

Investment Appraisal

6.62. Significant investments more than £1 million in our RIIO-ED2 Business Plan have an accompanying Engineering Justification Paper and Cost Benefit Analysis, whenever applicable.

6.63. The papers outline and justify the investment need, and also provide analysis of alternative solutions that have been discounted in favour of the preferred option.

6.64. Further detail is included in Supplementary Annex SA-11: Investment appraisal.

Reinforcement of the network

6.65. Load-related investment is expenditure incurred when providing additional capacity on the network to facilitate new connections as well as generic 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 (see figure 6.9).

6.66. Reinforcement in our Certainty View will increase from 8% of Totex as an average in RIIO-ED1, to 9% throughout RIIO-ED2. RIIO-ED1 additionally includes Green Recovery expenditure.

Figure 6.9 Reinforcement expenditure

Reinforcement of the network					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	31	39	8	13	92
RIIO-ED2 Annual Average (forecast)	31	42	21	24	119
RIIO-ED2 Total (5 years)	153	212	107	122	595

6.67. The main driver for higher load related expenditure is the government's 2050 net zero target, which is powering 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 regions which feature commercial, industrial and housing developments.

6.68. 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.

Our forecasting approach

6.69. 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.

6.70. Each of the technology types have been 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. We publish this data under our Distribution Future Energy Scenarios – Customer Behaviour report.

6.71. The forecasting process produces a set of growth rates, which are overlaid on to a power system model of the primary network to identify which areas of the network need reinforcement during RIIO-ED2, and when this would need to happen. The growth data is 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. It 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

6.72. We have made significant progress to operate the network more flexibly in short timescales, 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.

6.73. 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.

6.74. We have identified 50 potential schemes (out of 140 on the initial reinforcement list, and including connections driven reinforcement) where we anticipate that flexibility will defer the conventional reinforcement beyond the RIIO-ED2 period.

6.75. Within RIIO-ED2, flexibility is expected to avoid £49 million of load related expenditure otherwise anticipated within the Certainty View. Additionally, a cumulative total of £181 million will be deferred by flexibility for a year through the price control, creating net benefits of £3 million.

Connections related reinforcement

6.76. 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 are funded through the price control because it provides capacity that can be used by other customers. This is known as Distribution Use of System (DUoS) charges 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 (see figure 6.10).

6.77. We expect that the proposed changes under the Significant Code Review will impact these costs, but these have currently been forecast on the basis of no change to charging arrangements.

Figure 6.10 Connections expenditure

Connections Within the Price Control					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	4	17	1	3	25
RIIO-ED2 Annual Average (forecast)	7	16	4	8	35
RIIO-ED2 Total (5 years)	37	81	21	38	177

General reinforcement

6.78. General reinforcement is the investment required to provide adequate capacity on the network for generic load growth (therefore does not relate to any individual customer or new connection).

6.79. 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.

6.80. General reinforcement is split into two categories: primary network reinforcement, which covers the EHV (33kV and 66kV) and 132kV networks; and secondary network reinforcement which covers the low voltage (LV) and high voltage (HV) networks.

EHV and 132kV forecasts (Low volume - high cost)

6.81. 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.

6.82. 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.

6.83. The schemes that are required under all three net zero future energy scenarios have been identified and included as part of the ex-ante funding proposal (see figure 6.11). The remainder of the schemes required under the WPD Best View have been assigned to the proposed volume driver uncertainty mechanism. We anticipate that the majority of these schemes will go ahead in RIIO-ED2 and therefore expect to utilise the uncertainty mechanism for additional funding.

Figure 6.11 Primary network reinforcement expenditure

Reinforcement (Primary Network)					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	15	11	4	6	35
RIIO-ED2 Annual Average (forecast)	9	8	9	7	33
RIIO-ED2 Total (5 years)	43	40	47	36	165

LV and HV forecasts (high volume - low cost)

6.84. WPD's NIFT modelling tool has been used to identify the reinforcement requirement at LV and HV. To produce expenditure forecasts, volumes of interventions from NIFT have been multiplied by average unit costs derived from a number of costed projects based upon assessing the requirements on a representative sample of circuits (see figure 6.12).

6.85. We have service arrangements where the service cables to properties are looped from property to property. With anticipated load growth for LCTs, these arrangements are no longer appropriate and need to be unbundled. When we identify locations on the network that would benefit from unbundling we will consider proactive unbundling in anticipation of load growth to remove the potential constraints for customers. Since it is difficult to identify the scale of this activity ahead of need, we are proposing to use an uncertainty mechanism, rather than request ex-ante funding.

Figure 6.12 Secondary network reinforcement expenditure

Reinforcement (Secondary Network)					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	10	9	3	4	26
RIIO-ED2 Annual Average (forecast)	12	13	6	8	38
RIIO-ED2 Total (5 years)	58	65	32	38	192

Fault level reinforcement

6.86. 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.

6.87. It is imperative that we protect our employees and members of the public by applying temporary operational limitations to ensure they are 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.

6.88. 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.

6.89. 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.

6.90. Twenty-nine fault level schemes have been identified during the RIIO-ED2 period across WPD and the expenditure associated with these can be seen in figure 6.13. 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.

Figure 6.13 Fault level reinforcement expenditure

Fault Level Reinforcement					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	2	2	0	1	6
RIIO-ED2 Annual Average (forecast)	3	5	1	2	11
RIIO-ED2 Total (5 years)	15	23	6	9	54

New transmission capacity charges

6.91. WPD interconnects to the transmission network, typically at the Grid Supply Points (GSPs) which are 400/132kV or 275/132kV interface substations between the transmission and distribution networks.

6.92. 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.

6.93. 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 Electricity Transmission is required for the other five GSPs. Figure 6.14 shows the expenditure forecast.

Figure 6.14 New transmission capacity charges expenditure

New Transmission Capacity Charges					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	0	0	0	0	0
RIIO-ED2 Annual Average (forecast)	0	1	0	0	1
RIIO-ED2 Total (5 years)	0	4	1	1	6

Non load related investment

6.94. 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 and improving network performance. This section focuses on the activities associated with highest expenditure and/or most change.

6.95. Through RIIO-ED1 and RIIO-ED2, this area represents around 28% of Totex. Figure 6.15 shows the expenditure forecast.

Figure 6.15 Non load network investment expenditure

Non Load Network Investment					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	91	86	51	88	316
RIIO-ED2 Annual Average (forecast)	101	96	55	105	357
RIIO-ED2 Total (5 years)	503	481	277	524	1,784

Asset replacement

6.96. 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 focuses on removing assets in poorest condition, will remain unchanged, but the volumes of activity across the asset categories will be different. This will be influenced by the condition of the assets, network performance, historical activity levels and projected future requirements. This results in an increase in total replacement expenditure in RIIO-ED2, with the majority of the increase related to the EHV and 132kV networks (see figure 6.16). Longer term projections show that asset replacement costs will continue to increase for the next five price controls as more cable will need to be replaced.

Figure 6.16 Asset replacement expenditure

Asset Replacement					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	53	49	30	51	182
RIIO-ED2 Annual Average (forecast)	61	57	31	61	211
RIIO-ED2 Total (5 years)	305	286	157	305	1,054

6.97. There is a broad range of different asset categories covering underground cables, overhead lines, switchgear and transformers. There are different types and amounts of data available across the asset categories and therefore 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.

6.98. Some of the main changes to the volumes of activity in RIIO-ED2 include:

- A reduction in volumes of switchgear (particularly at HV) due to many of the older types already being removed from the network.
- Extra LV Consac cable to reduce the higher fault rate and inconvenience to customers.
- An increase in fluid filled cable volumes to remove leaking circuits from the network.
- Higher volumes of EHV transformers to deal with an ageing and poor condition population.

6.99. 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. While we have included increased costs associated with using larger assets to reduce losses, we have not included any increased costs for touch once at this stage.

Refurbishment

6.100. Refurbishment is carried out as an alternative to replacement, where it is possible to replace components of assets instead of the complete asset and is generally viewed as providing a material extension to the life of assets. Figure 6.17 shows our refurbishment forecast.

Figure 6.17 Refurbishment expenditure

Refurbishment					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	8	6	4	6	23
RIIO-ED2 Annual Average (forecast)	9	6	6	7	27
RIIO-ED2 Total (5 years)	43	28	28	34	133

6.101. The main refurbishment activities proposed for RIIO-ED2 (and their proportions of the refurbishment cost proposals in RIIO-ED2) include:

- Replacing steel members and painting overhead steel towers (32%).
- Replacing steelwork and insulators on overhead line pole supports (28%).
- Replacement of individual problematic protection relays (16%).
- Transfer of LV services when replacing poor condition paper and Consac LV mains cables (15%).

Civils

6.102. There are two main types of civils costs: those civils costs that are incidental to the asset replacement programme and civils activities that are driven by the condition of operational buildings and sites. Figure 6.18 shows our civils expenditure.

Figure 6.18 Civils expenditure

Civil Works					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	10	9	5	6	30
RIIO-ED2 Annual Average (forecast)	8	9	4	6	26
RIIO-ED2 Total (5 years)	40	43	19	28	130

6.103. The reduction in volumes of switchgear replacement is leading to a reduction in the associated civils costs for new plinths and modifications to substations. As a consequence, the overall civils costs associated with asset replacement are reducing in RIIO-ED2.

6.104. There are many operational buildings and substation sites with fences, roads and compounds. While these assets are not directly part of the network they provide security, access and protection for the network assets. We carry out substantive remedial works when sites are identified as being in poor condition. We view this activity as an on-cost to operating the network and we therefore forecast costs based on historical costs and the number of sites that we operate. There are no major changes to the cost forecast for civils work due to the condition of civils assets.

Diversions

6.105. 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. An increase, however, 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. Figure 6.19 shows our diversions forecast.

6.106. There may be some diversions activity arising from rail electrification in RIIO-ED2. This is still uncertain, requiring further clarity from government, and therefore no costs have been included in our base view Totex.

Figure 6.19 Diversions expenditure

Diversions					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	9	13	5	11	38
RIIO-ED2 Annual Average (forecast)	12	15	6	13	46
RIIO-ED2 Total (5 years)	59	75	30	66	231

Overhead line clearances

6.107. To keep our communities safe, we must ensure that overhead lines have sufficient clearance to objects, buildings and the ground. Detailed survey work has identified that there is a high volume of low ground clearance issues that need to be resolved.

6.108. 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 (based on the volume of new issues being identified in recent 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 required to be completed by 2029. Figure 6.20 shows our forecast.

Figure 6.20 Overhead line clearance expenditure

Overhead Line Clearances					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	4	4	3	8	18
RIIO-ED2 Annual Average (forecast)	6	3	4	12	24
RIIO-ED2 Total (5 years)	29	17	18	58	122

Flood mitigation

6.109. Significant flooding events during 2007 led to the government and industry identifying the need to install flood defences to prevent major power disruption from flood waters affecting electrical equipment. During DPCR5 and RIIO-ED1 we have been protecting a number of sites from flooding.

6.110. Figure 6.21 shows our expenditure forecast. Additional data on pluvial (surface water) flooding from the Environment Agency and Natural Resources Wales has identified that there are further sites at risk of flooding and therefore we propose to address the majority of these during RIIO-ED2.

Figure 6.21 Flood mitigation expenditure

Flood Mitigation					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	0	0	0	0	1
RIIO-ED2 Annual Average (forecast)	0	1	0	0	2
RIIO-ED2 Total (5 years)	1	7	2	2	12

Environmental

6.111. 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. Figure 6.22 shows our forecast.

Figure 6.22 Environmental reporting expenditure

Environmental Reporting					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	1	1	1	1	3
RIIO-ED2 Annual Average (forecast)	1	1	1	1	4
RIIO-ED2 Total (5 years)	6	6	3	6	20

Quality of service

6.112. We have made significant improvements to network performance during RIIO-ED1 and the reliability of the network remains a high priority for stakeholders. During RIIO-ED1 we have continued to invest in remote controlled equipment and we have deployed automated algorithms that respond to faults on the network and reconfigure running arrangements to minimise the impact on customers.

6.113. Our automation programme during RIIO-ED1 has focused on reducing the number of customers in a protection zone to below 1,500. In RIIO-ED2 we propose to go further and have no more than 1,000 customers in a protection zone. This means that when a fault occurs on the HV network the majority of customers will be restored automatically in less than three minutes. Figure 6.23 shows our expenditure forecast.

Figure 6.23 Quality of supply expenditure

Quality of Supply & North of Scotland Resilience					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	2	2	1	1	6
RIIO-ED2 Annual Average (forecast)	1	2	0	1	4
RIIO-ED2 Total (5 years)	5	8	1	5	19

Worst served customers

6.114. While WPD's network performance is among the best across the industry, there are some customers that experience higher numbers of faults than the average. 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. These customers are referred to as worst served customers.

6.115. Using the RIIO-ED2 definition of a worst served customer (12 or more faults over a three year period with a minimum of two in any year) indicates that WPD has around 12,500 worst served customers. Experience shows that there is also an amount of churn of worst served customers from year-to-year, with new customers and circuits becoming worst served.

6.116. There has been strong stakeholder support for carrying out work to reduce the likelihood and impact of faults on worst served customers. We will carry out 70 projects over the RIIO-ED2 period. Figure 6.24 shows our forecast expenditure.

Figure 6.24 Worst served customers expenditure

Worst Served Customers					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	0	0	0	0	1
RIIO-ED2 Annual Average (forecast)	0	0	0	0	1
RIIO-ED2 Total (5 years)	1	0	2	1	4

Visual amenity

6.117. WPD's geographic area includes numerous National Parks and Areas of Outstanding Natural Beauty (AONBs) such as the Isles of Scilly, Dartmoor, Pembrokeshire, the Cotswolds, the Peak District and the Lincolnshire Wolds.

6.118. Electricity supplies in rural areas are predominantly provided using overhead lines, meaning this often includes National Parks and AONBs. There are locations, especially at popular tourist sites, where the removal of selective overhead lines can enhance the visual amenity.

6.119. WPD has established collaborative working groups with National Parks, AONB and appropriate interest group representatives, to identify the areas that would benefit the most from the undergrounding of overhead lines. We propose to identify projects that will remove 50km of overhead lines during RIIO-ED2. Figure 6.25 shows our forecast expenditure.

Figure 6.25 Visual amenity expenditure

Visual Amenity					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	0	0	0	1	1
RIIO-ED2 Annual Average (forecast)	0	0	0	0	1
RIIO-ED2 Total (5 years)	2	1	1	2	7

Legal and safety

6.120. Legal and safety expenditure covers areas such as substation security, earthing issues and asbestos management. We have addressed most of the outstanding security upgrades during RIIO-ED1, so the amounts beings forecast for RIIO-ED2 are relatively small. There are, however, three bespoke programmes that will be carried out. Figure 6.26 shows our total expenditure forecast.

6.121. Following an incident in a school playing field, where a tree brought down an overhead line, we are proposing to underground, divert or cover conductors crossing school playing fields to reduce the risk of harm to children. The programme will focus on the overhead lines that have been assessed as posing the greatest risk.

6.122. Anti-climbing devices (ACDs) act as a deterrent for members of the public who may be tempted to access equipment on overhead lines. It has been identified that there are a number of wooden poles where ACDs need to be installed and it is proposed to complete the retrofit programme during RIIO-ED2.

6.123. While the substation security measures such as CCTV and fences have been upgraded, the backhaul system for managing the alarms and communicating intrusions is outdated and needs to be upgraded.

Figure 6.26 Legal and safety

Legal and Safety					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	2	2	1	1	5
RIIO-ED2 Annual Average (forecast)	2	1	2	3	9
RIIO-ED2 Total (5 years)	9	7	12	16	45

Uncertain cost areas

6.124. 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), diversions required to accommodate planned rail electrification and enhancements to security required by the Centre for the Protection of National Infrastructure. We expect any future expenditure in these areas to be covered by uncertainty mechanisms.

Network operating costs

6.125. 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 21% of Totex but, due to ongoing efficiency initiatives, will make up only about 17% of Totex in RIIO-ED2. Our expenditure forecast is in figure 6.27.

Figure 6.27 Network operating costs

Network Operating Costs					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	75	73	35	58	240
RIIO-ED2 Annual Average (forecast)	65	68	34	56	223
RIIO-ED2 Total (5 years)	326	342	168	281	1,117

Faults and ONIs

6.126. Each year we deal with around 48,000 faults and 90,000 occurrences not incentivised (ONIs) as part of responding to emergency issues on the network.

6.127. Faults are incidents that lead to power interruptions lasting three minutes or longer and are incentivised under the Interruption Incentive Scheme where rewards and penalties reflect the performance against Ofgem specified targets.

6.128. ONIs are situations where WPD staff have to attend site in response to reports from customers made via the contact centre, but the incidents are not part of the incentive mechanisms. They include issues with cut-outs and supply quality (such as reports of flickering lights), street lighting faults, call-outs to reports of potential break-ins to substations, falling trees that might be near electricity equipment, damaged gates or access doors.

6.129. Although investment programmes seek to minimise the likelihood of faults and ONIs, there will inevitably still be network issues. Fast and effective fault response is paramount to minimising the impact of supply interruptions. When faults occur the priority is the restoration of supply so that customers experience minimal inconvenience. Staff are mobilised quickly and challenging internal targets drive improvements in response and restoration.

6.130. There are a number of initiatives that are expected to have an impact on the volume of faults and we have assumed a progressive reduction in volumes as a result of these. For example, our move to using LiDAR technology for managing tree clearance is anticipated to lead to a reduction in the volume of tree related faults.

6.131. We recognise that during RIIO-ED1 we have been incurring higher costs as a result of ensuring quick response and restoration of supplies. In RIIO-ED2 we will be challenging ourselves to drive these costs down, whilst still delivering excellent levels of customer service and our cost forecasts reflect this. Figure 6.28 shows our forecast expenditure.

Figure 6.28 Faults & ONIs expenditure

Faults & ONIs					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	41	41	15	30	127
RIIO-ED2 Annual Average (forecast)	33	35	14	27	109
RIIO-ED2 Total (5 years)	164	174	71	137	547

Severe weather one in 20 year event

6.132. Each year there are periods of poor weather where storms can lead to network damage, but generally the impact is dealt with quickly, even though activity levels are several times normal daily volumes. While the impact of these storms may be classified as being exceptional, the effects are generally dealt with by using WPD staff and the costs are recorded against faults.

6.133. In rare cases, the magnitude of the storms can be very severe leading to widespread network damage that requires high volumes of additional resources to be drafted in from other DNOs to assist in the restoration of supplies. These rare and more costly events, where volumes of incidents are significantly higher than normal, are known as one in 20 year storms.

6.134. Forecasts in figure 6.29 for RIIO-ED2 represent 5/20ths of the costs of a one in 20 year storm.

Figure 6.29 Severe weather one in 20 event expenditure

Severe Weather One in 20 Event					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	1	1	0	0	2
RIIO-ED2 Annual Average (forecast)	2	2	1	2	6
RIIO-ED2 Total (5 years)	9	9	5	8	31

Inspections, repairs and maintenance

6.135. WPD has a legal obligation to maintain the safety and reliability of the assets that constitute the electricity distribution networks.

6.136. Inspections are carried out to identify safety issues and assess the condition of assets. Maintenance activities aim to ensure that the assets will reach anticipated life expectancy. Repairs are carried out to replace sub-components or rectify minor defects.

6.137. WPD's policy seeks to deliver an overall efficient balance between the amount of activity and overall reliability of the equipment. Maintenance activities and their frequencies are such that we preserve asset condition but do not undertake additional unrequired maintenance tasks. Our expenditure forecast is shown in figure 6.30.

6.138. During inspection we collect information about the assets which is recorded either as test results or defects. Safety related defects have a risk based deadline for resolution and many defects can be resolved through simple repairs that are either carried out during maintenance or as a standalone task. Our costs therefore reflect both the routine work of maintenance and the additional work of resolving defects.

6.139. During RIIO-ED2 we will be taking on additional inspections of network assets as a consequence of electricity suppliers installing smart meters. Data about service position defects is currently captured by suppliers and their meter operators when they take meter readings or when they attempt to install a smart meter. However, once the smart meter roll out is complete, suppliers and meter operators will visit less frequently and as a consequence we will need to carry out inspections at service positions. We are implementing an inspection programme based on a 20-year cycle which means that around 400,000 inspections will be carried out each year.

Figure 6.30 Inspections, repairs & maintenance expenditure

Inspections, Repairs & Maintenance					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	14	13	8	10	44
RIIO-ED2 Annual Average (forecast)	13	14	8	10	46
RIIO-ED2 Total (5 years)	67	70	39	52	229

Tree clearance

6.140. WPD has a legal obligation to operate tree cutting programmes with sufficient frequency to ensure that trees do not become a source of danger and, where appropriate, carry out more extensive clearance to enhance resilience to abnormal weather conditions.

6.141. These obligations are addressed through two programmes of tree clearance. Routine tree clearance is carried out on a cyclical basis to maintain safety clearances. Resilience tree clearance is more extensive clearance carried out on strategic circuits to minimise the risk of trees falling into overhead power lines during storms. Our expenditure forecast is shown in figure 6.31.

Figure 6.31 Tree clearance expenditure

Tree Clearance					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	16	12	9	14	51
RIIO-ED2 Annual Average (forecast)	14	13	8	13	49
RIIO-ED2 Total (5 years)	70	65	42	65	243

6.142. For routine tree clearance on HV and EHV networks, we are moving to using LiDAR technology mounted on our helicopter fleet to improve the data we hold about tree infestation and to use this to be more prescriptive in directing tree cutting activities. This is resulting in changes to how we manage tree clearance contractors and the structure of payments for clearance work, which is changing from a management fee per span to specific costing for how much tree infestation there is along the length of the line.

6.143. As part of these changes the clearance cycle is being shortened from 5 years to 4 years for HV and EHV circuits. Within our RIIO-ED2 forecast the higher costs of more frequent clearance are being offset by reductions to reactive clearance due to anticipated increased effectiveness of the LiDAR based approach.

6.144. For resilience clearance, we continue to focus on the 33kV network and propose to complete resilience clearance at this voltage level during RIIO-ED2. As more of the overhead network is made resilient there is an increasing need to carry out resilience maintenance clearance to address new tree vegetation growth.

Other

6.145. Within network operating costs, there are also costs for substation electricity, dismantlement and remote location generation. We do not anticipate any significant changes to the costs for these areas and forecasts are therefore based on historical levels of expenditure.

Engineering management

6.146. The physical work we do could not happen without the support of indirect activities, such as 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.

6.147. These costs form about 20% of Totex in RIIO-ED1 and 19% of Totex in RIIO-ED2. Figure 6.32 shows our expenditure forecast.

Figure 6.32 Engineering management

Engineering Management					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	73	72	34	52	232
RIIO-ED2 Annual Average (forecast)	76	75	37	55	243
RIIO-ED2 Total (5 years)	378	372	186	276	1,213

6.148. 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, and so we are not proposing radical changes to the core DNO organisational structures in RIIO-ED2. However, there are several areas where we are forecasting change.

6.149. 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, including additional roles such as primary system design engineers, planners, project engineers, wayleaves specialists, team managers and team supports. We will recruit these roles ahead of the start of RIIO-ED2. The costs included in this forecast are for the support of the Certainty view of reinforcement only. We foresee that there will be a need for additional indirect staff if the Certainty view is exceeded and we have included projections for additional engineering management expenditure in our proposals for the reinforcement volume driver (see Chapter 7: Managing uncertainty).

6.150. We are committed to deliver the new and increased volumes of direct activity, including delivery of net zero targets to facilitate central government policy targets. The increased delivery of these additional volumes is reliant on the indirect staff to support this. While the costs will increase, we have built in considerable efficiency assumptions for RIIO-ED2. Our planned costs would otherwise be higher if it was not for the efficiencies in the form of avoided costs that we are embedding in our plan.

6.151. 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.

6.152. To manage and maintain a high quality Priority Services Register (PSR) we are forecasting an increase in call centre handlers. This increase 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 within current cost levels.

6.153. As part of our continued commitment to innovation, 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.

6.154. We are also committed to rolling out and embedding successful innovation we anticipate developing in the RIIO-ED2 period. Our plan includes additional investment in extra staff and systems to replicate projects, scale up solutions to a production standard and cover the cost of training/deployment. Every solution we deploy will have direct benefits that will pay back either through budget reductions in other business areas, enhanced performance (e.g. customer minutes lost and customer interruptions) or be recovered through future connection charges (although some business cases may involve a return in future price control periods).

6.155. We currently forecast that there will be a small increase in wayleave payments 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. In our forecasts we have taken a number of factors into consideration, including land values, land rentals, consumer prices index and several agricultural factors. We consider our relationships with landowners and occupiers to be a critical component of operating our network and we work hard to maintain excellent working relationships with them.

Corporate activities

6.156. Corporate activities include a number of central functions across all of our licence areas, including human resources, finance and regulation, procurement, corporate communications, legal services and executive functions.

6.157. We will continue to be a low overhead business in RIIO-ED2. Corporate activities account for about 4% of Totex. Figure 6.33 shows our forecast expenditure.

Figure 6.33 Corporate activities expenditure

Corporate Activities					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	15	15	7	12	49
RIIO-ED2 Annual Average (forecast)	15	15	8	13	51
RIIO-ED2 Total (5 years)	76	76	38	64	254

6.158. Although there will be increased requirements in some of these areas as we expand DSO capabilities and carry out additional reinforcement programmes, these will be absorbed within existing resources, thanks to process improvements and efficiencies. We will however invest in our skilled labour force and we plan to provide opportunities for a small number of graduates to train for accountancy qualifications and develop their talents through contributing towards the evolution of the wider WPD business through RIIO-ED2.

6.159. To deliver our core commitments, we also forecast some additional expenditure for increased social outreach projects for vulnerable customers. We will continue to offer fuel poverty advice, in addition to new projects to protect vulnerable customers in a smart future.

Workforce resilience

6.160. 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 smarter ways to operate the network and manage data will call for new skills, as well as the recruitment and training of appropriately skilled staff.
Our commitment to a culture of continual learning and development, which prioritises training at all levels, helps us to attract and retain the best staff and, in turn, deliver the best service to our customers.

6.161. The costs of training staff form about 2% of Totex. Figure 6.34 shows our expenditure forecast.

Figure 6.34 Workforce resilience expenditure

Workforce Resilience					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	8	9	6	7	30
RIIO-ED2 Annual Average (forecast)	8	10	5	8	31
RIIO-ED2 Total (5 years)	38	50	27	39	154

6.162. Our existing apprenticeship, skills trainee, graduate and technical staff trainee programmes have enabled us to maintain the right number and mix of highly skilled staff to deliver our programmes of work successfully. We expect that further development of these trainee programmes will continue to deliver the right outcomes for us during RIIO-ED2.

6.163. 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 consistently ran a significant apprentice programme since DPCR3 (2000-2005).

6.164. WPD will continue to invest in staff development in RIIO-ED2. Our workforce resilience 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 achieve the Investors in People (IIP) award, gaining gold accreditation. Our strategy will also focus on enhancing gender and BAME representation, and driving benefits from a more diverse workforce.

Information technology and telecoms

6.165. Information technology and telecoms encompasses activities across our operational technology (OT) systems, investment in our non-operational information technology (IT) systems, the operating costs of supporting all our OT and IT systems and cyber enhancements for OT and IT systems.

6.166. OT and IT systems and expenditure will take on increasing importance in RIIO-ED2 as we invest in our DSO capabilities, move towards digitalisation, address the need for increased data policy and management and ensure we have the ability to minimise cyber risk on our network. As a result of these increased activities, these costs will form about 13% of Totex in RIIO-ED2 compared to 7% in RIIO-ED1. Figure 6.35 shows our forecast expenditure.

Figure 6.35 IT and telecoms

IT and Telecoms					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	23	23	12	20	78
RIIO-ED2 Annual Average (forecast)	46	51	30	42	170
RIIO-ED2 Total (5 years)	231	256	151	212	850

Routine operational IT

6.167. 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.

6.168. We are forecasting additional expenditure in the following areas:

- Control systems, because of the development of our DSO capabilities.
- Sensing and monitoring required on the network, including LV monitoring, power quality monitoring and distributed energy resource SCADA monitors.
- Remote Terminal Units (RTU) equipment 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 we are proposing a bespoke Price Control Deliverable for this activity).

6.169. To better manage future load growth and reinforcement requirements, WPD is planning to install increased amounts of LV monitoring. This 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. Installation locations 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.

Routine non operational IT

6.170. We are forecasting additional non-operational IT expenditure, associated with:

- Development of our DSO capabilities which includes data and 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.

Routine business support IT

6.171. 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 to ensure we remain able to meet increasing demands for more complex IT systems.

Cyber OT

6.172. The expected growth in cyber security risks will require continued and increased investment in order to protect our operational IT and telecom systems. We are forecasting additional expenditure in the following areas:

- Intrusion protection systems (IPS) for telecommunications.
- LAN separation & enhancements.
- Cyber security controls and proactive monitoring.

Cyber IT

6.173. The expected growth in cyber security risks will require continued and increased investment in order to protect our non-operational IT and telecom systems. We are forecasting additional expenditure in the following areas:

- A new data centre security upgrade (associated property costs are included in the property forecast).
- Increased number of IT cyber security staff to ensure we remain able to meet the expected growth in cyber security risks and increasing demands for more complex IT systems.
- IT cyber hardware, software applications and maintenance including Identity and Access Management (IAM) security and Security Orchestration, Automation and Response (SOAR) and Vulnerability management systems.

Vehicles, property and engineering equipment

6.174. 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 (for example fuel, vehicle maintenance).
- 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.

6.175. These costs represent 7% of Totex through RIIO-ED1 and into RIIO-ED2. Figure 6.36 shows our forecast expenditure.

Figure 6.36 Vehicles, property & engineering equipment

Vehicles, Property & Engineering Equipment					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	22	22	16	21	81
RIIO-ED2 Annual Average (forecast)	23	25	15	25	89
RIIO-ED2 Total (5 years)	116	127	74	127	443

Operational vehicle fleet

6.176. In line with our core commitments to achieve net zero in our own business carbon footprint, 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. We propose that the additional cost of this programme above standard purchase price of an ICE vehicle is delivered as a bespoke Price Control Deliverable (PCD).

6.177. We have embedded the savings from operating an electric fleet into our plan, including the lower cost of electricity compared to diesel fuel and lower servicing costs.

6.178. WPD will continue to operate an in-house vehicle management model with transport workshops at most depots. This allows us to be more productive as the downtime of a vehicle is reduced by having the workshops only dealing with WPD vehicles and no need for vehicle delivery to an external workshop which would require two staff and two vehicles. Minor vehicle defects are dealt with immediately, further reducing the downtime of the operational teams.

6.179. Savings have also been embedded into our RIIO-ED2 Business Plan as a result of an investment in RIIO-ED1 for the installation of a driver behaviour system in all WPD fleet. As well as the clear safety benefits, savings in fuel costs and accident repair costs are forecast.

6.180. We will also replace at least 35 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.

Property

6.181. 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.

6.182. We are planning major refurbishment and reconfiguration at three sites in the South West: Exeter, Torquay and Plymouth. The work at Exeter will allow for a new data centre with optimised operating costs and security. We have also included an allowance for smaller scale reactive works that are inevitable on such a large portfolio of property, to ensure we maintain operational effectiveness and comply with workplace legislation. To improve the efficiency of this expenditure, we will move towards a centralised model with a project scoring system to inform spend prioritisation and ensure consistency of decision making.

6.183. Our RIIO-ED2 plan reflects our environmental ambitions, with a determination to demonstrate leadership through our property strategy. We intend to conduct a series of planned works to improve the energy efficiency of our worst performing properties. We also plan to install photovoltaic (PV) solar panels at our non-operational property sites comprising depots, vehicle maintenance facilities, offices, stores and reporting centres.

Engineering equipment

6.184. Craft and engineering staff require tools to work on the network assets. These include hand tools for precision work such as electrical fitting and cable jointing, lifting and tensioning tackle for overhead line work, test equipment for commissioning assets and fault location, workshop machinery to enable fitters to refurbish components and plant such as drum trailers and winches used in the erection of overhead conductors.

6.185. Equipment is replaced as items become worn or broken. We have forecast that levels of expenditure on these types of equipment remain consistent with those in RIIO-ED1.

Other costs within the price control

6.186. These costs include innovation and atypical costs. See figure 6.37 for our forecast expenditure.

6.187. Innovation is primarily funded through the Network Innovation Allowance (NIA) and Network Innovation Competition (NIC) in RIIO-ED1. DNOs fund approximately 10% of the costs, which are included in the base costs presented in this chapter as part of Other Costs.

6.188. 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.

6.189. The NIC funding programme for larger scale projects is being replaced by the Strategic Innovation Fund in RIIO-ED2. No costs have been forecast for this in the base Totex plan. This is a competitive process across the wider industry and difficult to forecast at this stage. We expect to participate fully and will work with a range of partners to develop projects for submission.

6.190. 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. This will not be eligible for NIA and is forecast in engineering management.

6.191. 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.

Figure 6.37 Other costs within price control expenditure

Other Costs Within Price Control					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	4	3	2	4	13
RIIO-ED2 Annual Average (forecast)	0.2	0.2	0.1	0.2	1
RIIO-ED2 Total (5 years)	1	1	1	1	4

Driving business efficiency to keep bills low

6.192. Our Business Plan lays out our commitments to deliver a smart, efficient and reliable network which meets future energy requirements, as well as continuing to deliver industry leading customer service at an affordable cost.

6.193. 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 providing support for high volumes of distributed generation connections and establishing a DSO capability).

6.194. We have a strong track record of delivering on our proposals and responding to the changing requirements of our stakeholders.

6.195. 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.

6.196. Efficiency and value for customers is very important to us. In this section we consider the aspects of efficiency that will drive our aspiration to keep customer bills broadly similar to RIIO-ED1.

Our RIIO-ED2 efficiency story

6.197. We have a proven record of efficient and effective delivery. Ofgem recognised this coming into this current price control, where WPD was the only DNO to be fast-tracked.

6.198. Our commitment in RIIO-ED1 to date and for the remainder of the current price control has been to deliver excellent service performance in the most efficient way possible. In RIIO-ED1 we have delivered service performance improvements and delivered our commitments, whilst realising efficiencies equivalent to 0.3% Totex underspend. We are also delivering additional outputs, including a green recovery programme, beyond those set out in our RIIO-ED1 plan.

6.199. In RIIO-ED2 we will strive to further enhance our overarching standards of service performance for our customers; and we are looking to lead the industry with our green environmental action plan. Set alongside this we are also committing to deliver new and increased volumes of activity, including delivery of additional network capacity to facilitate central government net zero policy targets. Our proposals to deliver these additional outputs volumes includes a built in efficiency assumption for RIIO-ED2. We are delivering 30% more load related investment in our Certainty View with only a 3% increase in engineering management costs.

6.200. Overall therefore, whilst our RIIO-ED2 plan costs are higher than RIIO-ED1, for example to reflect the step-up in policy-related investment, our proposed costs are lower than they otherwise would be if we had not embedded these efficiencies.

6.201. Reflecting the above, due consideration of service performance, output delivery, and environment and policy-driven investments is required in the assessment of efficient costs for RIIO-ED2.

Ongoing efficiency (OE)

6.202. "Ongoing efficiencies are incremental gains in productivity that are achievable for a notional DNO that is already operating at the efficient frontier, due to technological progress. It is separate from catch-up efficiency improvements"[1] which is discussed above.

6.203. In addition to the efficiencies embedded in our plan (see above) we have challenged ourselves to deliver a further £53 million in Ongoing Efficiencies (OE) during RIIO-ED2 (see figure 6.38). This is equivalent to a 0.3% per annum OE assumption as set out in the table below.

Figure 6.38 RIIO-ED2: Ongoing efficiency assumptions

RIIO-ED2: Ongoing Efficiency Assumptions							
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total	Total RIIO-ED2	Average per year in RIIO-ED2
OE assumption	0.3%	0.3%	0.3%	0.3%	0.3%	-	-
OE assumption - cumulative	0.3%	0.6%	0.9%	1.2%	1.5%	-	-
WPD impact, £m	3	7	11	14	18	53	11

Note: The impact on our cost base is cumulative.

6.204. Our assumption has been informed by a wide range of evidence identified and evaluated by the economic consultants, NERA as part of an all-DNO ENA study[2] (April 2021). In particular this evidence base has drawn upon growth accounting analysis, including that of the EU KLEMS data set and those of independent institutions, both before and after the Great Financial Crisis (2008); historical outturn productivity of the ED sector; and short term productivity forecasts from independent institutions.

6.205. Consideration of this body of evidence has informed a recommended OE assumption of 0.3% for the period of RIIO-ED2. We agree with NERA's recommendation that no upward adjustment to the 0.3% estimate is required, for example on the basis that the evidence surveyed already captures the benefits of innovation funding and interactions with output quality.

6.206. In practice, the achievable rate of OE may be lower than 0.3% per annum in RIIO-ED2, as the above body of evidence surveyed does not account for new regulatory requirements in RIIO-ED2, Brexit and the long-term impact of Covid-19, which amongst other factors, could support a reduction to the 0.3% estimate. It is, however, difficult to quantify the expected magnitude of these factors and in the round we consider a 0.3% assumption provides a sensible balance of challenge, given the future unknowns.

6.207. "For a given volume of outputs, ongoing efficiency improvements, can take two forms: 1) Reducing the cost of providing the given volume of outputs; or 2) Improving the quality of outputs"[3]. As a frontier service performer in RIIO-ED1, for RIIO-ED2 we are planning to continue to strive to improve the high quality of outputs and service our customers and stakeholders expect. Whilst continually seeking to improve on our outputs we are also planning to deliver in ongoing efficiencies via releasing cost efficiencies in how we run our network, for example through harnessing new technologies available to us in the next price control.

6.208. Our OE assumption has been included in the Totex base view presented in this chapter, but is excluded from the individual activity areas (in line with regulatory requirements).

6.209. Further information on the OE challenge we have set ourselves can be found in Supplementary Annex SA-06: Expenditure.

Real price effects (RPEs)

6.210. We refer to Real Price Effects (RPEs) as the delta between the rate of change of the prices of inputs required to operate an electricity network and the rate of change of prices in the general economy, the latter as measured by general inflation (CPIH).

6.211. Given the existence of RPEs, the indexation of price control allowances to general inflation might under or over provide allowances to network companies. The RIIO-ED2 price control framework therefore provides for an assessment of RPEs that adjusts allowances, subject to DNO provision of a supporting evidence base. We set out our RPE evidence base in full in Supplementary Annex SA-06: Expenditure.

[1]NERA (April 2021), Ongoing Efficiency Improvement at RIIO-ED2, prepared for the ENA, p. i
[2]NERA (April 2021), Ongoing Efficiency Improvement at RIIO-ED2, prepared for the ENA
[3]NERA (April 2021), Ongoing Efficiency Improvement at RIIO-ED2, prepared for the ENA, p. 67

6.212. Given that future input prices are uncertain, RPEs have been prepared as an uncertainty mechanism in our plan. In the same way that Ofgem indexes baseline allowances to CPIH, Ofgem have signalled that they will adjust RPE allowances annually through indices that proxy for the price of our inputs.

6.213. We have worked with the economic consultants, NERA, as part of an all-DNO ENA study (June 2021), to propose indices to Ofgem that proxy for the price movement of these inputs used in the operation of an electricity distribution network, in line with Business Plan requirements.

6.214. We have included in our plan evidence to support RPEs with respect to the input categories of general labour, specialist labour, materials capex and opex, plant and equipment, and transport.

6.215. The following table sets out the combined impact on our cost base of the above RPEs by input, taking into account the cost structure of WPD (see figure 6.39).

6.216. Overall, we forecast that RPEs will have a £340m impact on our business during RIIO-ED2. Although RPEs will be subject to indexation (a form of Uncertainty Mechanism), we have included our projections in our base view of Totex.

Figure 6.39 RIIO-ED2: real price effects assumptions

RIIO-ED2: Real Price Effects Assumptions							
£m, 2020/21 prices	2023/24	2024/25	2025/26	2026/27	2027/28	Total RIIO-ED2	Average per year in RIIO-ED2
RPE assumption	1.1%	1.3%	1.0%	0.9%	1.0%		
WPD Impact, £m	42	58	72	79	90	340	68

Bill impact

6.217. WPD is proposing to spend an average of £1.2 billion per year in our baseline view of expenditure for RIIO-ED2. This is £188 million per year higher than our average annual spend in RIIO-ED1, and will fund the delivery of the commitments contained in this document, including the delivery of key government policies including the transition to a net zero carbon future.

6.218. WPD's Best View, which is the investment proposal supported by a range of stakeholders to facilitate further electrification of heating and transport, will result in an additional £95 million investment per year on top of our base view. It is this WPD Best View scenario that delivers the majority of our stakeholder requirements.

6.219. The additional cost in our base plan excluding Real Price Effects and Ongoing Efficiency is £131 million per year higher than RIIO-ED1. This would add £1.52 each year to WPD's average domestic customer bill for RIIO-ED2. WPD's Best View would add a further £2.16 to the average bill in RIIO-ED2.

6.220. However, as set out in Chapter 9, this potential increase, as a result of higher investment, will be more than offset by changes in the financing package, with lower costs of borrowing and lower returns offsetting the impact of the increased investment.

6.221. Overall, WPD's average domestic customer bill is expected to fall slightly under our base view from £91.45 to £90.50 (in 2020/21 prices), excluding inflation and will increase by £1.21 (1.3%) to £92.66 per year under our Best View.

6.222. Chapter 9 presents the customer bill impact of our Totex proposals in more detail.

Chapter 7

Managing uncertainty

Chapter 7 Contents

7. Managing uncertainty

Summary

7.1. We recognise the need for WPD's 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 will evolve over time. Uncertainty can become apparent due to potential changes in legislation and government policy and unforeseen events such as Covid-19, as experienced 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 into baselines at the time, thereby protecting both customers and companies from risk.

7.3. This chapter sets out how uncertainty mechanisms work and how we will utilise them to adapt to change.

7.4. Further detail on managing uncertainty is included in Supplementary Annex SA-07: Managing uncertainty.

Uncertainty

Uncertainty mechanisms overview

7.5. Our RIIO-ED2 Business Plan includes costs for which we have robust information to support the volumes of work proposed based on historical information and detailed stakeholder engagement. Forecasting of workload and costs for a five year price control will always involve some uncertainty, particularly when the Business Plan is submitted more than a year 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.

7.6. Such changes and challenges could include:

- A substantial shift in external policy; for example, legislation or government policy.
- Changes to the amount that is being delivered compared to the level originally funded under the price control; for example, levels of electric vehicle or heat pump take-up compared to the forecast.
- A risk outside of WPD's control; for example, a pandemic.

7.7. 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. Uncertainty mechanisms allow the revenues of network companies to change in line with changing requirements, protecting both customers and companies from risk.

7.8. Uncertainty mechanisms can be:

- Volume driven – 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 the expenditure is entirely outside the company's control.
- Indexation – where the evolution of prices is unknown.
- Use-it-or-lose-it (UIOLI) allowance – to adjust allowances where a specific activity has to be done but the costs are uncertain.

7.9. Ofgem has included a number of uncertainty mechanisms in their strategy decision that DNOs may use. This chapter highlights how we propose to use these in our plan. We are not proposing any bespoke mechanisms.

7.10. Further detail are included in Supplementary Annex SA-07: Managing uncertainty.

Reinforcement and strategic investment

7.11. In the period 2023 to 2028 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 clearly 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.

7.12. Whilst significant progress has been made in developing forecasting on the distribution network, there is still a greater amount of uncertainty compared to RIIO-ED1.

7.13. In RIIO-ED2, the expected range of outcomes is forecast to be much wider than envisaged in RIIO-ED1. Whilst WPD has developed its Best View through engagement with a range of stakeholders on their expectations, expenditure at this level may have to be increased by 102% to achieve "Leading the Way" by 2028 or reduced by 45% if a "System Transformation" scenario is followed.

7.14. To enable the RIIO-ED2 price control to deliver sufficient, timely capacity to support decarbonisation, protect customers from unnecessary or inefficient investment, and also maintain a simple and pragmatic regulatory overhead, WPD has proposed a new uncertainty mechanism. We expect this to play a larger role in our load related expenditure than during RIIO-ED1.

7.15. WPD's baseline plan includes upfront investment to deliver the capacity required under high certainty, but the actual investment required will be driven by national and local government policy, combined with activity in the consumer market. These factors are likely to change during the price control, so load related expenditure needs to be agile, in both directions, to respond to these changes.

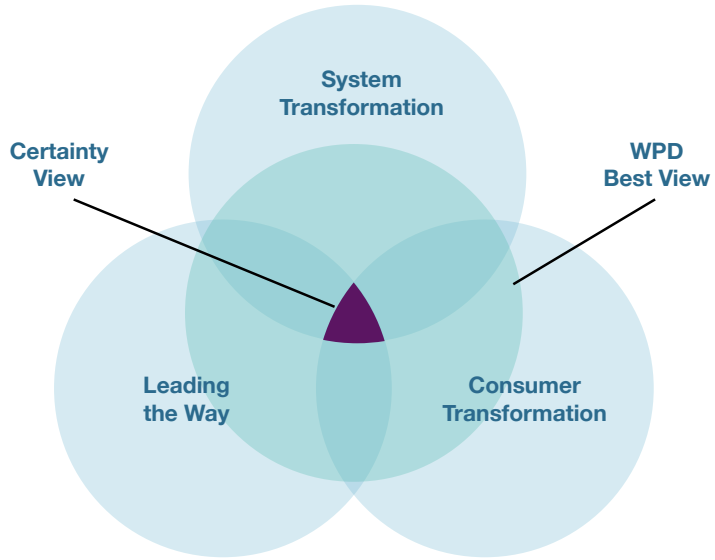
7.16. There will be more certainty of the investment in some areas that are supported by historical growth, national targets and local area enablers. Using the distribution future energy scenario framework (DFES), WPD has identified the volumes and locations of constraints triggering in each scenario and the consequential low regret investment required to accommodate the forecast growth.

7.17. Investment triggered under any of the three net zero compliant scenarios from the DFES within the WPD group area totals £2,269 million, with a split of £904 million resulting from reinforcement of the primary network and £1,365 million across the secondary network.

7.18. Through stakeholder engagement, forecasting and scenario modelling, WPD's Best View has been created. It identifies the most credible and likely growth which needs investment to deliver. This reduces the likely investment down to £1,095 million, split £460 million and £635 million between primary and secondary expenditure respectively.

7.19. Identification of the investment within WPD's Best View, which is also triggered under System Transformation, Consumer Transformation and Leading the Way scenarios, has led to our "Certainty View" (see figure 7.1). This is presented within our Business Plan as the base case for our ex-ante load related expenditure.

Figure 7.1 WPD's RIIO-ED2 Business Plan positioning



7.20. The difference in investment required between WPD's Certainty View and the Best View will be delivered through uncertainty mechanisms (see figure 7.2).

Figure 7.2 View of scenarios and split of WPD's Best View between ex-ante allowance and volume drivers

Primary	DFES Any Single Scenario	WPD's Best View	Ex-Ante Certainty View (3 Scenarios)	Volume Driver
	£904m	£460m	£224m	£236m

Secondary	DFES Any Single Scenario	WPD's Best View	Ex-Ante Certainty View (3 Scenarios)	Volume Driver
	£1,365m	£635m	£398m	£237m

Total	DFES Any Single Scenario	WPD's Best View	Ex-Ante Certainty View (3 Scenarios)	Volume Driver
	£2,269m	£1,095m	£622m	£473m

7.21. The proposed ex-ante allowance being requested under the Certainty View represents investment identifiable now with a high certainty of being triggered during RIIO-ED2. We propose for the additional investment above the Certainty View to be taken forward through uncertainty mechanisms.

7.22. In order to balance risk, agility and complexity, WPD is proposing volume drivers be applied to the load related expenditure. This will ensure that anticipated, but uncertain activities, can be funded.

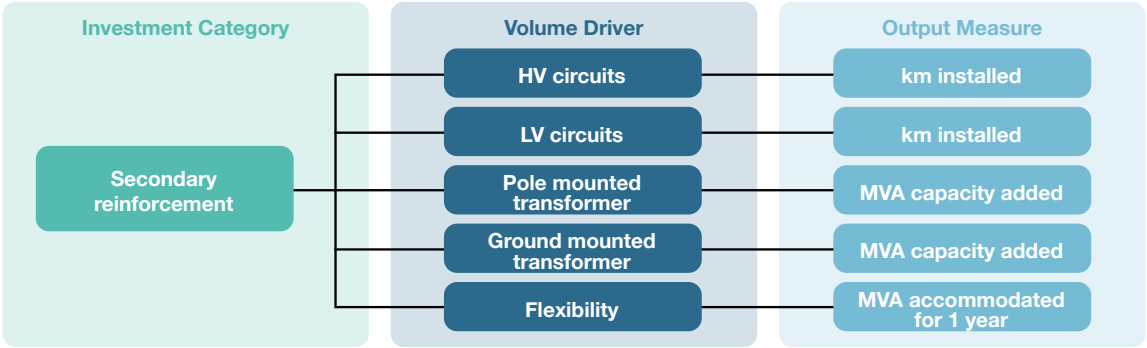
Secondary load related exenditure uncertainty mechanism

7.23. On the secondary network, activity involved in providing additional capacity to customers will likely involve upgrading or installing new HV and LV circuits, as well as upgrading or adding new pole mounted or ground mounted distribution transformers. Some of this activity may also be deferred or avoided due to flexibility.

7.24. As this work has historically had the costs and volumes of activity reported at an aggregated licence area level, moving it to a symmetrical volume driver and unit cost model requires little adaption to existing regulatory processes.

7.25. For linear assets we are proposing a volume driver unit aligned to the length of asset installed (in kilometres), split between LV and HV circuits (see figure 7.3). For transformer capacity, we are proposing a measure of capacity added (in MVA), split between overhead and underground networks. Flexibility will be measured against the capacity accommodated for one year (in MVA). For both of the latter two categories, the capacity released will be measured against the season of peak demand.

Figure 7.3 WPD's secondary reinforcement UM proposal



7.26. The proposed uncertainty mechanism will account for investment above our ex-ante Certainty View. We will provide annual volumes of activity profiled for the Certainty View across these categories. Where the volumes delivered are in excess of those profiles, an annually triggered uncertainty mechanism based on the unit costs and volumes delivered will be applied to adjust allowed recovery upwards.

7.27. The outturn and forecast load index reporting tables will ensure investment within the secondary network is undertaken aligned to system need, taking into account that monitoring and visibility on the secondary network will improve during the price control period.

Primary load related exenditure uncertainty mechanism

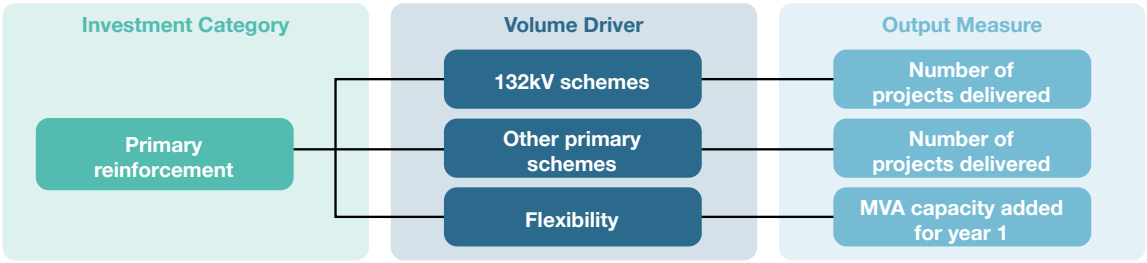
7.28. On the primary network, activity involved in providing additional capacity to users will require greater bespoke activity, differing across voltage levels and geographic locations. Projects may range between a few hundred thousand pounds through to >£25 million and scheme numbers are lower in volumes than the secondary network activity. Significant progress has been made in RIIO-ED1 to allow primary network investment to be deferred or avoided through flexibility.

7.29. Traditionally, investment has been well justified ahead of the price control and funded ex-ante, with a load related reopener triggered outside of a materiality limit. The scale of potential uncertainty within RIIO-ED2 means this approach is no longer valid.

7.30. WPD has committed to provide Engineering Justification Papers (EJPs) for all load related expenditure above £1 million, demonstrating transparency of the required investment and ensuring there is robust justification. As we anticipate the volume and scale of primary reinforcement will be larger than RIIO-ED1, we are proposing that the primary load related expenditure will also be enabled by a volume driver.

7.31. For each project delivered across the primary network, the investment will be funded by a volume driver with a unit cost where the expected project cost is under £6 million for 132kV projects and £4 million for other EHV projects (see figure 7.4).

Figure 7.4 WPD's primary reinforcement uncertainty mechanism proposal



7.32. Separate unit costs for 132kV associated schemes will be applied where there are 132kV works, with all other schemes being considered as a combined category. Where flexibility is employed, this will be measured against the capacity accommodated for one year (in MVA). Unit costs will be derived from the average project cost as justified in the EJPs outside of the ex-ante Certainty View, but within the WPD Best View.

7.33. The proposed uncertainty mechanism will be upwards against our ex-ante Certainty View. We will provide annual volumes of projects profiled for the Certainty View across these categories, and where volumes delivered are in excess of those profiles, an annually triggered uncertainty mechanism based on the unit costs and volumes delivered will be applied to adjust allowed recovery upwards.

7.34. The outturn and forecast load index reporting tables will ensure investment within the secondary network is undertaken in line with the system need. This will take into account that monitoring and visibility on the secondary network will improve during the price control period.

7.35. At the most remote ends of our network, LV services were frequently looped together to reduce the cost of servicing multiple properties in close proximity. The rate at which these services will need to be unlooped has been increasing due to the additional notifications we are receiving from the connection of LCTs such as EVs and heat pumps. As the DFES predicts in some areas these will be widespread, it now should be considered low regret and least cost to proactively and strategically invest in unlooping ahead of need, where this can be achieved to deliver greater efficiency than a reactive programme.

7.36. For each unlooped service delivered proactively within a programme, we propose for funding to be through a volume driver with a unit cost (see figure 7.5). No ex-ante provision will be requested against this activity.

Figure 7.5 Services uncertainty mechanism proposal

7.37. The proposed upwards-only uncertainty mechanism will be applied annually.

7.38. For services, secondary and primary network expenditure, we propose to employ a Totex Incentive Mechanism when comparing the ex-ante and uncertainty mechanism driven allowances against actual costs incurred and outputs delivered.

7.39. A 50% sharing factor will be applied to the volumes of activity forecast up to the totals within the WPD Best View. An enhanced sharing factor of 75% will be applied to volumes above the Best View, recognising the stretch target of delivering those additional volumes and further incentivising investment towards the enablement of decarbonisation.

7.40. Please refer to Supplementary Annex SA-06a: Load-related expenditure for further detail on our overall approach to load-related expenditure and the volume driver proposal.

Cyber resilience

7.41. Our baseline plan meets the expectations of our stakeholders by improving the resilience of our network to ever evolving and more frequent forms of cyber-attack.

7.42. The Network and Information Systems (NIS) Regulations of 2018 were introduced by the government to increase the overall security and resilience of Operators of Essential Services (OES), such as WPD. However, it is recognised that as our networks become increasingly data-enabled, the requirements for delivery of a cyber resilient network will continue to evolve over time.

7.43. In addition to the baseline revenues requested in our plan, and in line with Ofgem proposals, we expect funding for the changing requirements of cyber needs to be covered by the following mechanisms:

- IT baseline allowances will be subject to the Totex Incentive Mechanism (TIM); OT baseline allowances will be subject to UIOLI (Use it or lose it). If DNOs overspend on UIOLI it is not covered by the TIM, i.e. funded by the DNO entirely.
- There will be outcome based Price Control Deliverables (PCDs) for both cyber resilience IT and OT.
- There will be a mid-period reopener mechanism for cyber resilience activities, encompassing new activities, new risks and threats, new statutory or regulatory requirements.

7.44. We will work with Ofgem between now and our final Business Plan submission in December 2021 to clarify the process, timelines, and granularity of Ofgem's assessment process.

Other reopener mechanisms

7.45. WPD also expects to have access to the following reopener mechanisms in RIIO-ED2 which were outlined by Ofgem in the Sector Specific Methodology Decision (SSMD):

- **Net Zero Reopener:** Ofgem proposed to include a broad scoped RIIO-ED2 reopener mechanism to provide a means to amend the price control in response to the meeting of the net zero carbon targets that have an effect on the costs and outputs of network licensees not otherwise captured by any other RIIO-ED2 mechanism. The mechanism could be used by Ofgem at any time throughout RIIO-ED2, subject to a materiality threshold, triggered by a government change in policy, for example decision on the future of decarbonised heating, or the recommendations of the proposed Net Zero Advisory Group.

- **Streetworks:** Our plan includes the costs associated with known streetworks schemes that are already in effect. Our proposal includes the potential to trigger a reopener where there are significant changes in a local authority's proposals for streetworks or lane rental schemes, which place additional requirements on DNOs, leading to further costs for delivery of our outputs.

- **Environmental:** There are a range of environmental issues currently being discussed across Government and other relevant bodies, which could potentially lead to changes in environmental legislation. These include the treatment of Persistent Organic Pollutants (POPS), Sulfur hexafluoride (SF6) gas, a potential change to the Biocides Directive (use of creosote) and the withdrawal of the Regulatory Position Statements (RPS) 211, which applies to businesses who deal with excavated waste from utilities installation and repair works. All of these could lead to significant additional costs not captured by our current Business Plan proposals. We consider any changes to relevant environmental legislation should be covered by a reopener for RIIO-ED2. We will continue to work with Ofgem on a proposal ahead of our full December Business Plan submission.

- **Coordinated Adjustment Mechanism (CAM):** Ofgem proposed a whole system reopener called the CAM, to enable more coordination between network companies to maximise benefit across the whole energy system. The proposed annual reopener enables outputs and associated revenues to be reallocated from one network company's price control to another network company. WPD expects this to be triggered where there is a transfer of required outputs in RIIO-ED2.

- **Physical Site Security Upgrades (PSUP):** As per Ofgem's proposals for RIIO-T2 and GD2 we propose an uncertainty mechanism be included limited to PSUP related investments due to changes to government policy and/or the Critical National Infrastructure list.

- **Rail Electrification:** Ofgem proposed to retain the RIIO-ED1 reopener that allows DNOs to recover the costs of diverting electricity lines, as a result of Network Rail's electrification programme. We have currently included no certain rail electrification programme in our base plans, but we have identified some potential costs in the East Midlands should the government give the go ahead to extend the Midland Main Line electrification beyond Market Harborough. We will utilise the reopener for these and any similar programmes that arise across our regions.

- **Electricity System Restoration (Black Start) (ESR):** Ofgem proposed a reopener to cover the costs of workload changes in response to changes in the mandatory resilience period or additional activities that may arise from new obligations once the new ESR standard is in place. We do not currently anticipate any such costs, but support the policy for a reopener should this position change.

Other uncertainty mechanisms

7.46. WPD expects to utilise the following proposed uncertainty mechanisms:

- **Indexation on RPEs:** Ofgem proposed in the SSMD that RPEs would be indexed for RIIO-ED2. Our proposals on how this would work with our requested Totex proposals are set out in Chapter 6.
- **Other indexation:** The other significant new indexing proposal for RIIO-ED2 is on the indexing of key financial parameters. The Cost of Debt was indexed in RIIO-ED1. Ofgem proposed the Cost of Equity would also be indexed in RIIO-ED2. WPD supports this proposal, subject to further detailed workings. Please refer to our financing chapter, Chapter 6 for further details.
- **Pass through:** Ofgem determined a number of cost items for RIIO-ED1 that were pass-through costs as they were not costs outside the DNOs control. These costs included Ofgem licence fee costs, business rates, transmission connection point charges, smart meter communication licence and IT costs, ring-fence costs and costs associated with supplier bad-debt. WPD is proposing that these costs, which remain outside our sphere of influence, will continue as pass through costs in RIIO-ED2.

7.47. In addition to these known uncertainty mechanisms, in its SSMD, Ofgem indicated there may be a requirement for further mechanisms, potentially covering the following areas:

- **DSO:** We have developed our Business Plan on the premise that WPD will continue to operate as a single company covering both DNO and DSO activities. Our Business Plan sets out proposals for delivery of our outputs in the most efficient away, as a single organisation. Any changes to existing DSO governance arrangements, which could require further separation of functions, systems and/or data would likely incur higher costs than have not been factored into our RIIO-ED2 Business Plan. If Ofgem proposes any changes to the existing licence arrangements for DSO then we agree an uncertainty mechanism that should be included.
- **Access Significant Code Review:** Ofgem is expected to publish its minded to position on the Access SCR in late June 2021. Our Business Plan proposals have therefore not yet considered this latest position from Ofgem. WPD will review the proposal from Ofgem and will look to consider the proposal ahead of our December RIIO-ED2 Business Plan submission. However, given the timing of the minded-to position, and the potential timing of the final decision, once we have fully considered the latest Ofgem proposal we will consider the need for an additional uncertainty mechanism in our final RIIO-ED2 Business Plan to reflect the latest position on any Access SCR changes.
- **Data and Digitalisation:** As we progress through RIIO-ED2 we expect the requirements of our stakeholders to evolve, resulting in additional requirements for data provision from our networks. Our Business Plan recognises a large element of this change but as proposed by Ofgem in the SSMD, should there be significant changes in the data or digital requirements of the DNOs, we consider this should be covered by an uncertainty mechanism.

Adapting to change

7.48. The UK is experiencing a period of significant change as it works towards a net zero carbon future. As a key player in net zero, we need to react quickly to implement the appropriate solutions as electricity demand changes, and expected increases in heat pumps and electric vehicles materialise. We also need to react to unforeseen circumstances and ensure that we maintain the excellent service that our customers expect.

Track record

7.49. 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.
- Establishing the world's largest EV monitoring scheme - Electric Nation - providing significant insight into the charging behaviours of EV owners.

7.50. 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

7.51. 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.

7.52. 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 customer properties. Essential work on restoring power cuts and cutting trees on the network continued throughout the pandemic.

7.53. In response to the financial hardship experienced by some of our customers, we launched our £1 million 'Community Matters' fund to support vulnerable customers affected by the outbreak.

7.54. During the pandemic, within less than a month we ramped up from 100 to 2,000 home workers with robust IT infrastructure to ensure no loss in productivity or increase in cyber risk. 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.

7.55. We participated in the Supplier Payment deferral scheme, enabling non-investment credit rated electricity suppliers to defer payments during the height of the pandemic.

7.56. 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 attend in person.

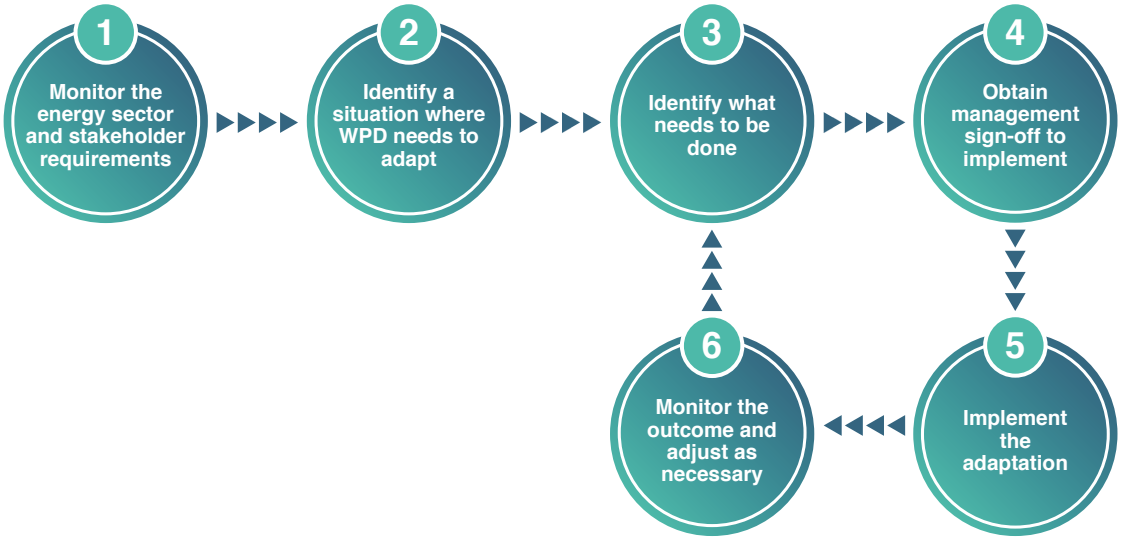
7.57. By continuing to engage regularly throughout the pandemic, and always including questions on the impact of Covid-19 on stakeholder priorities, we have been able to build a continually refreshed understanding of stakeholder views. This has been very important as the impact of the pandemic has shifted, and we consider the enduring impact.

7.58. The learning from the Covid-19 pandemic will be used to prepare us for any similar event that may occur in RIIO-ED2, with protocols that can be put in place quickly and effectively if needed.

Adapting in RIIO-ED2

7.59. As we enter RIIO-ED2, we will be operating in an even more dynamic energy sector, making our ability to respond quickly to challenges even more critical. To do so, WPD has created a simple model (see figure 7.6) to show how we will adapt rapidly to meet the changing needs of our stakeholders and the energy market.

Figure 7.6 WPD's adaptive process



7.60. 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 have a culture 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 ensure we uphold our reputation for adapting effectively and efficiently to change.

Chapter 8

Competition

Chapter 8 Contents

8. Competition

Summary

8.1. WPD supports competition in electricity distribution wherever it can deliver benefits for customers. 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. WPD will continue to explore, beyond traditional solutions, ways to minimise costs through innovation, keeping options open, facilitating non network solutions and competition.

8.3. WPD's purchasing strategy to multi-source goods and services not only protects the business from a single point of failure but also encourages competition, ensuring fit-for-purpose contracting across all sizes of project.

8.4. This chapter explains the different types of competition and our approach to it.

8.5. Further detail on competition is included in Supplementary Annex SA-08: Competition.

Types of competition

Native competition

8.6. Native competition is competition run by Distribution Network Operators (DNOs) within their price control. 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.

8.7. 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 customers, which considers the flexibility in an evolving policy landscape with greater contractual certainty, quality and lower costs.

8.8. WPD's predominantly insourcing model allows us full control of the end-to-end process with our customers with clear lines of ownership and responsibility, allowing us to provide a more effective service for our customers. 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.

8.9. Having delivered such significant competition in RIIO-ED1 to the benefit of customers, our focus will be to maintain and expand these further in RIIO-ED2 as there are limited opportunities for entirely new competition. For example, WPD was the first DNO to seek alternative solutions to traditional network reinforcement of £140 million planned for the final 3 years of RIIO-ED1. We will however continue to engage regularly with stakeholders to ensure we identify, and swiftly act on, any opportunities as they emerge during the RIIO-ED2 period.

8.10. 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.

8.11. 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

8.12. Early competition is competition that occurs prior to the detailed design, surveying and consenting phases of a large project.

8.13. We do not have any specific projects identified that exceeded or have the potential to exceed the £50 million 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

8.14. Late competition is when 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.

8.15. We do not have any projects identified in our RIIO-ED2 plan that either exceed, or have the potential to exceed the £100 million identified by Ofgem for late competition.

8.16. We will continue to ensure and demonstrate that all investments, regardless of size, achieve the best outcome for customers through the implementation of our plan.

8.17. WPD was the first DNO to commit to a six monthly procurement cycle for flexibility services through our 'Flexible Power' brand.

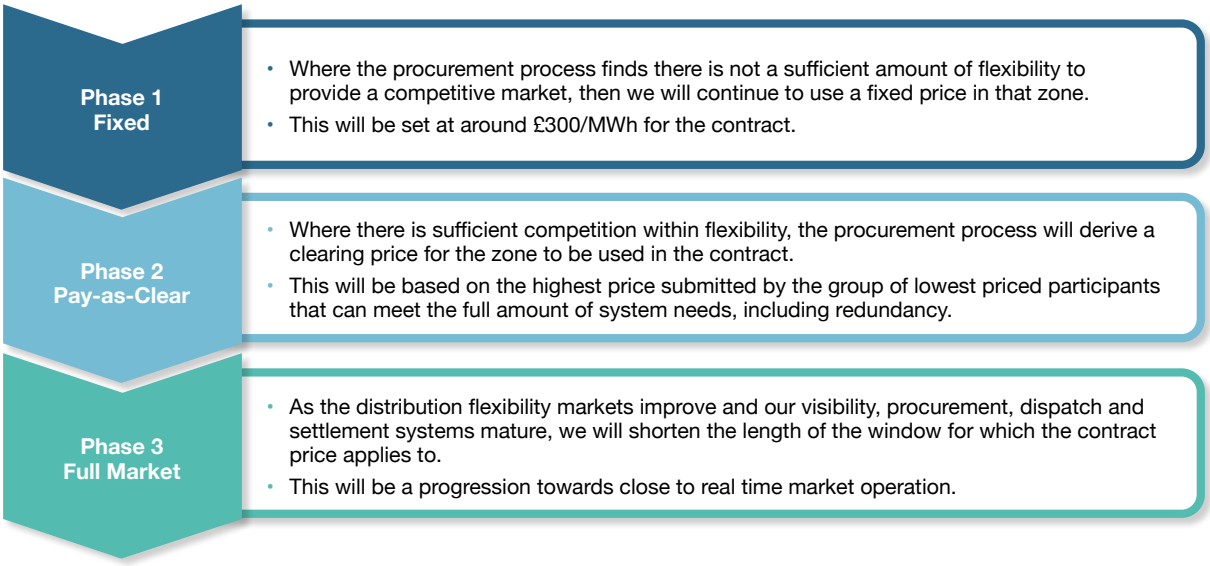
How we are facilitating competition with flexibility

8.18. Using flexibility services we aim to build in competition, both against alternative options for managing constraints (such as reinforcement), as well as between providers. This aims to find the optimal solution for the network.

8.19. If flexibility has been selected as the optimal choice, a formal process is used to tender for providers. We currently utilise a Dynamic Purchasing System to procure openly and competitively against our requirements. Before awarding contracts, the Distribution Network Options Analysis (DNOA) process will be triggered to ensure value is still being delivered to customers, given the final commercial terms.

8.20. Given the geographic nature of distribution flexibility services we have adopted a pricing strategy to manage the growth of provision to create longer term competition. This builds from fixed pricing in emerging markets, out to full market competition in more established ones. The three phases are shown in figure 8.1.

Figure 8.1 Flexibility services pricing strategy



8.21. As we currently operate a fixed price or pay-as-clear pricing structure, there is no differentiation in price between flexibility service providers (FSPs). However, we do optimise our instructions, instructing in an order which most closely aligns to the required flexibility. As our operational experience increases, we will use this information to provide feedback to FSPs in areas and support them to maximise their value to the system. As our procurement strategy matures towards full market-led pricing, the pricing submitted for each flexibility asset will be the dominant factor for consideration. In alignment with the Open Networks project our instructions are led by the factors in figure 8.2.

Figure 8.2 Factors affecting flexible services instructions

Principle	Description	In Practice
Security	The needs of the system will be met using flexibility in such a way that security of supply is maintained.	• DSO/DNO requirements: Conform with applicable standards with an appropriate management of risk.
Cost	Flexibility will be operated to meet system need at the minimum level of cost.	• Lowest prices per MWh and minimum levels of over procurement. • Flexibility will be procured in cost order and will not unduly discriminate against any provider.
Operability	DSOs will seek to instruct services that offer compatible levels of operability.	• Provider characteristics: availability, reliability, run times, response times etc. • Accepted offers need to match/partially match requirements.

8.22. An informed market is essential to fostering competition. As such we seek to publish as much market information on our requirements as possible. This includes:

- Details on our processes for flexibility procurement, through the documentation on the Flexible Power website, as well as our distribution flexibility service procurement statement.
- Details on our requirements through the Network Flexibility Map, Flexible Power Map, Procurement Documents and DNOA report.
- Details on procurement results, through Procurement Results reports & formal procurement Contract Award Notifications. This will be supplemented by Distribution Flexibility Services Procurement Report.
- Details on our operational requirements through the provision of monthly forecasts.

Purchasing contractual arrangements

Background

8.23. Our purchasing team manages contracts valued at around £1.9 billion which fall into three categories: a) Services – including Network Operations, Transport, IT and Facilities, b) Major Projects and c) Goods & Plant. WPD uses the Achilles Utilities Vendor Database to ensure consistency when tendering for contracts.

Tendering activities

8.24. One of the roles of the purchasing team is to deliver the most advantageous contracts for WPD both strategically and commercially. In all tendering activities, the team interacts with a company appointed Senior Nominated Person (SNP), who is sufficiently experienced in the relevant field of work to scope and specify the requirements of the contract. The specification must satisfy the business objectives, the requirement for the goods or services, consider appropriate accreditations and safety criteria, or legislation. The SNP is often assisted by a member of the policy team or safety team to ensure health and safety, environment and technical knowledge is also applied to the contract specification.

Purchasing objectives

8.25. The purchasing team procures materials and services that allow the business to operate a high quality reliable, efficient network while ensuring compliance with EU Directives. Taking into account current and future business requirements, the team has developed its objectives in line with the following key business objectives of the RIIO-ED2 plan.

8.26. To support the continuity of supply, the team considers the appropriate contract model, taking into account the strength of the supply chain and availability of resources. For each tender, the SNP and buyer apply contract specific award criteria using a system of scored weighting to ensure all requirements are suitably tested. This includes looking at technical fit, service levels, delivery, environmental issues, sustainability, financial and commercial risks.

8.27. The purchasing team only works with reputable suppliers and contractors to ensure our contractual arrangements reflect our principles and controls and are commercially, ethically and morally aligned with WPD's values.

8.28. Our purchasing strategy to multi-source goods and services not only protects the business from a single point of failure but also encourages competition. Where appropriate, WPD tenders goods and services through 'Lots' which service the four licence areas or can be split into smaller geographical locations. This approach helps to secure the most economically advantageous contracts that deliver financial benefits to both WPD and our customers.

8.29. To support the growing need for cyber secure business IT systems, the purchasing team will ensure cyber security principles and controls are embedded into the supply chain for all areas of WPD, including IT and WPD Telecoms.

Chapter 9

Financing our plan

Chapter 9 Contents

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. Ofgem's current limited proposals for the RIIO-ED2 incentive package do not present a range of opportunities linked to customer deliverables and is largely focussed on downside adjustments to returns. The values in this Business Plan do not, therefore, include any incentive revenues. However, incentive revenues are an important part of a RIIO price control, and the associated financial package, and key to financeability.

9.3. Our proposed RIIO-ED2 financing package will provide the funding to deliver these outputs along with the returns required to compensate investors for risks associated with delivering the agreed outputs over the next five years.

9.4. Our proposal balances the need to attract the investment required to deliver the RIIO-ED2 plans developed with stakeholders, whilst keeping customer bills broadly stable compared to RIIO-ED1 levels.

9.5. The content of this chapter builds on Ofgem's Finance Annex of the Sector Specific Methodology Decision (SSMD), which was published on 11 March 2021, and chapter 9 of our second Business Plan, published on 24 March 2021. Further detail on financing our plan is included in Supplementary Annex SA-09: Financing our plan.

Financial projections

9.6. The preceding chapters set out the details of our RIIO-ED2 expenditure plans, which have been co-developed with our stakeholders. The following tables set out our detailed projections of how WPD's Best View translates into the revenues we will recover from customers to fund this expenditure, under our proposed financing package.

9.7. We have used WPD's Best View of expenditure to determine our forecast revenues as we believe this is the most likely outcome during RIIO-ED2. Our proposed reinforcement volume driver will adjust the Totex and hence associated revenue in line with actual outturn reinforcement expenditure. (see figures 9.1 to 9.5).

Figure 9.1 West Midlands' revenue requirements RIIO-ED2

WPD Financial Projections for RIIO-ED2 - Revenue requirement (£m in 2020/21 prices)						
West Midlands Total	**2023/24**	**2024/25**	**2025/26**	**2026/27**	**2027/28**	**Total**
Fast pot costs	89	91	95	91	98	**464**
Depreciation on slow pot costs (RAV)	196	194	193	189	185	**957**
Pension deficit repair payments	28	0	0	0	0	**28**
Rates, licence fees and smart metering	36	36	36	36	36	**178**
Transmission exit charges	9	9	9	9	9	**47**
Financing costs	102	102	102	102	102	**509**
Equity issuance allowance	7	0	0	0	0	**7**
Taxation allowance	45	40	39	34	34	**192**
Total	**511**	**472**	**474**	**462**	**463**	**2,383**

Figure 9.2. East Midlands' revenue requirements RIIO-ED2

WPD Financial Projections for RIIO-ED2 - Revenue requirement (£m in 2020/21 prices)						
East Midlands Total	**2023/24**	**2024/25**	**2025/26**	**2026/27**	**2027/28**	**Total**
Fast pot costs	97	100	103	101	100	**501**
Depreciation on slow pot costs (RAV)	192	192	192	191	189	**957**
Pension deficit repair payments	30	0	0	0	0	**30**
Rates, licence fees and smart metering	35	35	35	34	34	**173**
Transmission exit charges	9	9	9	9	9	**46**
Financing costs	102	103	105	105	105	**520**
Equity issuance allowance	7	0	0	0	0	**7**
Taxation allowance	44	39	37	33	30	**183**
Total	**515**	**478**	**480**	**474**	**469**	**2,417**

Figure 9.3 South Wales' revenue requirements RIIO-ED2

WPD Financial Projections for RIIO-ED2 - Revenue requirement (£m in 2020/21 prices)						
South Wales Total	**2023/24**	**2024/25**	**2025/26**	**2026/27**	**2027/28**	**Total**
Fast pot costs	55	58	57	52	54	**276**
Depreciation on slow pot costs (RAV)	89	89	89	89	88	**443**
Pension deficit repair payments	11	0	0	0	0	**11**
Rates, licence fees and smart metering	16	16	16	16	16	**81**
Transmission exit charges	8	8	8	8	8	**40**
Financing costs	49	51	52	53	54	**259**
Equity issuance allowance	3	0	0	4	0	**8**
Taxation allowance	21	18	16	16	14	**83**
Total	**252**	**240**	**238**	**238**	**233**	**1,201**

Figure 9.4 South West's revenue requirements RIIO-ED2

WPD Financial Projections for RIIO-ED2 - Revenue requirement (£m in 2020/21 prices)						
South West Total	**2023/24**	**2024/25**	**2025/26**	**2026/27**	**2027/28**	**Total**
Fast pot costs	81	84	90	86	83	**424**
Depreciation on slow pot costs (RAV)	131	131	131	132	131	**657**
Pension deficit repair payments	20	0	0	0	0	**20**
Rates, licence fees and smart metering	23	23	23	23	23	**116**
Transmission exit charges	6	6	6	6	6	**28**
Financing costs	75	78	80	82	84	**399**
Equity issuance allowance	5	0	0	7	0	**11**
Taxation allowance	30	26	25	25	21	**127**
Total	**372**	**349**	**355**	**360**	**348**	**1,783**

Figure 9.5 WPD's revenue requirements RIIO-ED2

WPD Financial Projections for RIIO-ED2 - Revenue requirement (£m in 2020/21 prices)						
WPD Total	**2023/24**	**2024/25**	**2025/26**	**2026/27**	**2027/28**	**Total**
Fast pot costs	322	334	344	330	335	**1,665**
Depreciation on slow pots costs (RAV)	608	606	606	601	594	**3,014**
Pension deficit repair payments	89	0	0	0	0	**89**
Rates, license fees and smart metering	110	109	110	109	109	**547**
Transmission exit charges	32	32	32	32	32	**161**
Financing costs	328	334	340	342	344	**1,689**
Equity issuance allowance	21	0	0	11	0	**32**
Taxation allowance	140	123	115	109	99	**586**
Total	**1,651**	**1,539**	**1,547**	**1,534**	**1,513**	**7,783**

Business financing objectives

9.8. Investment in electricity distribution networks is essential to maintain the standards of performance our customers, both current and future, expect in terms of reliability, security of supply and driving the UK's transition to net zero. Our Business Plan sets out a need for continued and significant investment in our electricity distribution network. Ofgem's statutory duty to ensure that efficient companies can finance their activities is key to attracting this future investment[1].

9.9. As part of developing our Business Plan, we sent questionnaires to our core banks and bond investors which included questions that related to the availability of capital. The general consensus was that funding of this magnitude would be available to WPD, although some reservations were expressed in relation to concerns that a drop in ratings as a result of RIIO-ED2 determinations would impact such availability of capital.

Key financial ratios

9.10. Ofgem has specified that it will be reviewing ratios used by Ratings Agencies to evaluate credit ratings, as part of its evaluation of our Business Plan. We have also used these ratios to assess whether our draft Business Plan is financeable. 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;
- RCF/Net Debt.

9.11. 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.

[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-2: Further Information; Ofgem slide pack, 26 March 2019.

[6] The most significant issues identified so far are:

- Ofgem's BPFM is using an average of up to 3 historical years' ratios when assessing Adjusted Interest Cover Ratio (AICR), Net debt to RAV, Funds From Operations (FFO)/Net debt and Retained Cash Flow (RCF)/Net debt to derive the rating for each year in RIIO-ED2. This does not follow the approach taken by the rating agencies and has the effect of distorting the outcome of the financeability analysis by not giving equal weight to the ratios in each year of RIIO-ED2. Ofgem has acknowledged this issue and the resulting limitations this brings to its current financeability analysis.
- Ofgem's BPFM assumes an equity injection in RIIO-ED2 as Ofgem's notional gearing assumption reduces from 65% in RIIO-ED1 to 60% in RIIO-ED2, which is necessary to perform the notional modelling. However, Ofgem's BPFM assumes further equity injections are made where gearing increases to 5% above the notional 60% level during the RIIO-ED2 period meaning the full financeability downsides from higher gearing is not properly considered.
- Ofgem is not using companies' forecast of the cost of new debt from the BPDT in any modelling scenarios but rather using Ofgem's own cost of debt forecast applied to volumes of new debt. Further, in the Actual (BPDT) financeability scenario, Ofgem applies its own cost of debt to its own calculation of the value of new debt required. This does not capture a true actual financeability scenario which reflects the DNOs' actual position.

9.12. We consider Ofgem's approach to financeability and follow rating agency methodologies as the minimum financeability requirements. Later in this chapter we set out our further financeability considerations and stress tests.

9.13. Ofgem has also stated that licences will continue to include a requirement to maintain an investment grade credit rating on an actual structure basis. The definition of Investment Grade included in WPD's current licence is BBB- or higher by Fitch Ratings Ltd or Standard & Poor's Rating Group, Baa3 or higher by Moodys Investor Services or BBB (low) or higher by DBRS Rating Limited.

9.14. Ofgem's Business Plan Financial Model (BPFM) is intended to generate the credit rating ratios for companies and Ofgem to use when assessing financeability. However, we have identified a number of material issues with Ofgem's current draft BPFM methodology which must be resolved ahead of our December Business Plan submission[6]. As such there are significant limitations for the use of Ofgem's current BPFM at this stage in the process.

9.15. We consider that financeability must be considered from a wider perspective, and critical decisions such as the financing package, should not be based simply on the minimum level of funding which does not "break" a company or based solely on mechanistic outcomes of an individual model, but built up using a wider framework of evidence and regulatory precedent. The results of our stakeholder engagement with bond and bank investors clearly demonstrated that predictability of the regulator's methodology and transparency of the regulatory process are key factors that investors take into account when investing in the UK Electricity Distribution sector.

Target ratings

9.16. Ofgem stated in the RIIO-2 SSMD for Gas and Transmission companies that it would not target a particular rating, but that this was a decision for company boards[7].

9.17. We are targeting a credit rating of BBB+/Baa1 for the notional company in 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. The use of this index appears appropriate, however the use of it does create 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. As no determination has been stated for rating in RIIO-ED2, WPD considers it appropriate for a company to target a rating of BBB+/Baa1 to maintain consistency with the RIIO-ED1 approach.
- In Ofgem's RIIO-2 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.[8]"
- A rating of BBB+/Baa1 should allow 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[9] 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. Further, the CMA performed its own financeability analysis with reference to a Baa1 target in its Provisional Findings[10].
- 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.

Ofgem's working assumptions

9.18. Ofgem set out it's working assumptions for the RIIO-ED2 Electricity Distribution price control in the March 2021 Sector Specific Methodology Decision document[11], which included:

[7] RIIO-2 Sector Specific Methodology Decision – Finance, 24 May 2019, p. 92 (para 4.27).
[8] RIIO-2 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
[9] 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
[10] 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
[11] RIIO-ED2 Sector Specific Methodology Decision: Annex 3 Finance, 11 March 2021.

Figure 9.6 Ofgem Sector Specific Methodology Decision working assumptions

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

9.19. Ofgem's document "Financeability Assessment for RIIO-2: Further Information"[12] 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

9.20. We note above that Ofgem considers that refinancing existing debt is an option available to licensees to resolve potential financeability issues. Whilst it is true that current fixed debt rates are considerably lower than historical values, 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 Chapter 2, the RIIO-ED1 Cost of Debt allowance for WPD 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 have done so wherever possible. We regularly look at refinancing existing (more expensive) debt, but this has not been an efficient option in RIIO-ED1 nor will it inRIIO-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, then approaches other than refinancing expensive debt should be considered.

9.21. We want to ensure that our Business Plan is financeable without the need to make changes to asset lives, which Ofgem has previously stated it was not looking to do for RIIO-ED2, and would also undermine its strong track record of regulatory certainty. We set out further detail on this issue in paragraphs 9.58 – 9.62.

Financial ratios used in financeability analysis

9.22. Each rating agency uses a slightly different methodology to rate companies. However, the fundamental ratios used will be common to all the rating agencies. Moodys methodology is the most explicit in terms of ratios (although this only accounts for 40% of the weighting of their rating) and we set out below the credit ratio limits used by Moodys when assessing DNOs. We will therefore target credit ratios at all four DNOs, in the long run, that are good investment grade in order to provide resilience against macro downside movements.

Figure 9.7 Financial ratios

Financial ratios		
Primary focus	**A**	**Baa1 - Baa2**
Net debt/Regulated asset value (RAV)	≤68%	68% - 85%
Adjusted interest cover ratio (AICR)	≥1.6x	1.6x - 1.2x
Secondary focus	**A**	**Baa**
Funds from operations (FFO) to Interest	≥4x	2.8x - 4x
FFO/Net debt	≥18%	11% - 18%
Retained cash flow (RCF)/Net debt	≥14%	7% - 14%

Source: Boundaries for primary focus ratios from Moodys/Ofgem UK Energy Networks webinar[13] ; boundaries for secondary focus ratios as published in Moodys 'Regulated Electric and Gas Networks methodology scorecard published in March 2017[14].
Note: Moodys states that a deterioration in the secondary ratios will not, in isolation, result in downward rating pressure.

9.23. As stated above, credit rating ratios should not be the sole influence on the RIIO-ED2 financing package. Credit rating agencies consider other factors, such as the regulatory environment, and the scale and complexity of investment programmes. We have also considered this as part of our financing considerations.

[12] Financeability Assessment for RIIO-2: Further Information; Ofgem slide pack, 26 March 2019.
[13] Slide 16, Moodys Investors Service, UK Energy Networks, EMEA infrastructure Finance Team, 9 September 2020.
[14] Moodys Investors Service, Rating Methodology, Regulated Electric and Gas Networks, March 16, 2017.

Financial ratios calculated using Ofgem's working assumptions

9.24. As Ofgem requires, we have modelled the outcome of the ratios above, using Ofgem's working financial assumptions and the expenditure set out in this Business Plan. Note that the ratios set out in the following tables use our 'best case' view of RIIO-ED2 expenditure. Given the issues with the Actual financeability scenario modelling set out above, we include the results of modelling Ofgem's Base scenario with Notional financeability settings. As in RIIO-ED1, WPD will ensure our gearing is aligned to Ofgem's notional 60% gearing level every year. However, Ofgem's notional modelling approach only re-sets to 60% if gearing exceeds 65%:

Figure 9.8 West Midlands' financial ratios

Financial ratios under Ofgem assumptions West Midlands	2023/24	2024/25	2025/26	2026/27	2027/28	RIIO-ED2 Average
Net debt/Regulated asset value (RAV)	60.2%	60.7%	61.3%	61.8%	62.5%	**61.3%**
Adjusted interest cover ratio (AICR)	1.40	1.41	1.42	1.44	1.46	**1.43**
Funds from operations (FFO) to interest	4.08	4.01	3.99	3.96	3.94	**3.99**
FFO/Net debt	13.4%	12.8%	12.2%	11.6%	10.9%	**12.2%**
Retained cash flow (RCF)/Net debt	11.0%	10.3%	9.8%	9.2%	8.5%	**9.8%**

Figure 9.9 East Midlands' financial ratios

Financial ratios under Ofgem assumptions East Midlands	2023/24	2024/25	2025/26	2026/27	2027/28	RIIO-ED2 Average
Net debt/Regulated asset value (RAV)	60.6%	61.5%	62.4%	63.2%	63.9%	**62.3%**
Adjusted interest cover ratio (AICR)	1.39	1.39	1.39	1.41	1.42	**1.40**
Funds from operations (FFO) to interest	3.99	3.90	3.85	3.82	3.81	**3.87**
FFO/Net debt	12.9%	12.2%	11.6%	11.0%	10.5%	**11.7%**
Retained cash flow (RCF)/Net debt	10.5%	9.8%	9.2%	8.7%	8.1%	**9.3%**

Figure 9.10 South Wales' financial ratios

Financial ratios under Ofgem assumptions South Wales	2023/24	2024/25	2025/26	2026/27	2027/28	RIIO-ED2 Average
Net debt/Regulated asset value (RAV)	61.6%	63.4%	64.8%	65.8%	61.1%	**63.3%**
Adjusted interest cover ratio (AICR)	1.38	1.36	1.35	1.35	1.49	**1.39**
Funds from operations (FFO) to interest	3.84	3.65	3.52	3.47	3.76	**3.65**
FFO/Net debt	12.1%	11.0%	10.2%	9.7%	10.2%	**10.6%**
Retained cash flow (RCF)/Net debt	9.7%	8.7%	7.9%	7.4%	7.8%	**8.3%**

Figure 9.11 South West's financial ratios

Financial ratios under Ofgem assumptions South West	2023/24	2024/25	2025/26	2026/27	2027/28	RIIO-ED2 Average
Net debt/Regulated asset value (RAV)	61.4%	62.9%	64.6%	65.8%	61.2%	**63.2%**
Adjusted interest cover ratio (AICR)	1.42	1.39	1.38	1.37	1.51	**1.42**
Funds from operations (FFO) to interest	3.79	3.61	3.48	3.41	3.68	**3.59**
FFO/Net debt	11.9%	10.9%	10.0%	9.4%	9.9%	**10.4%**
Retained cash flow (RCF)/Net debt	9.5%	8.6%	7.7%	7.1%	7.5%	**8.1%**

9.25. The overall credit ratings above are being generated by Ofgem's BPFM. However, we note that the Adjusted Interest Cover Ratio (AICR) from Ofgem's model for each of the WPD DNOs is a value of 1.4 on average over RIIO-ED2 which, according to the Moodys ratios we set out above, would place all 4 WPD DNOs in the mid-range of the Baa2-Baa1 category. This is considerably lower than the credit rating being generated by Ofgem's model, and below WPD's target of ratios at the top of the range of the Baa values shown in the table of Moodys ratios.

Ofgem's suggested set of common stress test scenarios

9.26. In its Sector Specific Methodology Decision 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[15]: These stress tests were reiterated by Ofgem in the RIIO-ED2 SSMD.

Figure 9.12 Ofgem suggested scenarios from the Sector Specific Methodology Decision

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%*

* 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.

9.27. The full results of these stress tests are set out in Appendix A01 to the Finance Annex of this Business Plan, alongside notes regarding the shortcomings in Ofgem's modelling of several of these scenarios.

9.28. 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 review to measure the financeability of the plan are the credit ratio limits that we must meet. However, alongside these calculated metrics, it should be noted that the Return on Regulatory Equity (RoRE) is a key measure for investors and it is important that our Business Plan is both financeable and, essentially, attractive enough to investors to generate the necessary investment.

9.29. Moodys published approach to assessing credit risk for regulated electricity and gas networks makes it clear that ratios are only one of five factors it considers important, and that leverage and coverage ratios only hold 40% of the weighting of these factors in its consideration. Evidence from our investor survey includes statements from investors that overly harsh judgment on allowed returns for the distribution companies may limit investor appetite. Investors take into consideration, the risk of adverse regulatory tightening, especially on allowed return, and a less favourable regulatory environment as significant risks facing the UK Electricity Distribution sector.

9.30. In addition, Ofgem's approach to the RIIO-ED2 financial package does not recognise the importance of incentives in the price control framework, and the weighting that rating agencies and investors place on it. Ofgem's current limited proposals for the RIIO-ED2 incentive package do not present a range of opportunities linked to customer deliverables and is largely focussed on downside adjustments to returns.

[15] Paragraph 4.80 and table 19, p.96, RIIO-2 Sector Specific Methodology Decision – Finance, 24 May 2019.

Outcome of Ofgem stress test scenarios

9.31. We have not included the results of Ofgem's stress test scenarios in this document at this stage. As flagged, there are a number of significant issues with the current models issued by Ofgem and the results are not meaningful at this stage.

9.32. To comply with the Business Plan guidance we have included the results of Ofgem's stress test scenarios in our plan. The full details are included in Appendix A01 to the Finance annex of this Business Plan.

9.33. It is important to recognise the significant additional risks WPD would be taking on with the high level of expenditure we have proposed which is subject to an uncertainty mechanism in RIIO-ED2 in response to stakeholder feedback and the resulting increased likelihood that additional allowances to recover expenditure are not received, resulting in a Totex overspend against allowances, and the consequent impact on financeability.

Any additional stress tests WPD considers are required at this stage

9.34. We consider that the following additional scenarios should also be considered:

- Evaluation of financeability under our best case scenario, in addition to our Base case – i.e. including/excluding variant costs.
- Evaluation of financeability under a range of sharing factors between 50% and 80% for Totex under/overspends.
- Evaluation of the Ofgem sensitivity scenarios using WPD's proposed financial assumptions (which exclude any outperformance).

Best case scenario

9.35. Chapter 7 sets out the level of expenditure under the uncertainty mechanisms WPD is proposing which takes us to our Best View of expenditure. Our Business Plan facilitates the government's net zero targets. Whilst our Base View presents the lowest required investment to meet net zero, based on our intensive stakeholder engagement process, our Best View results in an additional £473 million which stakeholders have told us they consider to be the most appropriate level of investment. As a result, we consider that the Best View represents our most likely level of expenditure necessary to meet our stakeholder required outputs and this higher level of investment will result in more financeability challenges. It is therefore critical that financeability assessment is done on the Best case, and the ratios set out above use WPD's Best case expenditure.

Sharing factors

9.36. The sharing factors are still being considered by Ofgem and we expect further clarification later this year, which we then reflect in our December update. The uncertainty around the sharing factor carries a level of risk which should be considered in financeability modelling.

WPD's financing proposals

9.37. In light of the above, our proposed financing assumptions in the following section will ensure that we are able to finance the significant investment required to address the challenges RIIO-ED2 will bring, including the transition to net zero, whilst addressing the risks and uncertainty within the RIIO-ED2 price control.

WPD's proposed assumptions, having evaluated Ofgem's SSMD Finance Annex proposals

9.38. WPD is proposing our own set of financing assumptions for RIIO-ED2 and we include an overview of these in this chapter. Further information is included in the Finance Annex and Appendices of this Business Plan.

Cost of debt

9.39. We are not proposing a fundamental alternative to Ofgem's Cost of Debt working assumption at this stage. We note, however, that further work is required, particularly in the area of additional costs of borrowing and small company premium. In Appendix A02 of our Finance annex we include a NERA report commissioned by the ENA which provides evidence that additional costs of borrowing are in the range of 38-48bps, compared to Ofgem's 25 bps assumption, with an additional 6 bps required to reflect the small company premia licensees face[16].

[16] Additional costs of borrowing and Small Company Premium at RIIO-ED2, NERA, 15 June 2021.

9.40. In relation to cost of debt, we also note that Ofgem's proposed switch from using the A and BBB iboxx indices to the iboxx utilities index has introduced a risk that the average rating of this index will no longer reflect the ratios used in Ofgem's financeability assessment, and the associated risk that the cost of debt may therefore no longer be adequate. It is vital this additional risk is recognised by ensuring adequate headroom in any financeability assessment.

Cost of equity

9.41. WPD commissioned Frontier Economics to provide an estimate for the range of our cost of equity over RIIO ED2, which has been considered as part of our overall cost of capital estimate. Frontier's report is presented in Appendix A03 to the Finance Annex[17]. In summary, we consider that the appropriate Cost of Equity for RIIO-ED2 is 5.8%. This broadly aligns with the bottom of the range determined by Oxera in their report commissioned for the ENA which is presented in Appendix A04 to the Finance Annex.

9.42. We consider that the cost of equity Ofgem is proposing is significantly below contemporaneous market evidence, as supported by both the Frontier and Oxera reports. Oxera's report for the ENA[18] concludes that Ofgem has made errors that result in a significant underestimate of the cost of equity, specifically:

- Ofgem's estimate of the risk free rate using spot yields on government bonds violates the assumption that investors can borrow and lend at the RfR as non-government investors cannot borrow at such rates;
- In estimating Total Market Returns (TMR), Ofgem uses unadjusted estimates of historical CPI, creating a series of inflation data that is inconsistent across time, and Ofgem uses geometric averaging with a subjective uplift to estimate the arithmetic average TMR;
- In addition to mathematical errors in the debt beta calculation, Ofgem/CEPA misrepresent debt beta arguments and incorrectly place greater weight on the evidence of UK water companies than European energy networks.

Outperformance adjustment

9.43. As we have proposed in all our responses to Ofgem's methodology consultation for RIIO-2, we disagree with Ofgem's proposed reduction of 25 bps to the cost of capital for future outperformance. We believe companies should always strive for efficiency and innovation, particularly at such a critical time in the net zero transition, and there are key economic arguments that a regulator should 'aim up' when setting the cost of capital to ensure that the task is achieved. This is expanded in the Frontier paper appended to our Business Plan[19]. These include:

- Aiming up is an optimal regulatory response to the uncertainty in estimating the cost of equity; the consequences arising from setting the allowed return too low are far greater than the consequences of setting it too high.
- Aiming up is common practice in UK regulatory regimes.
- The consumer benefit of under-remuneration in the form of a lower allowed return may easily be more than offset by the cost of only slightly worse quality of service as a result of under investment.

9.44. The CMA has also reaffirmed its commitment to aiming up in its recent findings on the price controls for water companies, where it stated that a cost of equity 0.25% above the mid-point of its range of possible estimates was needed to secure finance and to promote investment in the sector in the long-term[20].

9.45. Considering all these factors outlined above, WPD's proposed financial parameters for RIIO-ED2 are:

Figure 9.13 WPD's proposed financial parameters

Parameter	WPD proposed financial parameters, CPIH real
Gearing	60%
Cost of Debt	2.087% average for 2023/24-2027/28 period
Cost of Equity	5.8% average for 2023/24-2027/28 period
Cost of Capital	3.572% average for 2023/24-2027/28 period

Cost of equity calculation

9.46. We have based our Cost of equity assumption above based on the findings in Frontier's report, also noting that our proposed cost of equity broadly aligns to the bottom of the range in the cost of equity report prepared by Oxera for the ENA, also attached at Appendix A04 to the Finance Annex of this Business Plan[21].

[17] WPD Cost of equity, Frontier Economics, May 2021.
[18] The cost of equity for RIIO-ED2, Prepared for Energy Networks Association, Oxera, 4 June 2021.
[19] Further analysis of Ofgem's proposal to adjust baseline returns, A report prepared for the ENA, Frontier Economics, September 2020.
[20] 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.
[21] The cost of equity for RIIO-ED2, Prepared for Energy Networks Association, Oxera, 4 June 2021.

Figure 9.14 WPD's cost of equity components

WPD Cost of equity components	Low	High
Notional gearing	60%	60%
Observed gearing	50%	45%
Risk-free-rate	-1.6%	-0.9%
Equity risk premium	8.2%	8.3%
Total market return	6.6%	7.4%
Unlevered beta	0.3	0.4
Debt beta	0.1	0.1
Asset beta	0.4	0.4
Equity beta	0.7	0.9
Post-tax cost of equity	**4.33%**	**6.45%**
Mid-point	**5.4%**	
Aiming up	**0.4%**	
Point estimate	**5.8%**	

9.47. The detail behind the above parameters is set out in Frontier's report, however we note the following key assumptions:

- The calculation of the risk free rate is in line with the recent CMA PR19 redetermination, considering both Bank of England index linked gilts and corporate bonds using the iBoxx AAA index to provide a lower and upper bound, both averaged over a 6-month period.
- The range for Total market return has been calculated using the historical ex post approach, considering a number of averaging methods, holding periods and two methods for deflating nominal historical returns.
- The lower bound for unlevered beta is based on the GB water networks which tend to be exposed to less risk than energy networks (as per the CMA PR19 redetermination); the upper bound is based on National Grid and other European comparators.
- Debt beta assumptions are per the CMA PR19 decision.

9.48. We asked NERA to review WPD's financeability under WPD's scenarios set out above, and to perform stochastic analysis to assess the impact of a range of different scenarios on the credit rating of WPD's licensees.

9.49. The key results of the financeability assessment using WPD's parameters and scenarios above are set out in the following tables. NERA's full report is included in Appendix A05 to the Finance Annex of this Business Plan.

9.50. Outcomes under WPD's own scenario, generated from Ofgem's financial model, are presented below, noting the shortcomings set out above. We will continue to work with Ofgem to resolve the issues with the BPFM and will include a full assessment, which we are satisfied aligns with our internal modelling, in our December Business Plan.

Figure 9.15 Financial ratios under WPD assumptions West Midlands

Financial ratios under WPD assumptions West Midlands	2023/24	2024/25	2025/26	2026/27	2027/28	RIIO-ED2 Average
Net debt/Regulated asset value (RAV)	65.1%	61.0%	62.1%	63.1%	64.3%	**63.1%**
Adjusted interest cover ratio (AICR)	1.58	1.49	1.46	1.45	1.42	**1.48**
FFO to interest (including accretions)	3.89	3.92	4.13	4.04	3.90	**3.97**
FFO/Net debt	13.5%	13.3%	12.3%	11.5%	10.7%	**12.3%**
Retained cash flow (RCF)/Net debt	10.4%	9.6%	8.7%	8.1%	7.4%	**8.8%**

Figure 9.16 Financial ratios under WPD assumptions East Midlands

Financial ratios under WPD assumptions East Midlands	2023/24	2024/25	2025/26	2026/27	2027/28	RIIO-ED2 Average
Net debt/Regulated asset value (RAV)	65.5%	61.5%	62.5%	63.5%	64.5%	**63.5%**
Adjusted interest cover ratio (AICR)	2.06	2.04	2.17	2.03	1.92	**2.04**
FFO to interest (including accretions)	4.94	4.97	4.96	4.64	4.37	**4.78**
FFO/Net debt	13.2%	13.3%	13.1%	12.2%	11.4%	**12.6%**
Retained cash flow (RCF)/Net debt	9.5%	9.0%	8.9%	8.2%	7.6%	**8.7%**

Figure 9.17 Financial ratios under WPD assumptions South Wales

Financial ratios under WPD assumptions South Wales	2023/24	2024/25	2025/26	2026/27	2027/28	RIIO-ED2 Average
Net debt/Regulated asset value (RAV)	65.3%	61.9%	63.7%	64.6%	65.9%	**64.3%**
Adjusted interest cover ratio (AICR)	2.25	1.97	1.69	1.78	1.60	**1.86**
FFO to interest (including accretions)	5.15	4.85	4.23	4.16	3.88	**4.45**
FFO/Net debt	13.6%	12.7%	11.3%	11.1%	9.9%	**11.7%**
Retained cash flow (RCF)/Net debt	10.3%	8.9%	7.7%	7.6%	6.6%	**8.2%**

Figure 9.18 Financial ratios under WPD assumptions South West

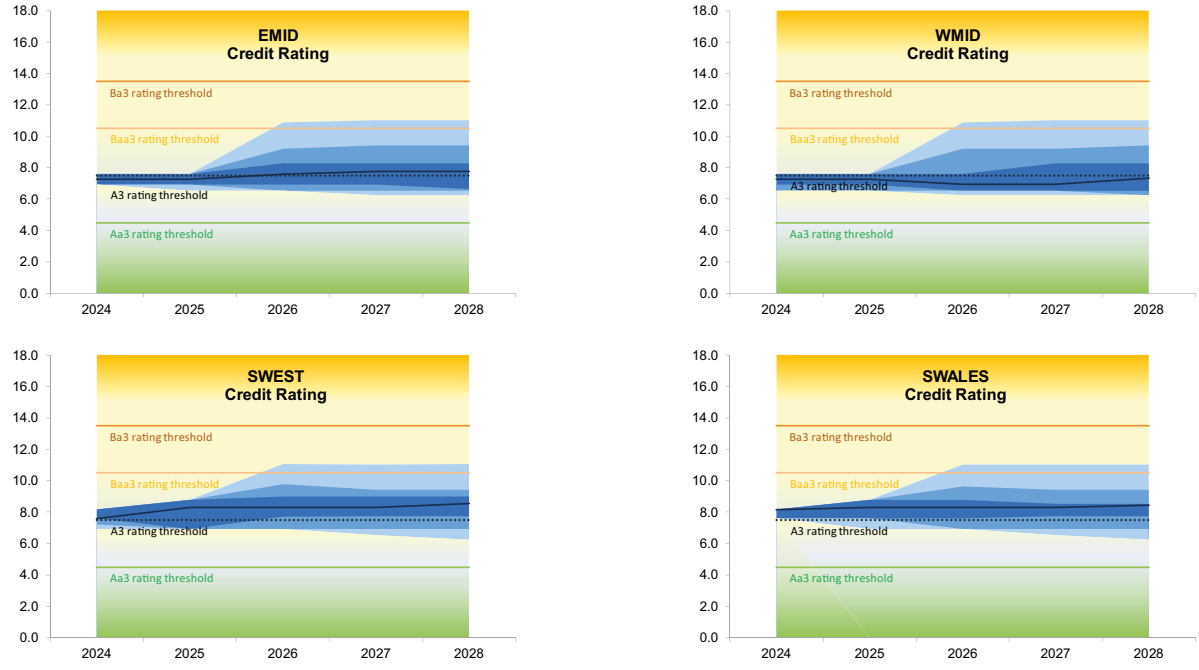
Financial ratios under WPD assumptions South West	2023/24	2024/25	2025/26	2026/27	2027/28	RIIO-ED2 Average
Net debt/Regulated asset value (RAV)	66.0%	61.7%	63.7%	64.9%	66.1%	**64.5%**
Adjusted interest cover ratio (AICR)	2.01	2.12	1.89	2.10	1.91	**2.01**
FFO to interest (including accretions)	4.11	4.32	4.02	4.19	3.97	**4.12**
FFO/Net debt	12.8%	12.9%	11.3%	11.1%	10.0%	**11.6%**
Retained cash flow (RCF)/Net debt	9.1%	8.6%	7.3%	7.4%	6.4%	**7.8%**

9.51. NERA's stochastic analysis demonstrates that there is a substantial downside risk on credit ratings, including the risk of sub investment grade rating by the end of ED2 for at least two of the WPD DNOs. NERA's full report is included in Appendix A06 to the Finance Annex.

9.52. The charts below show the results of NERA's stochastic analysis for WPD. Note that NERA has made adjustments to Ofgem's model to derive the results below, where it considers Ofgem's model contained fundamental errors:

Figure 9.19 Extract from NERA report: Scenario 1: Ofgem March 2021 SSMD financial parameters

Ofgem SSMD COE parameters, 3% notional dividends, 0.25% expected RoRE outperformance, 25% share of ILD, no equity issuance threshold, WPD central view on variant Totex.



Ofgem's March 2021 SSMD financial parameters create substatial downside risk on credit rating during ED2, with all WPD DNOs falling below investment grade as early as Y3 of ED2 in the 95th percentile. Ofgem's base case also assumes 25bps RoRE expected outperformance, which is not guaranteed, and hence ratios may be even weaker.

Confidence Levels: 50% - 75% - 88% - 95%

9.53. NERA's modelling demonstrates that under Ofgem's notional scenario there is a substantial downside risk on rating including risk of sub investment grade rating by the end of RIIO-ED2 (see NERA statement under figure 9.19).

9.54. Under WPD's own finance assumptions, i.e. using WPD's proposed cost of equity and removing Ofgem's 25bps expected outperformance adjustment, NERA's modelling shows that the downside risk on rating is mitigated (see NERA statement on page 13 in Appendix A06 to Annex 9).

WPD's proposed Totex capitalisation and depreciation rates

Totex capitalisation rates

9.55. 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, in the year in which they are incurred;
- 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.

9.56. Our current assumption in this Business Plan is that 75% of Totex will be added to the RAV (i.e. as slow pot costs). This is a slight decrease from WPD 80% capitalisation rate in RIIO-ED1, where WPD's ED1 capitalisation rate is the highest of all the electricity distribution networks. This slight downwards shift is reflective of the greater levels of expenditure on shorter lived assets, associated with, for example, cyber security requirements and also DSO and flexibility which facilitate analysis, information provision and more efficient operation of the whole system.

9.57. It should also be noted that this decrease in capitalisation rates has helped to improve the financeability of our plan. Changes to capitalisation rates are one of the 'levers' Ofgem highlights for companies to consider adjusting to improve the financeability of the Business Plan and we have therefore taken this step as part of our approach to ensure that our plan is able to be financeable.

Asset lives

9.58. 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.

9.59. As stated earlier, 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[22]. 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.

9.60. 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.

9.61. Our stakeholder engagement has indicated that regulatory certainty and predictability is a key factor for investors. We also firmly believe that the detailed review of asset lives Ofgem conducted in 2011 was intended as a long term policy decision and should not be reopened to solve financeability issues; this could have the unintended consequence of increasing returns over the longer period by undermining Ofgem's reputation for predictability.

9.62. WPD has therefore continued with the asset life assumption at the end of RIIO-ED1, with an asset life of 45 years for all RAV additions in RIIO-ED2.

Evolution of the Regulatory Asset Value (RAV)

9.63. Using the asset lives and capitalisation approach set out above, the following tables show how the value of the RAV evolves over the RIIO-ED2 period under our Best View.

[22] 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

Figure 9.20 Evolution of the RAV - West Midlands

Evolution of the RAV West Midlands £m, 2020/21 prices	2023/24	2024/25	2025/26	2026/27	2027/28
Opening RAV	2,706	2,777	2,857	2,948	3,034
Additions	267	274	285	274	293
Depreciation	-196	-194	-193	-189	-185
Closing RAV	**2,777**	**2,857**	**2,948**	**3,034**	**3,142**

Figure 9.21 Evolution of the RAV - East Midlands

Evolution of the RAV East Midlands £m, 2020/21 prices	2023/24	2024/25	2025/26	2026/27	2027/28
Opening RAV	2,706	2,804	2,912	3,028	3,140
Additions	290	300	308	303	301
Depreciation	-192	-192	-192	-191	-189
Closing RAV	**2,804**	**2,912**	**3,028**	**3,140**	**3,252**

Figure 9.22 Evolution of the RAV - South Wales

Evolution of the RAV South Wales £m, 2020/21 prices	2023/24	2024/25	2025/26	2026/27	2027/28
Opening RAV	1,286	1,363	1,449	1,530	1,597
Additions	166	175	170	155	161
Depreciation	-89	-89	-89	-89	-88
Closing RAV	**1,363**	**1,449**	**1,530**	**1,597**	**1,670**

Figure 9.23 Evolution of the RAV - South West

Evolution of the RAV South West £m, 2020/21 prices	2023/24	2024/25	2025/26	2026/27	2027/28
Opening RAV	1,979	2,092	2,214	2,352	2,477
Additions	244	253	269	257	250
Depreciation	-131	-131	-131	-132	-131
Closing RAV	**2,092**	**2,214**	**2,352**	**2,477**	**2,596**

Dividend and equity issuance policies

9.64. We note that Ofgem has set a working assumption of a 3% dividend yield, which differs from the RIIO-1 assumption of a 5% dividend yield, and does not align with our investor expectations of stable dividend growth. Our Business Plan currently facilitates a dividend yield of up to 5.8%, which aligns with the 5.8% Cost of Equity in the WPD WACC assumption included as part of our alternative financing assumptions above, and is in line with our historical dividend payment levels. We will continue to review our assumptions for inclusion in our December submission of this Business Plan.

9.65. We have not assumed any equity issuance as part of our Business Plan under our actual company modelling for this plan. However, the notional modelling in Ofgem's BPFM assumes equity issuance at the start of RIIO-ED2 to bring gearing down from the RIIO-ED1 assumption of 65% to the RIIO-ED2 assumption of 60% for all scenarios, plus the modelling of WPD's specific scenario in the BPFM results in further equity issuances for South Wales and South West in 2026/27 and the modelling of the Base case scenario in the BPFM results in further equity issuances for South Wales and South West in 2027/28 in both cases to bring gearing back down to 60% where it would otherwise exceed 65%, as discussed above.

9.66. As during RIIO-ED1, WPD intends to ensure that our gearing is aligned to Ofgem's notional gearing level.

WPD's revenue requirements for RIIO-ED2

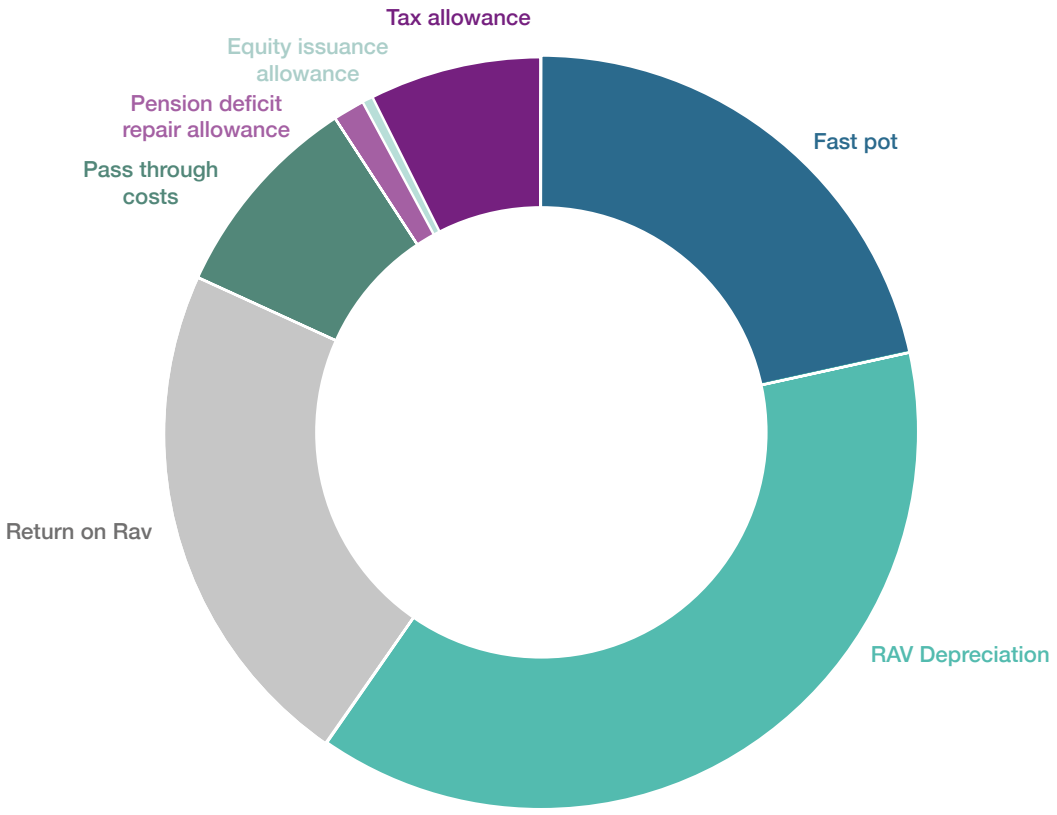
9.67. We have limited guidance from Ofgem in relation to the presentation of customer bills. We have therefore replicated the approach we used in RIIO-ED1 as closely as possible.

9.68. Our presentation of customer bills is 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;
- return;
- equity issuance allowances;
- tax payment allowances.

9.69. The graphic below shows our analysis of the key components of WPD's customer bills for RIIO-ED2:

Figure 9.24 Key components of WPD's customer bills



Details and sources and uses of cash during RIIO-ED2

9.70. 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. As in RIIO-ED1 we will provide detailed information showing the sources and uses of cash during RIIO-ED2 for our four DNOs in our December 2021 Business Plan, once the issues with the current Ofgem model have been resolved.

Availability of capital

9.71. We will need to raise a significant amount of capital during RIIO-ED2 to fund our RIIO-ED2 Totex expenditure of approximately £6.2 billion, 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 package, including the allowed cost of capital and the opportunity to earn incentive revenues, is set at an appropriate rate to attract this investment.

9.72. In its report 'Further analysis of Ofgem's proposal to adjust baseline returns'[23], 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.

9.73. 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.

Further details on the impact on customer bills

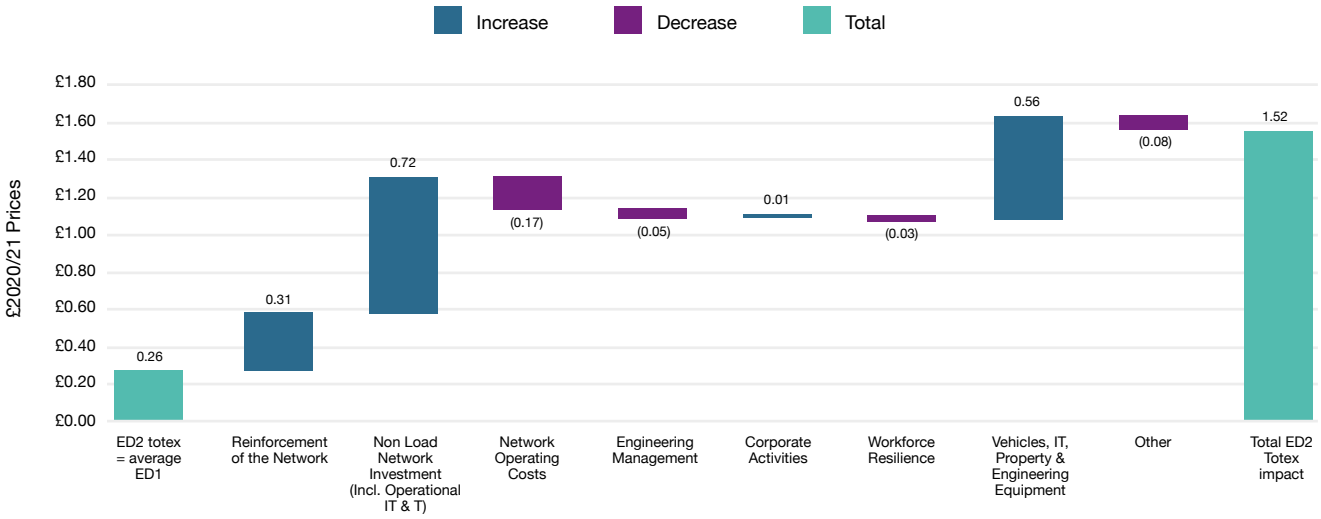
9.74. Modelled changes in customers' bills are driven by a number of key areas of expenditure, and by the financial parameters, including the working assumptions set by Ofgem. These may include:

- 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.

9.75. Our current calculations estimate that the impact of the increased expenditure set out in WPD's base view outlined above would result in an approximate £1.52 annual increase on the average domestic bill in RIIO-ED2, if all other elements of the price control were unchanged. However, based on our latest analysis this increase is 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 bill at the end of RIIO-ED1.

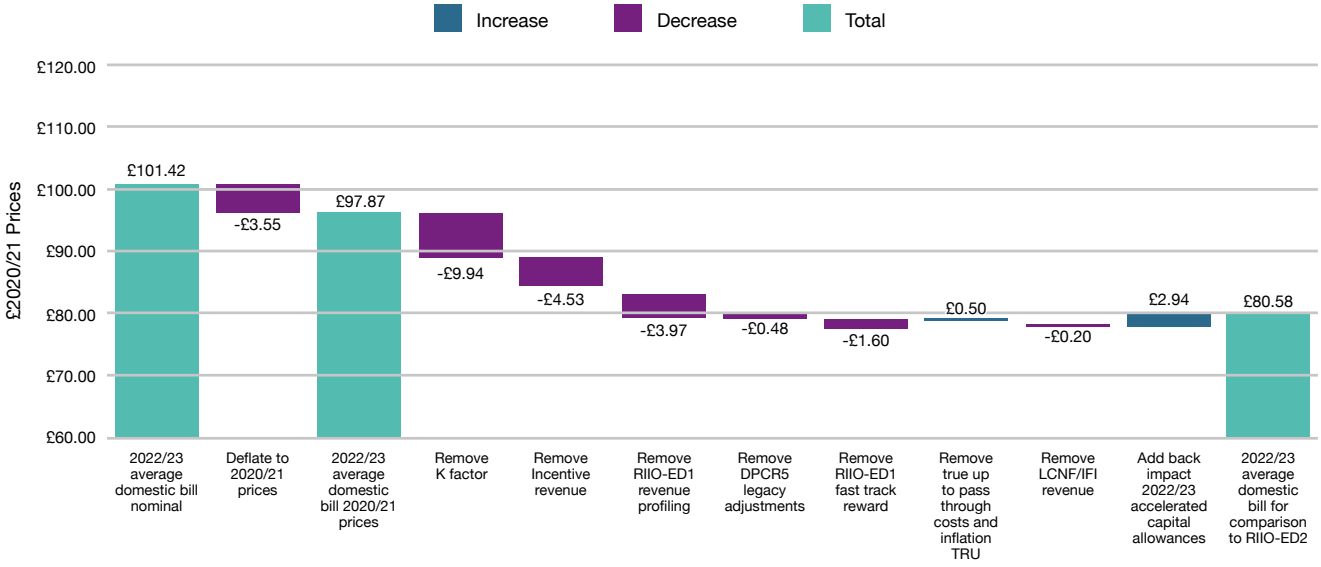
[23] Further analysis of Ofgem's proposal to adjust baseline returns", A report prepared for the ENA, Frontier Economics, September 2020.

Figure 9.25 Impact of Totex on ED2 Average Domestic Bill - WPD - 2020/21 Prices



9.76. The following chart demonstrates how we have adjusted the published 2022/23 average domestic network charge for WPD, to put it onto a comparable basis for comparing against the proposed average RIIO-ED2 bill. The largest adjustments include removing the K-Factor, which reflects any over/under recovery over the price control at the end of RIIO-ED1, and removal of the impact of the RIIO-ED1 earned incentive revenue as this will not be the same for RIIO-ED2.

Figure 9.26 2022/23 Average Domestic Bill (normalised)



9.77. The position presented in figure 9.26 is for an average WPD domestic customer. The normalised annual bill for the average domestic customer at the end of RIIO-ED1 for each of our four DNOs ranges between £71.66 for East Midlands, £75.70 for West Midlands, £86.01 for South Wales and £99.62 for South West (please see Annex 9 for DNO specific details).

9.78. Figure 9.27 subsequently demonstrates the impact of our RIIO-ED2 proposals on the average WPD domestic customer bill for RIIO-ED2.

9.79. Decisions already taken by Government and Ofgem on inflation and taxation policy, including the move from RPI to CPIH and the recently announced changes to the corporation tax are shown as increases to the £80.58 average annual bill at the end of RIIO-ED1, leading to the adjusted end of RIIO-ED1 bill being £91.45 for comparative purposes.

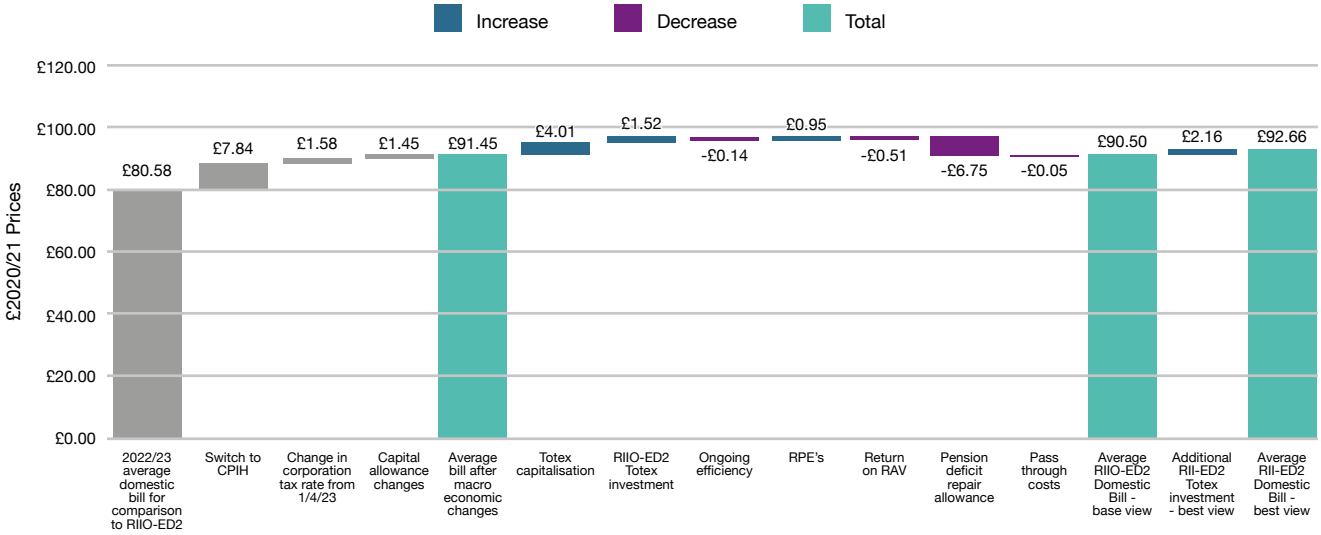
9.80. The right hand side of figure 9.27 presents the impact of our proposals, which we are consulting on as part of our Business Plan, and how these subsequently affect the average WPD domestic customer's bill for RIIO-ED2.

9.81. As can be seen from the chart our proposals under WPD's base view - reflecting lower reinforcement for EVs in our network, would result in WPD's average domestic customer's annual bill falling from £91.45 at the end of RIIO-ED1 to an average of £90.50 in RIIO-ED2, a 95 pence (1%) reduction in real terms.

9.82. However, our stakeholder approved plan supports WPD's best view which sees an additional £473 million of reinforcement expenditure during RIIO-ED2 to facilitate the delivery of Local Authority requirements for heating and electric vehicles in which we have significant confidence. Including the overall impact of this additional investment would see our WPD average annual domestic customer bill increase by an additional £2.16, resulting in an overall WPD average domestic customer bill being an average of £92.66 during RIIO-ED2 (DNO specific impact is provided in Annex 9).

9.83. The position for each of four DNOs varies depending on their specific bill starting position at the end of ED1, and the DNO specific investment proposals. The individual DNO charts provided in Annex 9, demonstrate how bills will fall in two of our DNOs in real terms under the base view scenario - West Midlands and East Midlands DNO; with two increasing - South Wales DNO will increase by 2.5% and South West by 2.4%. This reflects the increased levels of investment our stakeholders have asked us to make in these areas. The charts in Annex 9 also present the bill impact under our best view of investment for each DNO.

Figure 9.27 Average Domestic Bill - WPD



Other policy areas: related party costs, taxation, capital allowance pools, business rates and pensions

9.84. We set out below our current thinking on these policy areas.

Related party costs

9.85. 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 Western Power Distribution (South West) plc. That DNO provides services to the other DNOs, the costs of which are charged to those other DNOs on an arm's length basis.

9.86. We also operate a single banking system, with South West 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 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.

9.87. 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.

Taxation

Basis of tax modelling for tax allowance

9.88. 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.

9.89. Tax for price control purposes is on a cash basis so deferred tax is ignored.

9.90. 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

9.91. In the RIIO-ED1 Final Proposals, Ofgem stated that it would roll forward regulatory tax pool calculations at the end of the RIIO-ED1 period[24]. 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.

9.92. 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.

9.93. 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.

9.94. One significant development in the Spring 2021 Budget was the announcements that there will be temporary capital allowance increases applying to regulatory years 2021/22 and 2022/23. Our initial assessment has shown that the impact of the above changes across all four of our licensees is a significant reduction in our tax allowance in 2021/22 and 2022/23. We have included a provisional estimate of the impact of the increased allowances in our latest RIIO-ED1 forecast and the consequent reduction on opening RIIO-ED2 tax pools has also been included in our modelling. This impact is shown in our Bill impact charts above.

9.95. We set out below our projections for the taxation allowance that is included in this RIIO-ED2 Business Plan, under our Best Case scenario:

Figure 9.28 Taxation allowance

Taxation allowance (£m, 2020/21 prices)	West Midlands	East Midlands	South Wales	South West	WPD Total*
RIIO-ED1 annual average	15	13	7	9	45
RIIO-ED2 annual average	38	37	17	25	117
RIIO-ED2 total (5 years)	**192**	**183**	**83**	**127**	**586**

* Totals may not match the breakdown of individual licensees shown due to rounding to the nearest £ million.

[24] Table A9.1, p.101. Ofgem, RIIO-ED1: Final determinations for the slow-track electricity distribution companies, 28 November 2014.

Business rates

9.96. 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.

9.97. 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.

9.98. We set out below our projections for Business Rates costs that are included in this RIIO-ED2 Business Plan:

Figure 9.29 Business rates funded through DuOS

Business Rates funded through DuOS (£m, 2020/21 prices)	West Midlands	East Midlands	South Wales	South West	WPD Total*
RIIO-ED1 annual average	31	36	15	19	101
RIIO-ED2 annual average	31	29	14	20	93
RIIO-ED2 total (5 years)	**153**	**146**	**69**	**98**	**465**

* Totals may not match the breakdown of individual licensees shown due to rounding to the nearest £ million.

Pensions

9.99. 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

9.100. 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.

9.101. 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.

9.102. 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. By their nature, defined contribution schemes can have neither a surplus nor a deficit.

9.103. 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

9.104. 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.

9.105. 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.

9.106. 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.

9.107. 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.[25]

9.108. We set out below a breakdown of pensions costs included in our RIIO-ED2 Business Plan:

Figure 9.30 Ongoing pension costs expenditure

Ongoing pension costs expenditure, including incremental deficit repair costs (£m, 2020/21 prices)	West Midlands	East Midlands	South Wales	South West	WPD Total*
RIIO-ED1 annual average	14	14	10	16	53
RIIO-ED2 annual average	18	17	13	21	69
RIIO-ED2 total (5 years)	**91**	**84**	**65**	**103**	**343**

* Totals may not match the breakdown of individual licensees shown due to rounding to the nearest £ million.

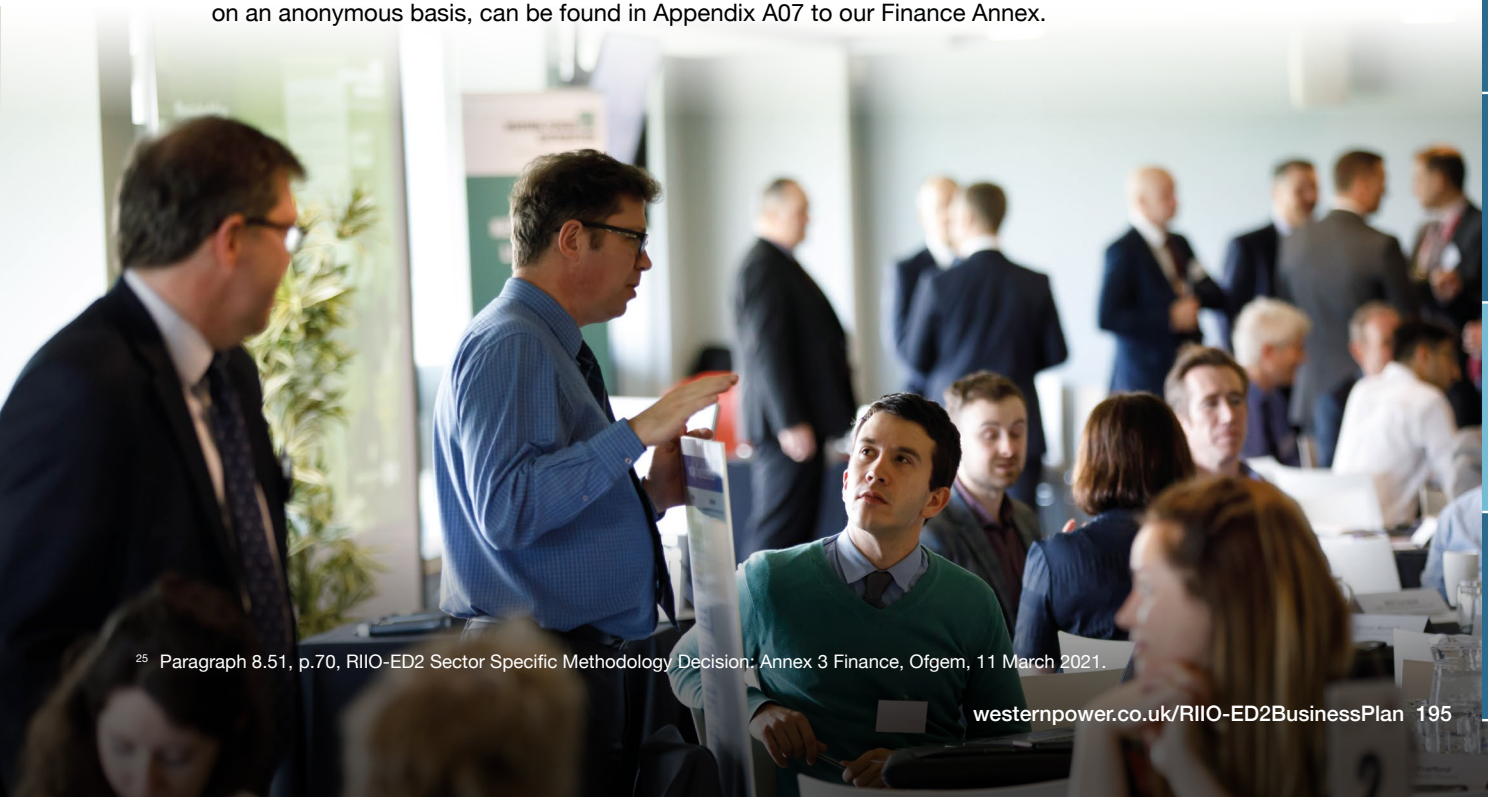
Figure 9.31 Established pension deficit repair costs funded through DuOS

Established pension deficit repair costs funded through DuOS (£m, 2020/21 prices)	West Midlands	East Midlands	South Wales	South West	WPD Total*
RIIO-ED1 annual average	40	40	27	42	148
RIIO-ED2 annual average	6	6	2	4	18
RIIO-ED2 total (5 years)	**28**	**30**	**11**	**20**	**89**

* Totals may not match the breakdown of individual licensees shown due to rounding to the nearest £ million.

Stakeholder feedback

9.109. As part of the process of assessing the financeability of our plan we have consulted our core banking group and also some of our key investors. The questionnaires sent to both groups and a summary of their responses, set out on an anonymous basis, can be found in Appendix A07 to our Finance Annex.



[25] Paragraph 8.51, p.70, RIIO-ED2 Sector Specific Methodology Decision: Annex 3 Finance, Ofgem, 11 March 2021.

Board assurance regarding the proposed financial package for RIIO-ED2

9.110. Within this chapter and associated Finance Annex, we have provided a detailed assessment of the financial package prescribed by Ofgem in the published Business Plan Guidance document and the SSMD Finance Annex.

9.111. We have also set out a detailed assessment of WPD's proposed alternative financial package.

9.112. Given the critical importance of delivering net zero, and the level of investment our stakeholders have approved over the RIIO-ED2 period to facilitate this, our view is that Ofgem's working assumptions do not reflect the reality of the returns our investors require. Further, we do not consider that Ofgem's cost of capital appropriately reflects the balance between the significant risks of underinvestment compared to the marginal impact of setting the cost of capital too high; it is this balance that has led regulators to "aim up" historically, whereas Ofgem's approach to setting the cost of equity and its outperformance adjustment has the opposite effect.

9.113. Whilst we acknowledge that the financial ratios generated using Ofgem's BPFM under its own current working assumptions may not indicate a credit downgrade under all scenarios, it is clear that there are significant shortcomings in Ofgem's credit ratio modelling and the model's interpretation of the relationship between ratios and credit rating. It is also clear that there are wider considerations in any financeability assessment.

9.114. It is important that our licensees are not simply financeable, but have a robust enough financial position to withstand unforeseen shocks for example DNOs were expected to assist suppliers during the recent pandemic, therefore if we are to provide our own balance sheet then Ofgem need to ensure that we are very much financeable. One important consideration is the level of expenditure in this Business Plan that is subject to uncertainty mechanisms, which carries increased risk for our licensees and has not been considered in any of Ofgem's "Base case" scenarios.

9.115. It should also be recognised that, in setting the RIIO-ED1 framework, there was a reasonable prospect of achieving additional returns for investors through outperformance against price control incentive mechanisms. Ofgem's current limited proposals for the RIIO-ED2 incentive package do not present a range of opportunities linked to customer deliverables and is largely focussed on downside adjustments to returns.

9.116. In light of the above, we do not consider that Ofgem's working assumptions are acceptable and therefore cannot provide assurance that our licensees are financeable under these assumptions.

9.117. The Board is satisfied that, using our internal modelling, our licensees are financeable on both a notional and actual capital structure basis under WPD's proposed alternative financing proposals.

Chapter 10

Glossary

Glossary

A full list of the terms can be found in Supplementary Annex (SA-10) Glossary.

AFR
Accident Frequency Rate

ANM
Active Network Management

AONB
Areas of Outstanding Natural Beauty

API
Application Programming Interface

BEIS
Business, Energy and Industrial Strategy

BCF
Business Carbon Footprint

BMCS
Broad Measure of Customer Satisfaction

CAF
Cost Apportionment Factor

CAPEX
Capital Expenditure

CBA
Cost Benefit Analysis

CCSG
Customer Connection Steering Group

CEG
Customer Engagement Group

CiC
Competition in Connections

CIs
Customer Interruptions

CMLs
Customer Minutes Lost

CMZ
Constraint Management Zones

CNI
Critical National Infrastructure

CPNI
Centre for Protection of National Infrastructure

CSE
Customer Service Excellence

CVP
Customer Value Proposition

DER
Distributed Energy Resources

DFES
Distribution Future Energy Scenarios

DG
Distributed Generation

DNO
Distribution Network Operator

DNOA
Distribution Network Options Analysis

DPCR
Distribution Price Control Review Period

DSO
Distribution System Operator

DSR
Demand Side Response

DUoS
Distribution Use of System

EAP
Environmental Action Plan

EHV
Extra High Voltage

EJPs
Engineering Justification Papers

ENA
Energy Network Association

ESG
Environmental Social Governance

ESO
Electricity System Operator

ESQCR
Electricity, Safety, Quality and Continuity Regulations

EVs
Electric Vehicles

FES
Future Energy Scenarios

FFC
Fluid Filled Cables

GSOP
Guaranteed Standards of Performance

HI
Health Index

HSE
Health and Safety Executive

HV
High Voltage

ICE
Incentive on Customer Engagement

ICP
Independent Connections Provider

IDNO
Independent Distribution Network Operator

I and M
Inspections and Maintenance

INM
Integrated Network Model

LAEP
Local Area Energy Plans

LCNF
Low Carbon Network Fund

LCTs
Low Carbon Technologies

LED
Light Emitting Diode

LEPs
Local Enterprise Partnerships

LiDAR
Light Detection and Ranging

LiMo
Licence Model

LO
Licence Obligation

Lte
Long Term Evolution

LV
Low Voltage

NARMs
Network Asset Risk Metrics

NASD
Network Asset Secondary Deliverables

NIA
Network Innovation Allowance

NIC
Network Innovation Competition

NIFT
Network Investment Forecasting Tool

NOx
Nitrogen Oxides

NRSWA
New Roads and Street Works Act

ODI
Output Deliverable Incentive

ONIs
Occurrences Not Incentivised

OT
Operational Technology

PCBs
Polychlorinated Biphenyl's

PCD
Price Control Deliverables

PFT
Perfluorocarbon Tracer

POA
Power Outage Alerts

PoC
Point of Connection

PR19
Water industry Price Review 2019

PSR
Priority Services Register

PSTN
Public Switched Telephone Network

PV
Photovoltaic

QoS
Quality of Supply

RAV
Regulatory Asset Value

RIIO
Revenue = Incentives + Innovation + Outputs

RIIO-ED1
RIIO Electricity Distribution Price Control Period 1

RIIO-ED2
RIIO Electricity Distribution Price Control Period 2

RoRE
Return on Regulated Equity

RPE
Real Price Effects

RTU
Remote Terminal Unit

SBTs
Science Based Targets

SCADA
Supervisory Control and Data Acquisition

SCR
Significant Code Review

SECV
Stakeholder Engagement and Consumer Vulnerability

SF_6
Sulphur Hexafluoride

SIF
Strategic Investment Fund

SMETS1
First Generation Smart Meters

SSSIs
Site of Special Scientific Interest

SoW
Statement of Works

T60
Target 60

TIM
Totex Incentive Mechanism

Totex
Total Expenditure

TTC
Time to Connect

TTQ
Time to Quote

VMF
Vehicle Maintenance Facility

V2G
Vehicle to Grid

VTs
Voltage Transformers

WISE
Women in Science and Engineering

WPD
Western Power Distribution

WSC
Worst Served Customers

WESTERN POWER DISTRIBUTION

Serving the Midlands, South West and Wales

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