WESTERN POWER DISTRIBUTION

Serving the Midlands, South West and Wales

Our Business Plan 2023 - 2028 Final Submission

December 2021

POWER FOR LIFE
POWER FOR FUTURE GENERATIONS

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

A transformed energy network to drive net zero by as early as 2028 across our region.
This is what WPD's highly ambitious Business Plan for 2023-2028 (RIIO-ED2) will deliver. It has been co-created with more than 25,000 stakeholders and future customers and has received significant levels of acceptability from wider consumers.

The energy sector is undergoing a significant and exciting period of change as the UK works towards a net zero carbon future. This RIIO-ED2 Business Plan will place WPD at the heart of this movement. Net zero cannot happen without us and our leadership will directly impact the pace and efficiency with which it is achieved. At WPD we take this responsibility very seriously; we are determined to achieve a sustainable energy future by delivering a dynamic, innovative and high functioning energy grid that stands ready to serve many generations to come.

We are revolutionising the electricity network - not simply tweaking or evolving what we do. Change is already well underway, with unprecedented levels of flexibility, efficiency and new distribution system operator capabilities already in place. In RIIO-ED2 we will dramatically accelerate the rate of this change, placing customers at the heart of a swift and effective transition to a smart, decarbonised energy future.

We will lead and actively drive the nation's move to decarbonisation. Through targeted green investment, the widespread rollout of flexibility services and the development of entirely new products, services and digitalised solutions we will unlock the network capacity our customers need in order to adopt low carbon technologies at scale. We will also collaborate with our regional stakeholders to enable them to achieve their aspirations, building transformational local area energy plans that maximise ambitions.

What our customers will see

Customers pay for everything we do. That is why our Business Plan was created with them and is created for them. It contains 42 ambitious core commitments and more than 400 wider commitments, all designed to achieve four crucial outcomes for customers:

Sustainability: We will lead the industry in the charge towards net zero, driving crucial changes in energy usage and customer green behaviour. We will set the benchmark by achieving net zero in our own operations by 2028, and we will ensure the network is ready to enable local authorities to achieve similar ambitions in their regions.

Connectability: We will ensure that the network can cater for at least 1.5 million additional electric vehicles, 600,000 heat pumps and a significant increase in renewable generation over the next five years. A lack of network capacity should not be a barrier for our customers.

Vulnerability: We will deliver a first class programme of inclusive support. This will include offering 600,000 smart energy action plans for vulnerable customers each year, ensuring no one is left behind in a smart future. We will also more than double our ground breaking fuel poverty support, to deliver over £60 million of savings direct to customers.

Affordability: We will continue to deliver the highest standards of safety, reliability and customer service that customers have come to expect from us. Power cuts will be at their lowest ever levels and customer satisfaction will be at its highest at over 93%. Crucially we will achieve all of this while keeping our portion of the average domestic customer bill broadly flat, around the current average level of less than 28p a day.

How we will achieve this

We will always utilise innovative and digitalised solutions to enhance our operations. We will instil a culture across our business that maximises every opportunity to innovate and work smarter for our customers. We have already embedded £723 million of efficiency savings into our Business Plan thanks to our proven track record of innovation development and rollout. Without this, required investment in RIIO-ED2 would have been £7.4 billion, which would have resulted in increases to customer bills. Instead, by working smarter and embracing a culture of continual innovation, we will deliver our RIIO-ED2 commitments with a budget of £6.7 billion and keep bills broadly flat.

In addition, we will deliver an extra £95 million of efficiency savings over RIIO-ED2. A clear indication of our efficiency is the fact that we anticipate a 108% increase in the level of load related schemes with only an 8% increase in engineering management and support. And by adopting a 'flexibility first' approach to all load related investment decisions, we have committed that by 2028 we will avoid over £94 million of network reinforcement by operating the existing primary and secondary networks more flexibly.

How we built our Business Plan

I am proud that our Business Plan has been co-created with stakeholders. Our largest ever stakeholder consultation process with the broadest range of representatives, has delivered unprecedented levels of scrutiny and collaboration. It has resulted in a pioneering set of well justified proposals to serve our customers both today and also in the future. Never consulting on pre-determined proposals, we enabled stakeholders to start from a blank sheet of paper and have shared decision making power with them.

We have also delivered unparalleled transparency during our planning process. Prior to this final submission, we published three drafts of our Business Plan for consultation – more than any other network operator - to maximise the opportunities for stakeholders to have their say. This has resulted in a highly refined and effective plan, with stretching targets, clear outcomes and only 4% of customers did not find our plan fully acceptable.

Our Business Plan fully reflects the ambitious and changing priorities of the people we serve. We are already moving towards a low carbon future and you can be confident we will deliver it.

Phil Swift
WPD Chief Executive

Navigating our plan

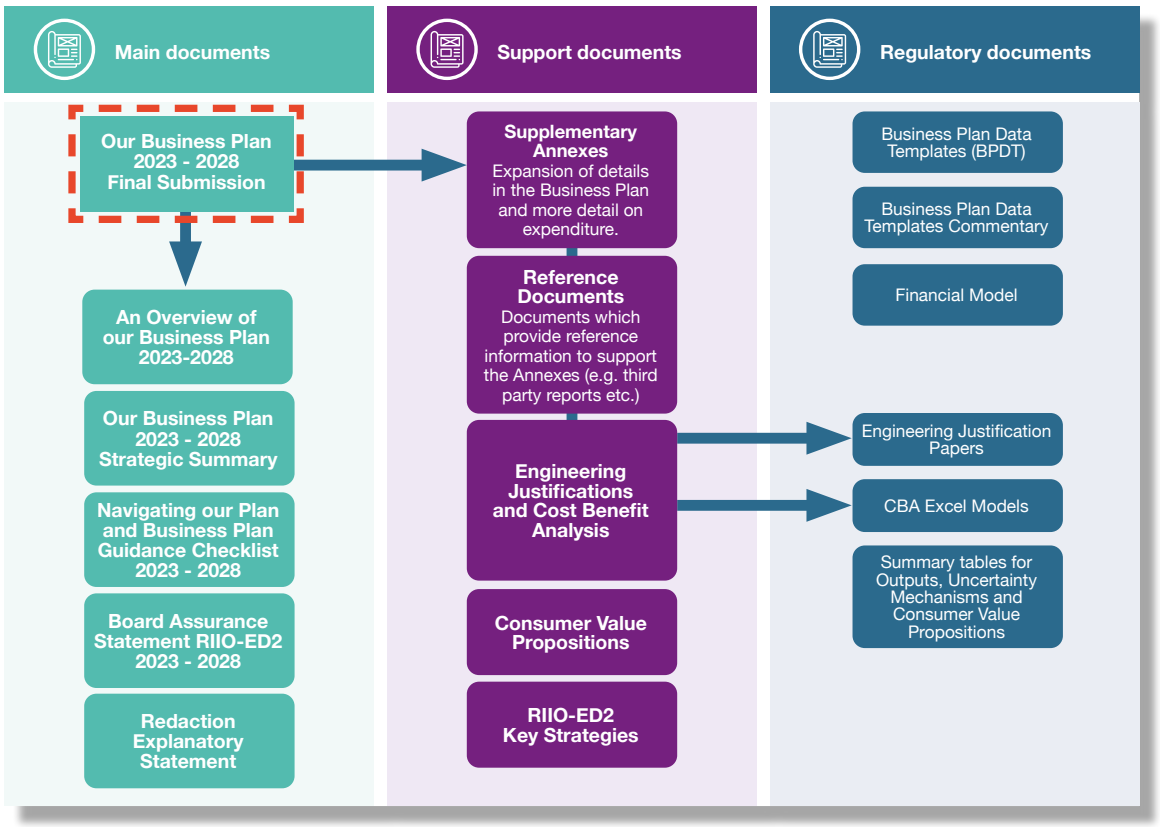
This document is the RIIO-ED2 Business Plan which is part of our final submission to Ofgem.

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

- a hyperlinked contents page;
- '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 final submission RIIO-ED2 Business Plan submission structure



A list of our supplementary annexes and strategies

Supplementary annexes

- SA-01 Governance and assurance
- SA-02 Our commitments
- SA-02a Our commitments – Justification analysis
- SA-03 Delivering a smart and flexible electricity network
- SA-04 We keep our promises
- SA-05 Giving customers a stronger voice - Enhanced engagement
- 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 key strategies

- Climate Resilience Strategy
- Customer Vulnerability Strategy
- Destination: Net Zero - Business Innovation and Efficiency Strategy
- Digitalisation Strategy and Action Plan
- DSO Strategy
- Environment Strategy
- Innovation Strategy
- Major Connections Strategy
- Network Visibility Strategy
- Net Zero Communities Strategy
- Social Contract
- Whole Systems Strategy
- Workforce Resilience Strategy

Ofgem's Business Plan guidance

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

Our Business Plan Guidance Checklist can be found in our document 'Navigating our Plan and Business Plan Guidance Checklist 2023-2028'.

Contents

Setting the scene

What we will deliver for our customers

Why you can trust us to deliver it

Contents

Why you can trust us to deliver it

Chapter 1

An ambitious vision for the future

For a short video overview of this chapter scan the QR code.

Chapter 1 Contents

1. An ambitious vision for the future

1.1. The future of energy has never been more exciting. Western Power Distribution (WPD) is leading an energy revolution; delivering a smart, digitalised electricity grid by 2028. By doing so we will drive the nation's achievement of net zero carbon emissions, accelerate the shift to electric vehicles and roll out flexibility services to always maximise the efficiency of the existing network before we need to build more infrastructure.

1.2. We are a highly adaptive and innovative business. Since 2015 we have been transforming our network, and it is already able to connect more than 31GW of distributed, local and green generation on a network conventionally designed for 14GW of demand. But that is just the start. RIIO-ED2 presents an opportunity to deliver unprecedented digitalisation and innovation to build a smart network that is adaptive to the rapidly changing needs of our customers in a zero carbon future.

1.3. More than 25,000 stakeholders have helped us to co-create our vision for 2023-2028. They have stretched our ambitions, made us think differently and developed a range of challenging commitments that will deliver outcomes of huge social value, all at an affordable cost.

1.4. Our approach has been driven by five overarching principles, to build a Business Plan that is:

- **Transparent:** We are the only company to have published three full versions of our Business Plan for stakeholders to scrutinise, challenge and refine. When we say 25,000 stakeholders engaged, this was via detailed, direct and involved consultation giving them opportunities to influence every aspect of our plan. In addition we have analysed and considered feedback from over 70,000 customer interactions.
- **Believable:** Our commitments are stretching proposals that are realistic and achievable. We have been the number one performer in our sector for customer service, network reliability and vulnerable customer support for many years and have already spearheaded the UK's largest rollout of flexibility services. This provides an exceptional platform to build from.
- **Deliverable:** Our RIIO-ED2 plan proposes significant uplifts in ambition but is credible and deliverable. We have a clear plan for how we will deliver and have an unrivalled track record that gives confidence to customers that we can be trusted to do so.
- **Highly ambitious:** As the largest Distribution Network Operator (DNO) in the UK we are determined to lead. We are delivering a step change in all areas of our performance despite already being the industry leader. We are proposing the most stretching targets to deliver net zero. We are also driving efficiency in all we do to ensure we deliver exceptional social value while keeping bills low.
- **Adaptive to change:** While our Business Plan is built on our most accurate and granular forecasts of the future needs of our customers, including anticipated volumes of low carbon technologies (LCTs), our plans will be agile and adaptive. As set out in chapters 3 and 7, we have built robust scenarios for the future so that there will be no surprises. We have a delivery model that ensures we are able to flex and ramp-up quickly if LCT volumes exceed our expectations and we have built an innovative uncertainty mechanism that will enable us to finance activities at these enhanced levels.

Efficiency

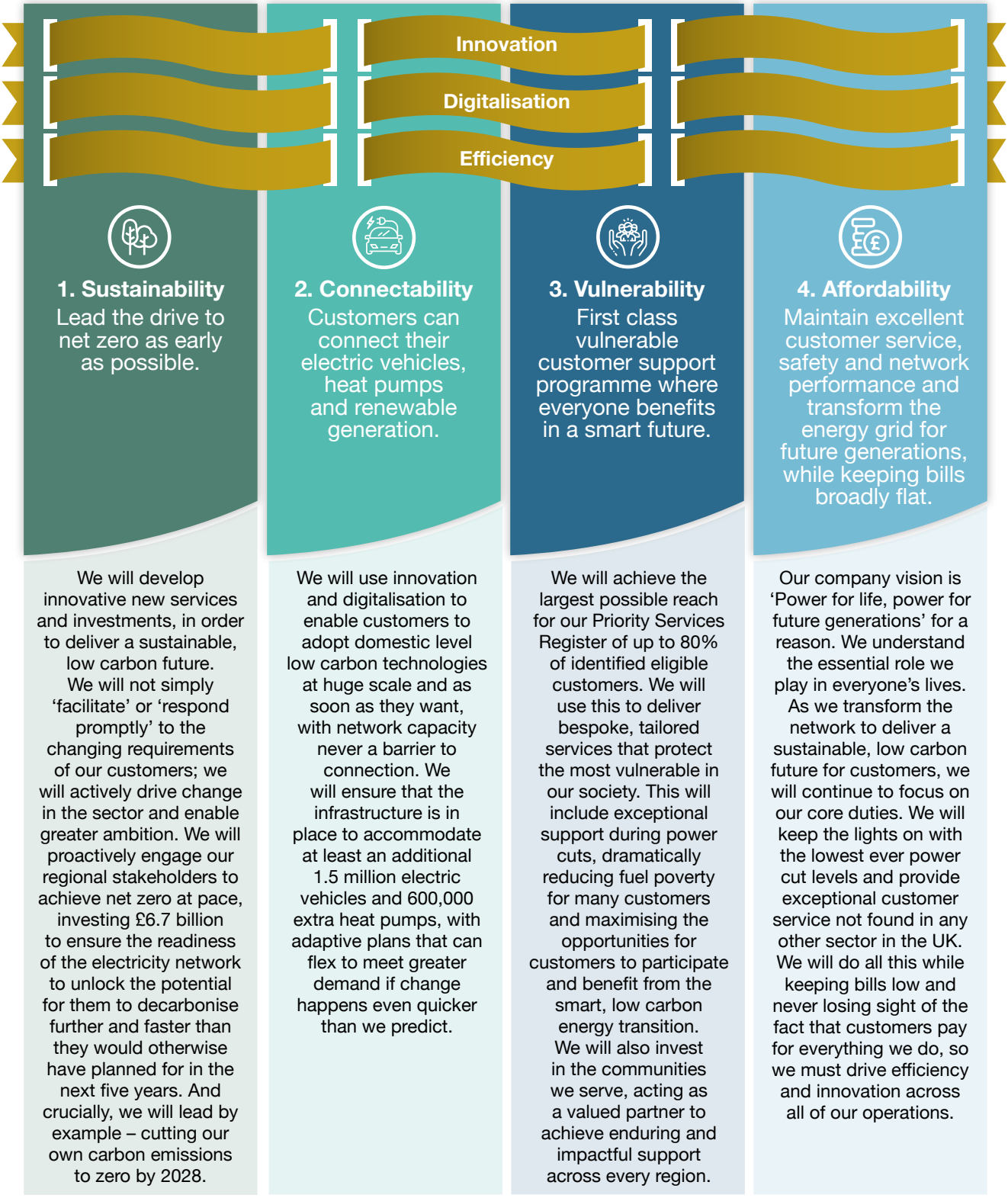
1.5. Innovative thinking and digitalised solutions will run through everything we do, enabling smarter ways of working and entirely new services to be established to match the changing expectations of our customers. This will drive significant levels of efficiency across our business.

1.6. This Business Plan includes £723 million of embedded efficiencies, which means the total expenditure we require is £6.7 billion rather than £7.4 billion. As a result of these efficiencies the average domestic customer bill will remain broadly flat rather than increasing. On top of that, we are challenging ourselves to go even further in RIIO-ED2. We will utilise innovation and digitalisation to achieve a further £95 million of ongoing efficiencies. Moreover, our commitment to always maximise the efficiency of the existing network, via flexibility services before new assets are built, will save money for customers by avoiding around £94 million in conventional reinforcement.

What will be different for our customers?

1.7. Our 8 million customers are the reason we exist. In the period 2023-2028 we will deliver stretching, ambitious outcomes that they have told us they want and highly value. While WPD's Business Plan is structured in line with Ofgem's guidance, every commitment is driven to achieve these core outcomes. In terms of the way we will do so, innovation, digitalisation and efficiency are 'golden threads' that run through all we do (see figure 1.1).

Figure 1.1 The overarching outcome we will achieve for customers



Our commitments in a nutshell

1.8. Our Business Plan contains 42 core commitments and more than 400 wider commitments that we will deliver in RIIO-ED2 while keeping bills broadly flat (see figure 1.8). Each one contributes to the achievement of the four ambitious outcomes our stakeholders have identified for WPD. Our success will be measured by the extent to which we deliver and surpass these stretching targets, all while continually innovating and adapting to change as it happens.

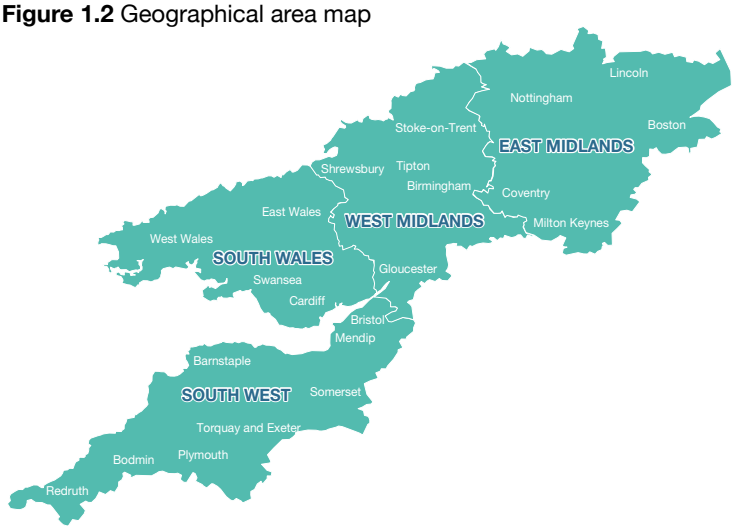
1.9. We will deliver these commitments by embracing digitalisation to improve our services and processes and capturing innovative ideas from our staff and stakeholders to continually improve the efficiency of our operations.

1.10. Key examples of our core commitments for 2023-2028 are:

Who we are and how we serve our communities

1.11. WPD is a DNO, with Distribution System Operator (DSO) capabilities, responsible for distributing electricity to 8 million customers, and serving more than a quarter of the UK (see figure 1.2). 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 1.2 Geographical area map

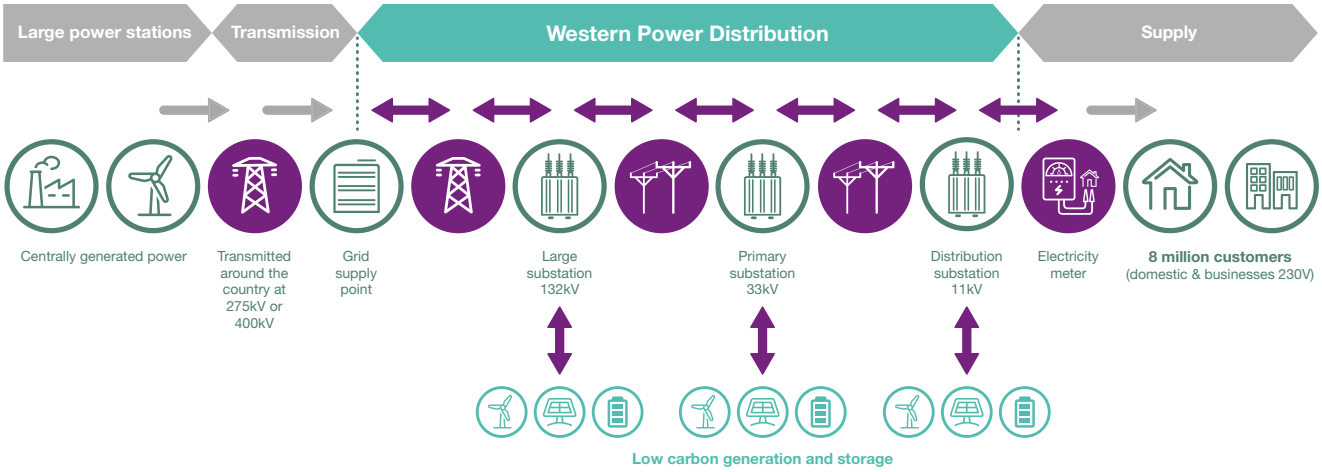


1.12. Our customers depend on us to live and work. Electricity is becoming even more critical to our customers increasingly supporting their transportation, heating and home working communication systems. We provide a reliable and efficient power supply at an affordable price, as well as supporting the most vulnerable people in the region.

1.13. 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 and support the UK's ambition to achieve net zero carbon emissions by 2050.

1.14. 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 1.3). We deliver it safely into homes and businesses in our regions, via our safe and reliable network. As the country drives towards decarbonisation, many smaller renewable generation installations are now connected directly to our network, bypassing the transmission system and the traditional model. During 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 of delivery and experience, to deliver transformation efficiently, while continuing to provide a resilient electricity supply.

Figure 1.3 Electricity network system



1.15. Our main responsibilities to our customers are shown in figure 1.4.

Figure 1.4 Main responsibilities to our customers

Keep the power flowing
by operating and protecting our assets

Maintain equipment
so that the network remains reliable

Fix the network
if the equipment gets damaged or is faulty

Connect customers
by utilising existing capacity or upgrading our network

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

What is RIIO-ED2?

1.16. We are a regulated business and a natural monopoly. As such, the Office of Gas and Electricity Markets (Ofgem) regulates how much DNOs like WPD can earn and what we need to spend and deliver under regulated price review arrangements. The next price control review will last for five years and 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.

1.17. 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**.

1.18. 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. It 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 defined by Ofgem, which are:

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

Industry leadership in RIIO-ED1 provides a fantastic platform for RIIO-ED2

1.20. As Chapter 4 outlines in greater detail, we have surpassed the commitments we made for the current price control, RIIO-ED1. We have proven ourselves to be highly adaptable and agile in the face of change. We have dealt promptly with unforeseen developments, including the surge in solar PV installations, and have built the UK's largest flexibility programme to unlock considerable capacity from the existing network despite none of these actions being part of the original settlement. We have therefore delivered these additional outcomes at no extra cost to customers.

1.21. In RIIO-ED1 we have delivered exceptional performance. For example we have:

- Been rated the industry's top performing DNO for overall customer satisfaction since 2015, with an average score of over 90%.
- Helped 92,000 fuel poor customers save more than £37 million on their energy bills since 2015.
- Reduced our business carbon footprint by 36%.

1.22. At the same time we have adapted rapidly to keep pace with the significant changes in the way power is generated and energy has been consumed over the last six years. Over and above our original plan, we recognised the need to adapt and be flexible to the changing energy landscape. We therefore:

- Spearheaded the UK's largest rollout of flexibility services (709MW contracted since launch), with contracts signed and with services regularly utilised and dispatched across our regions.
- Are investing an extra £59 million to support the green recovery from Covid-19, increasing available network capacity for demand growth by 617MW – equivalent to connecting 171,000 heat pumps or 385,000 domestic electric vehicle chargers. £44 million of this will be invested before RIIO-ED2 commences.

An ambitious plan created with our stakeholders

1.23. 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.

1.24. 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.

1.25. To shape the commitments we will deliver in RIIO-ED2, we have undertaken our most comprehensive and inclusive stakeholder engagement programme ever, with more than 25,000 stakeholders shaping our plan via a rigorous co-creation programme. 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 influence our proposals, culminating in 42 ambitious core commitments.

1.26. Over the last two years, we have 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.

1.27. 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.

1.28. As the only company to publish three drafts of our Business Plan for stakeholders to review in January, March and July 2021, (see figure 1.5) our final Business Plan has been significantly refined to ensure that it meets stakeholder requirements.

Responding to feedback received on our first submission Business Plan

Figure 1.5 Our business plan publications

1.29. Since our first draft submission to Ofgem and the Challenge Group on 1st July 2021 (the third time WPD published its plan for stakeholder consultation) we have received feedback from a wide range of sources. Responses from Ofgem, Ofgem's Challenge Group, the Customer Engagement Group, Welsh government, Citizens Advice, wider stakeholders at six workshops and extensive customer research, led us to identify a number of improvement opportunities that have been addressed via substantive changes to this final Business Plan. We have also reviewed all other published DNO plans to consider best practice approaches.

1.30. A list of the most significant changes this has led to can be found in Chapter 5 of this document. More detail is then provided in Supplementary Annex SA-05: Giving customers a stronger voice - enhanced engagement. In summary the changes we have made fall into six key categories, to:

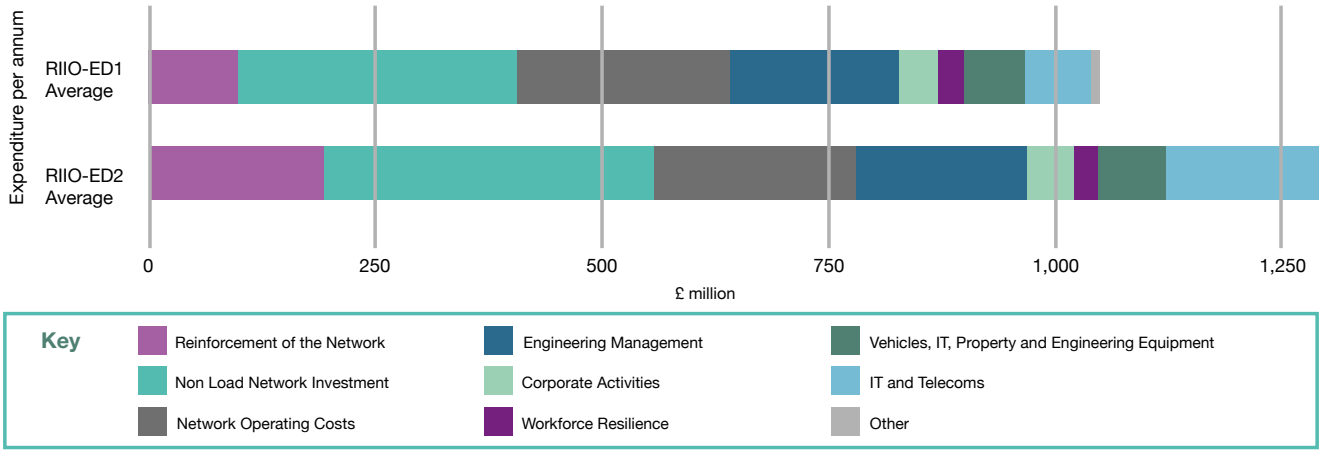
- Ensure WPD's plan is based on our Best View of the future take up of LCTs.
- Specify clearer outcomes and strategic drivers for all areas of our plan.
- Enhance the justifications for all core commitments and areas of significant spend, including setting out the full range of options considered.
- Clarify how innovation and digitalisation is embedded in all we do and quantify the efficiencies it has led to.
- Update the financing parameters and assumptions to reflect very latest modelling.
- Further enhance the overall scope and quality of our strategies in relation to innovation, digitalisation and DSO.

What we will spend in RIIO-ED2

1.31. We plan to invest around £6.7 billion in the network across the period 2023-2028 to deliver our commitments and provide the level of service our customers expect. This is an increase in overall expenditure of around £1.4 billion from current levels. This will deliver significant benefits to customers, show leadership in the drive to 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.

1.32. Figure 1.6 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 1.6 Average annual expenditure (RIIO-ED1 vs RIIO-ED2)

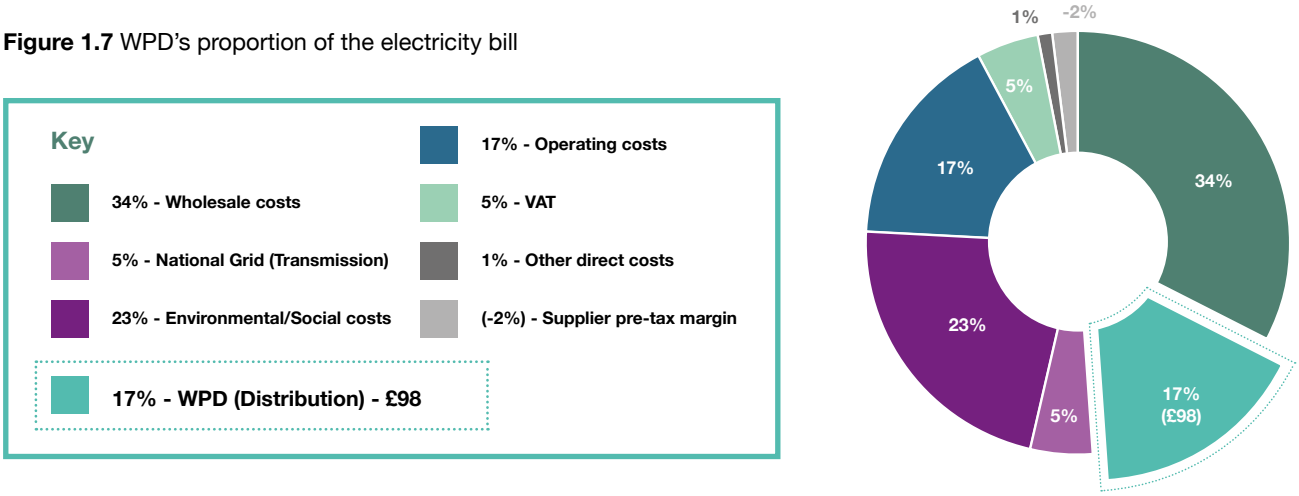


Average current annual expenditure
£1.05 billion

Average annual expenditure proposed for RIIO-ED2
£1.34 billion

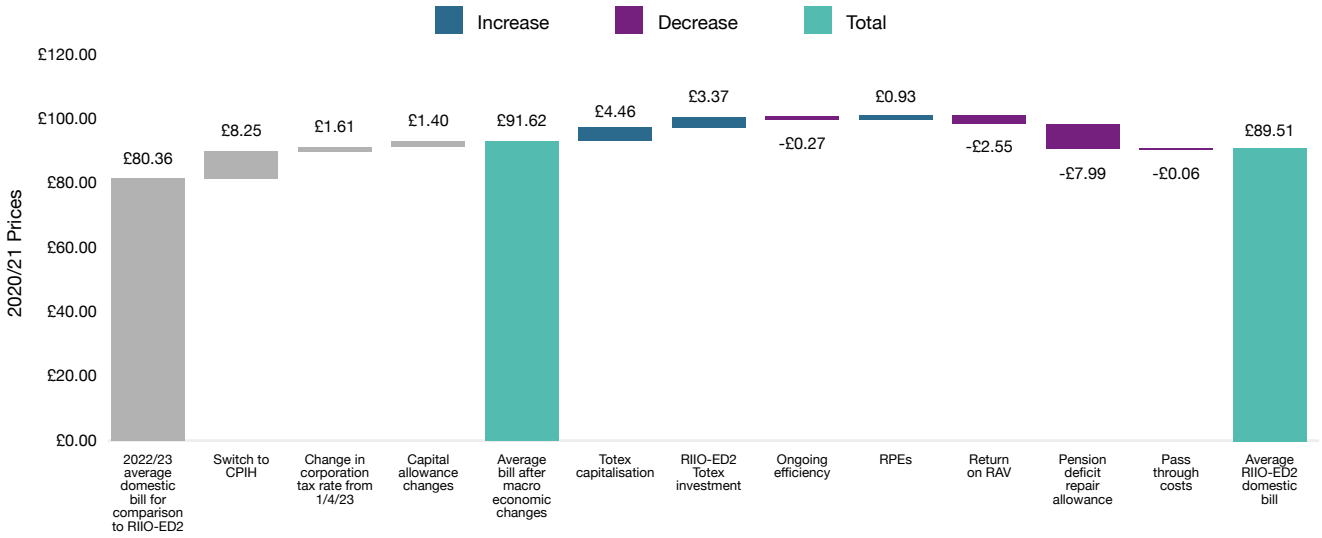
1.33. Around 17% of an average domestic customer's yearly electricity bill is allocated to us (see figure 1.7).

Figure 1.7 WPD's proportion of the electricity bill



1.34. Our current calculations estimate that the impact of the increased expenditure would result in a £3.37 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 bills broadly flat across the five year period 2023-2028 (see figure 1.8).

Figure 1.8 Average Domestic Bill – WPD Total



1.35. 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 investment. 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.

1.36. 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 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.

Governance and assurance

Board engagement and governance arrangements for developing our plan

1.37. This Business Plan aligns with our overall business strategy to ensure our customers receive an affordable, sustainable service which is fully supported by our stakeholders, will enable them to be net zero by 2050 and aligns with WPD's values.

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

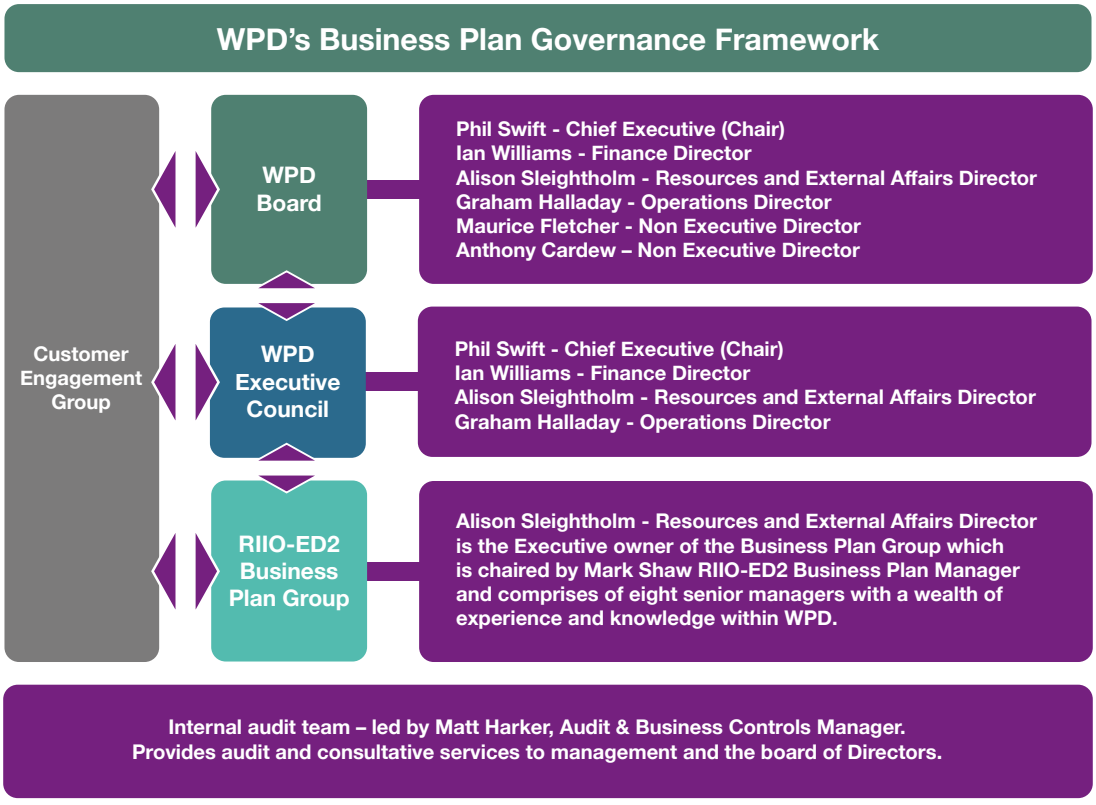
1.39. Our Board has been actively engaged in the development of our plan to ensure that the needs of our stakeholders are recognised and addressed. This has included:

- 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.

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

1.41. 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.

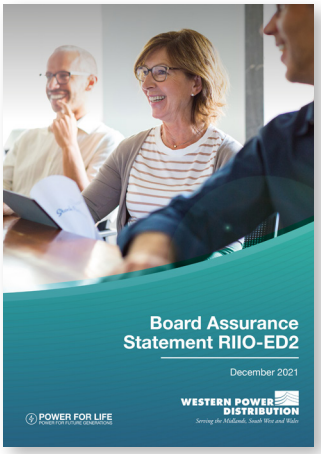
Figure 1.9 Governance framework



1.42. Our plan has been developed using a highly experienced team which is integrated with the operational delivery team and works closely with our Executive team. Mark Shaw was reassigned from his role as Network Services Manager in charge of the West Midlands' licence area to lead our Business Plan Group.

1.43. Our two non executive directors have played a key role in oversight and challenge. Access was provided to the 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, is deliverable and is ambitious in scope to support the UK's transition to net zero carbon emissions. (see www.westernpower.co.uk/RIIO-ED2/board-assurance)



Assuring our plan

1.45. A comprehensive assurance programme was critical to our Board, ensuring the plan is both accurate and drives our strategic aims. We understood that a robust assurance programme builds 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 used risk assessments to identify and understand potential issues. Our assurance programme was targeted to ensure appropriate assurance resources were applied and were commensurate with the risks.

1.47. We used a range of internal and external specialists to assess that our plan assurance objectives were addressed. We engaged PricewaterhouseCoopers (PwC) 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 actively and openly engaged with the CEG to leverage their skills and insights.

1.49. A comprehensive and ongoing stakeholder engagement programme ensures we are responsive to the evolving needs of those we serve and our plan has been co-created with them. We were the only DNO to publish three 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. We recognised the value of the independent expert review and challenge presented by the Ofgem Challenge Group and by the CEG. We used their comments to critically reappraise our plan and the underlying rationale for the decisions and spending we are proposing. We approached the challenge with enthusiasm and openness and believe the review has enabled us to strengthen our overall final plan.

1.51. Based on the outcomes of our assurance programme, the Board has collectively satisfied themselves that:
- The Business Plan has been built upon an effective stakeholder engagement programme and that feedback from the CEG and the Ofgem Challenge Group 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.
- The plan is innovative and ambitious in supporting the UK's transition to net 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, (see www.westernpower.co.uk/RIIO-ED2/board-assurance) We also provide more detailed explanations of our Business Plan development governance and assurance programme within Supplementary Annex SA-01 Governance and assurance.

Our staff are critical to our success

1.53. The success of our business is built by our people and 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 key pillars of our workforce strategy. 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 and benchmarked against appropriate energy and comparator groups.

Chapter 2

Our commitments

For a short video overview of this chapter scan the QR code.

Chapter 2 Contents

2. Our commitments

Summary

2.1. This section details the ambitious programme of activity we will deliver in RIIO-ED2 to ensure that our vision to enable net zero for a sustainable future is realised. Building on an impressive track record, our plans focus on delivering excellent customer service, harnessing the benefits of a smart future, driving industry leading sustainability plans and prioritising digitalisation and innovation to ensure we operate efficiently. We will do all of this while supporting our most vulnerable customers, tackling fuel poverty and ensuring bills remain affordable for everyone (see figure 2.1). Supplementary Annex SA-02 provides further details on our core and wider commitments.

Figure 2.1 Our overarching strategic outcomes

2.2. Our approach to producing our commitments has been driven by the following overarching principles to be:

- **Transparent:** We are the only company to have published three full versions of our Business Plan for stakeholders to scrutinise, challenge and refine.
- **Believable:** Our commitments are stretching, but are realistic and achievable. We have a clear plan for how we will deliver, and an unrivalled track record that gives our customers confidence that we can be trusted to do so.
- **Deliverable:** Our RIIO-ED2 plan proposes significant uplifts in ambition but is credible and deliverable.
- **Highly ambitious:** As the largest Distribution Network Operator (DNO) in the UK we are leading the industry in terms of innovation, digitalisation and developing a DSO capability.
- **Adaptive to change:** While our Business Plan is built on accurate forecast, our plans will be agile and adaptive.

2.3. Our stakeholders have led us to identify 42 core commitments that we will deliver over the five year period. These core commitments and supporting wider commitments have extensive stakeholder support and contribute to achieving the four overarching strategic outcomes for customers. A sustainable and affordable smart energy future can only be achieved if our stakeholders can deliver their net zero aspirations when they want to and at a price they can afford.

2.4. Our performance against these commitments will be measured rigorously, to demonstrate to our customers, stakeholders, independent consumer groups and regulator 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 and scrutinise our progress at every stage.

2.5. We will go further than ever before, so in addition to our core commitments we have identified over 400 wider commitments which we will also deliver. As a package it will enable us to transform the way we supply power to our customers, deliver excellent service and accelerate our journey towards decarbonisation. Underpinning all of our commitments is the promise to keep innovating and harnessing digitalisation to continually improve the services we deliver. We will also continue to engage proactively with our stakeholders throughout RIIO-ED2 and adapt our plan to address the changing needs of our communities.

Regulatory framework

2.6. Our commitments are required to fit into a regulatory framework provided by Ofgem (see figure 2.2).

Figure 2.2 Ofgem's RIIO-ED2 high level output categories

Delivering an environmentally sustainable network	Meet the needs of consumers and network users	Maintaining a safe and resilient network
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.	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.**

2.7. There are three main framework mechanisms to which each of our core commitments is aligned (see figure 2.3).

Figure 2.3 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.	• Specific volume driven targets. • Consequences for non delivery of activity.

2.8. 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).

2.9. 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 Customer Satisfaction Survey.
- **ODI Reputational (ODI-R)** is where a performance is compared against other DNOs or against targets but there is no financial reward associated with this.

2.10. 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.

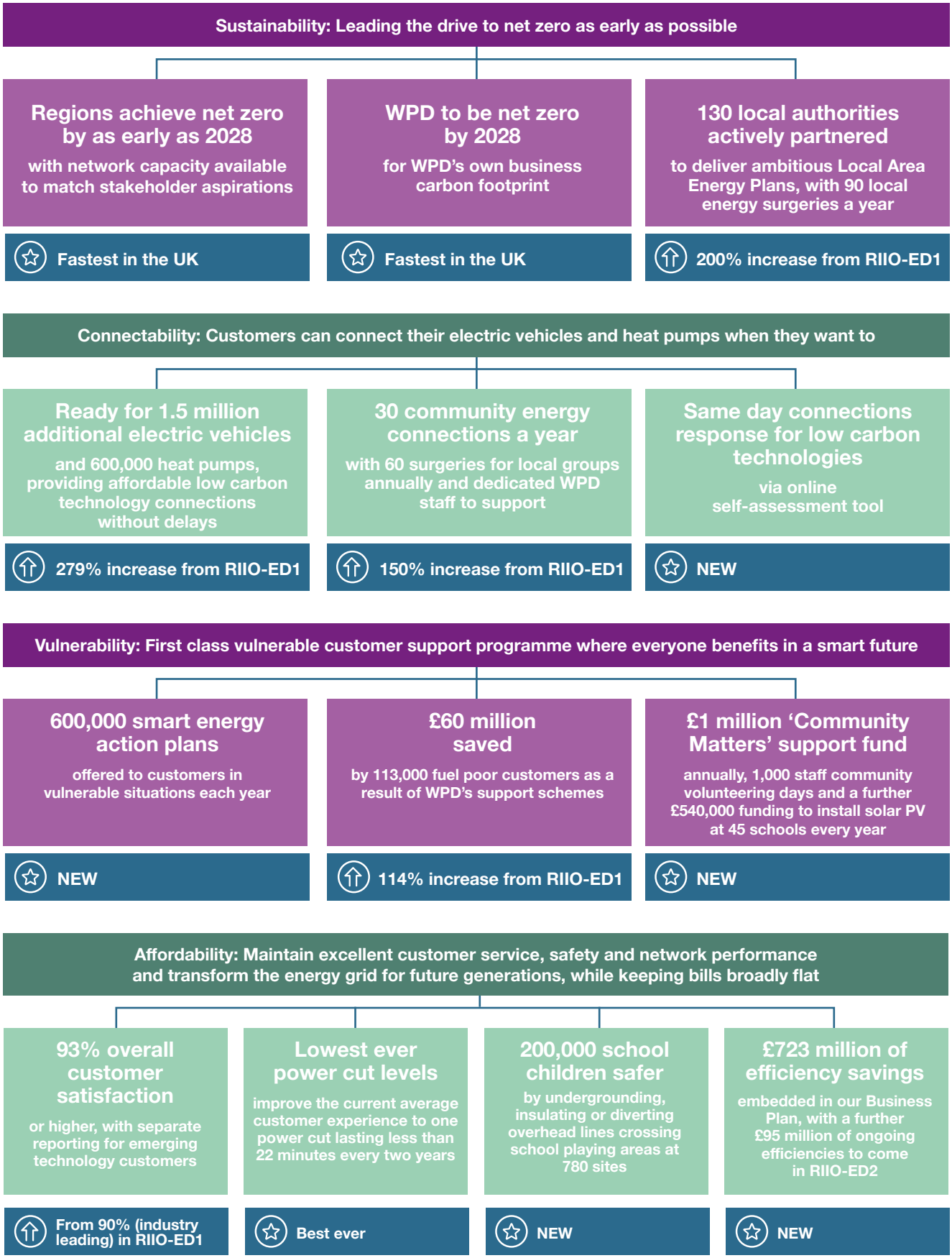
2.11. Ofgem specifies LOs, ODIs and PCDs for certain key activities which we undertake. However, where a commitment is additional to those specified by Ofgem, then we are able to propose a Bespoke ODI-F, ODI-R or PCD. All of our 42 commitments fit into one of these mechanisms.

2.12. 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 successful, will allow us to secure a one off award for our commitment.

RIIO-ED2 highlights

2.13. Figure 2.4 shows 13 key core commitments out of the total of 42.

Figure 2.4 RIIO-ED2 key core commitments



2.14. Our customers have told us they value the excellent levels of customer service we consistently deliver. We will build on this success and adapt to their evolving needs. For example, we will connect EV chargers as customers embark on the transition to low carbon technologies (LCTs), offer better access to our data and ensure our service remains affordable and reliable. Despite the significant change, as energy use shifts away from traditional models, we have set the ambitious target of achieving an average customer satisfaction rate of at least an overall 9.3 out of 10 by the end of RIIO-ED2. This will include the entirely new services that will emerge as a result of the shift to a net zero future.

2.15. As we radically transform the electricity system, it is essential that we protect our vulnerable customers and support them to embrace and benefit from LCTs. We already have 1.9 million customers, on our Priority Services Register (PSR), who receive additional tailored support during power cuts. We proactively contact these customers every two years to deliver bespoke advice and to ensure that our records are up to date. But we will go further. In RIIO-ED2, we will offer 600,000 PSR customers a smart energy action plan each year and work with partner organisations to support 113,000 fuel poor customers to save more than £60 million.

2.16. 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 already industry leading performance so that on average our customers experience just one power cut every two years, lasting less than 22 minutes. We will also make improvements to remove all Worst Served Customers known at the end of RIIO-ED1, by undertaking 70 schemes to improve network reliability for 8,260 customers.

2.17. 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, and it is our role to support them. We have already helped over 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, funded by our shareholders, to continue to support our local communities as they recover and rebuild.

2.18. Safety is of paramount importance, intrinsic to how we operate. We will divert, underground or fully insulate overhead lines crossing school playing areas and although we have never had any reported incidents of harm, we are committed to taking proactive action to significantly reduce risk and keep our young children safe.

2.19. Cyber security is another important area of focus for our stakeholders. We will continually assess for potential cyber threats to ensure we are innovative in using security systems to protect our customers' data and to safeguard the network from a possible cyber attack. As criminal methods become more sophisticated, it is our responsibility to stay one step ahead and to invest to mitigate potential threats.

2.20. As we transition towards net zero, we are readying our network for the future. We will support our customers with the connection of EV charging points, heat pumps and prepare our network to support more localised renewable generation. We will also support the creation of community energy projects, enabling extensive schemes of green, distributed generation to connect to our network.

2.21. As we accelerate towards decarbonisation, we will lead by example, reducing our own business carbon footprint (BCF) (excluding network losses), reaching net zero by 2028 – 22 years ahead of the government's target. 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.

2.22. Successful delivery of all our promises lies with our dedicated, highly skilled workforce that will continue to evolve during RIIO-ED2 to meet the needs of our stakeholders. We will attract innovative and talented individuals with diverse views and backgrounds who are able to understand, and respond to the changing needs of our customers.

Our core commitments

Well justified core commitments

2.23. Our core commitments were co-created with stakeholders. It is essential every commitment is extensively well justified, considering a wide range of factors. This drives the achievement of the best outcomes for customers at the optimum cost. In agreement with the Customer Engagement Group, we have used six key justification criteria as follows. WPD must:

1. Explain why **actions are appropriate** for a DNO to undertake (WPD is best placed to deliver) and that electricity distribution customers should fund.
2. Demonstrate that we have **considered alternative approaches** to meet these objectives and explain why the proposed approach is best.
3. Demonstrate that the **costs are efficient** and that the benefits of the actions plausibly outweigh the costs (recognising benefits may not all be quantifiable and may be uncertain).
4. Test whether a representative sample of customers and **stakeholders support the Business Plan** when properly informed of the costs and benefits.
5. Propose how the initiatives included will be treated in the price control so that **customers are not exposed to unacceptable risks** (e.g. paying and not getting the benefits).
6. **Provide assurance** undertaken or commissioned by WPD and explain how this has been taken into account.

2.24. These six criteria are met across all of WPD's core commitments. Supplementary Annex SA-02a provides full details on our full justification analysis for our core commitments. Figures 2.5 and 2.6 summarise the justification method for each of our core commitments and also key wider areas of expenditure.

2.25. The following tables summarise our 42 core commitments, which drive our £6.7 billion investment we will make in RIIO-ED2.

Figure 2.5 Summary of our 42 core commitments

1. Delivering an environmentally sustainable network

1.1 A smart and flexible network					Justification method	
	Core commitment	Commitment Type	Change from RIIO-ED1	Positive impact for customers	Annex 2a - Detailed Justification	Annex 5 - Stakeholder Justification
1	**Drive the achievement of net zero across our regions sooner than 2050 in line with stakeholder plans (some areas as early as 2028), by ensuring network capacity is available.**	Bespoke ODI-R	New	Support the UK's net zero aspirations and the government's ten point plan and Net Zero Wales 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.	✓	✓
2	**Ensure customers are able to connect low carbon technologies quickly and easily, with the network being ready to support at least an additional 1.5 million electric vehicles and 600,000 heat pumps by 2028.**	Bespoke ODI-R	New	Customers can easily connect low carbon technologies without delays due to a lack of available network capacity.	✓	✓
3	**Make it easy for customers to adopt low carbon technologies and achieve net zero in their region much sooner than 2050, by driving the delivery of ambitious Local Area Energy Plans and proactively engaging all 130 local authorities each year via 90 local energy surgeries.**	Bespoke ODI-R and CVP	New	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.	✓	✓
4	**Deliver a network to meet the evolving needs of our customers by aligning our future energy forecasts with the plans of local regions and the Electricity System Operator, by updating WPD's Distribution Future Energy Scenarios every 12 months.**	Bespoke ODI-R	Increase from every 2 years	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.		✓
5	**Keep bills as low as possible and minimise the requirement for load related reinforcement by adopting a 'flexibility first' approach in order to maximise the utilisation of the existing network.**	Bespoke ODI-R	New	Choosing the most effective option to provide required capacity will minimise network costs for all customers.		✓

1.1 A smart and flexible network					Justification method	
	Core commitment	Commitment Type	Change from RIIO-ED1	Positive impact for customers	Annex 2a - Detailed Justification	Annex 5 - Stakeholder Justification
6	**Unlock capacity from the existing grid and therefore avoid the need for reinforcement, by stimulating the development of flexibility markets and implementing simple, fair and transparent rules for procuring flexibility services, with a six monthly tender and exceptional customer satisfaction for flexibility services.**	Bespoke ODI-R	Increase from annual tenders	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.		✓
7	**Deliver solutions that achieve the greatest social benefit to customers by utilising a whole system approach for major reinforcement to improve network efficiency. We will undertake three regional collaboration trial schemes by 2025 involving gas, electricity, water, waste, transport and heating sectors.**	Bespoke ODI-R	New	Looking across the wider energy system to provide capacity for the future needs of our customers in the most efficient way.		✓

1.2 Community energy					Justification method	
	Core commitment	Commitment Type	Change from RIIO-ED1	Positive impact for customers	Annex 2a - Detailed Justification	Annex 5 - Stakeholder Justification
8	**Actively support the expansion of green, renewable energy generation and help local communities to decarbonise and lower their bills, by connecting at least 30 community energy groups to the network each year. We will hold 60 community energy surgeries per year and provide a dedicated WPD community energy representative to assist with connection and flexibility offers.**	Bespoke ODI-R and CVP	150% increase in connected groups	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.	✓	✓
9	**Support a growth in community energy schemes by facilitating their access to available funding streams.**	Bespoke ODI-R	New	Support community energy schemes with viable and ambitious low carbon schemes to secure funding to make them a reality.		✓

1.3 Environment and sustainability					Justification method	
	Core commitment	Commitment Type	Change from RIIO-ED1	Positive impact for customers	Annex 2a - Detailed Justification	Annex 5 - Stakeholder Justification
10	**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 and CVP	New	Accelerate a reduction in carbon emissions to minimise our impact on climate change.	✓	✓
11	**Avoid damage to the environment by reducing the volume of oil leaked from fluid filled cables by 50% by 2028 and replacing 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	Further increase	Significantly reduce the risk of harm to the local ecology and protect habitats and species in the regions we operate in.	✓	✓
12	**Significantly reduce our impact on climate change by delivering a 20% reduction in SF_6 losses and drive industry partners to develop technological alternatives to reduce overall volumes of SF_6 on the system.**	Bespoke ODI-R	Further increase	Improve WPD's business carbon footprint by reducing the risk of leaks from environmentally harmful gases from WPD's equipment.	✓	✓
13	**Significantly reduce the environmental impact of our operations by achieving zero waste to landfill by 2028 (excluding hazardous waste) and delivering an overall 30% reduction in tonnage of waste produced.**	Bespoke ODI-R	Reduce waste to land fill from 13% to zero	Ensure our services for customers are delivered in an environmentally responsible way, reducing the carbon impact of our operations.	✓	✓
14	**Improve visual amenity by removing at least 50km of overhead lines in Areas of Outstanding Natural Beauty and National Parks.**	Bespoke ODI-R	51% increase	Improve the visual amenity of the landscape in beauty spots across our operating region.	✓	✓
15	**Achieve a 10% net gain in biodiversity (in line with nationally recognised assessment tools) for new major projects and for selected primary and grid substation sites.**	Bespoke ODI-R	New	Ensuring we have a positive impact on our surroundings, enhancing local biodiversity (rather than just mitigating any negative impact), improving community wellbeing and overall air quality.		✓

1.4 Innovation					Justification method	
	Core commitment	Commitment Type	Change from RIIO-ED1	Positive impact for customers	Annex 2a - Detailed Justification	Annex 5 - Stakeholder Justification
16	**Keep bills for customers low by delivering an additional stretch efficiency saving of £95m through RIIO-ED2 (on top of £723m of efficiencies already included in the plan) by utilising innovation to improve our processes and show a positive carbon impact.**	Bespoke ODI-R	New	Successful innovation is quickly rolled out across the business to improve day-to-day operations to improve WPD's efficiency and overall quality of supply for customers.	✓	✓
17	**Enhance access to data that is tailored to the individual needs of our customers, by making 60% of WPD's network data available via an interactive Application Programming Interface.**	Bespoke ODI-R	New	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.		✓

2. Meeting the needs of our consumers and network users

2.1 Customers in vulnerable situations					Justification method	
	Core commitment	Commitment Type	Change from RIIO-ED1	Positive impact for customers	Annex 2a - Detailed Justification	Annex 5 - Stakeholder Justification
18	**Ensure customers are not left behind in the smart energy transition by offering at least 600,000 Priority Services Register customers a bespoke smart energy action plan each year.**	Bespoke ODI-R and CVP	New	Targeted advice and support for vulnerable customers in relation to low carbon technologies, smart meters, and flexible energy services for example.	✓	✓
19	**Support at least 113,000 fuel poor customers to save £60 million on their energy bills over RIIO-ED2.**	Bespoke ODI-R	95% increase in savings	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.	✓	✓
20	**Expand the reach of our Priority Services Register to at least 75% of total eligible customers and 80% of customers with critical medical dependencies to ensure those in greatest need receive targeted support services. This will include registering at least 50,000 additional 'hard-to-reach' customers each year.**	Bespoke ODI-R	Increase from 59% reach	Customers with the most serious vulnerabilities are proactively identified and offered support.	✓	✓
21	**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	Improve from manual data shares with 80% of companies	Customers no longer have to register multiple times with each individual utility company in order to receive priority support.		✓
22	**Maintain high quality data to allow us to deliver bespoke support to customers in vulnerable situations by proactively contacting over two million Priority Services Register customers once every two years to remind them of our services and update their records (with 60% via direct telephone call).**	LO	New	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.		✓

2.2 Social contract					Justification method	
	Core commitment	Commitment Type	Change from RIIO-ED1	Positive impact for customers	Annex 2a - Detailed Justification	Annex 5 - Stakeholder Justification
23	**Support and add significant value to our local communities via a 'Community Matters' social initiative associated with the smart energy transition, vulnerability, environment and sustainability. This will include a shareholder funded annual £1 million community support fund and 1,000 volunteer days per year for WPD staff to support local causes.**	Bespoke ODI-R and CVP	New	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.		✓
24	**Deliver enduring, long term support to our communities by publishing an updated WPD Social Contract and performance report every year and maintain our prime Environmental, Social and Governance rating.**	Bespoke ODI-R	New	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.		✓
25	**Build decarbonised communities and local energy schemes by providing £540,000 shareholder funded support per year to install solar PV on schools in areas of high economic deprivation.**	Bespoke ODI-R and CVP	New	Establish community energy schemes enabling schools to reduce their carbon impact and lower their energy bills, enabling the redistribution of savings to spent elsewhere on education resources.		✓

2.3 Customer service					Justification method	
	Core commitment	Commitment Type	Change from RIIO-ED1	Positive impact for customers	Annex 2a - Detailed Justification	Annex 5 - Stakeholder Justification
26	**Deliver exceptional service levels by achieving an overall average customer satisfaction of 93% or higher by the end of RIIO-ED2, with separate reporting for emerging technology customers.**	ODI	4% increase	Excellent and improved service across all key service areas, including power cuts, connection and general enquiries.	✓	✓
27	**Ensure a speedy telephone response to customers by answering 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	Maintain	Customers virtually get straight through to speak to a call agent on the telephone.		✓
28	**Ensure a speedy social media response to customers by replying to enquiries within an average of five minutes and Webchats in an average of less than a minute, 24 hours a day.**	Bespoke ODI-R	2 minutes quicker	Customers contacting us for a response on Twitter, Facebook and WhatsApp receive a swift and comprehensive response.		✓
29	**Provide greater insight on our planned work activities and interruptions on our network by creating an online viewer.**	Bespoke ODI-R	New	Enable customers to access information online via a 'self-service' function, rather than needing to call us, if that is their preference.		✓
30	**When things go wrong ensure we put things right very quickly, by resolving at least 90% of complaints within one day and 99% of complaints within 25 days.**	ODI	6 days quicker	Complaints resolved to the customer's full satisfaction very quickly.		✓

2.4 Connections					Justification method	
	Core commitment	Commitment Type	Change from RIIO-ED1	Positive impact for customers	Annex 2a - Detailed Justification	Annex 5 - Stakeholder Justification
31	**Make it as easy as possible for customers to apply to connect individual domestic low carbon technologies by providing a same day connections response via an online self-assessment tool**	Bespoke ODI-R	New	Enable customers to receive a rapid response to their connection applications for potentially high volume connection types.	✓	✓
32	**Provide quicker and cheaper connections options for customers by increasing the number of flexible connection offers made, ensuring 100% of schemes receive a flexible alternative to reinforcement where the reinforcement cost is >£75k for LV, 11kV and 33kV connections and >£100k for 66kV or 132kV connections and/or where works will take more than 12 or 18 months respectively to complete.**	Bespoke ODI-R	Significantly lowered threshold (from >£125k)	More customers can choose between a conventional reinforcement solution, or a cheaper and quicker flexible solution.		✓

3. Maintaining a safe and resilient network

3.1 Network resilience					Justification method	
	Core commitment	Commitment Type	Change from RIIO-ED1	Positive impact for customers	Annex 2a - Detailed Justification	Annex 5 - Stakeholder Justification
33	**Deliver improved network reliability where on average power cuts are better than one interruption every two years lasting less than 22 minutes (12% reduction in customer interruptions (frequency) and 16% reduction in customer minutes lost (duration)), utilising vulnerable customer data to prioritise network improvement schemes.**	ODI	Further improve	Customers receive a highly reliable supply of electricity, delivering our lowest ever power cut levels with an average duration of less than 22 minutes per year.	✓	✓
34	**Improve the service for at least 8,260 Worst Served Customers by undertaking 70 schemes.**	PCD	46% increase in schemes	Significantly improved supply reliability for customers that have experienced a significantly poorer service (higher volumes of power cuts) than the average. Improvements will result in less inconvenience and disruption for customers.	✓	✓
35	**Counteract deterioration of network assets through an investment of £216 million per annum, delivering a 22% change in risk to keep network risk at similar levels to the start of the price control period.**	Bespoke ODI-R	22% change	Reducing the risk of unplanned power cuts by improving the reliability of our network by replacing equipment in the poorest condition.	✓	✓
36	**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	42% increase in schemes	Improve the resilience of the network to severe flooding, therefore reducing the risk of power cuts and disruption to customers.		✓

3.2 Safety					Justification method	
	Core commitment	Commitment Type	Change from RIIO-ED1	Positive impact for customers	Annex 2a - Detailed Justification	Annex 5 - Stakeholder Justification
37	**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	Reduce the risk of harm to the general public, in particular younger children.	✓	✓
38	**Keep our children safe by sending electrical safety education packs to every primary school in WPD's region and educate at least 80,000 children per year via direct learning.**	Bespoke ODI-R	24% increase	Keep children safe around our electricity equipment and reduce the risk that they could come to harm.		✓

3.3 Business IT Security and Cyber Resilience					Justification method	
	Core commitment	Commitment Type	Change from RIIO-ED1	Positive impact for customers	Annex 2a - Detailed Justification	Annex 5 - Stakeholder Justification
39	**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	New	Personal customer data will be protected and the risk of power cuts as a result of cyber attacks will be kept to a minimum.		✓
40	**Reduce the risk of disruption to our operations and enhance the resilience of our IT network security as we deliver greater digitalisation, by increasing levels of threat monitoring, prevention and alerting systems, and upgrading our disaster recovery capability to ensure continuity of our operations.**	Bespoke ODI-R	New	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.		✓

3.4 Workforce resilience					Justification method	
	Core commitment	Commitment Type	Change from RIIO-ED1	Positive impact for customers	Annex 2a - Detailed Justification	Annex 5 - Stakeholder Justification
41	**Demonstrate exceptional and embedded employment practices by achieving Gold accreditation with Investors in People by the end of RIIO-ED2.**	Bespoke ODI-R	New	Customers receive excellent service as a result of a motivated, highly-skilled and knowledgeable workforce.		✓
42	**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	Improve the quality and tailoring of our services by having a workforce that reflects the diversity of the communities we serve.		✓

2.26. Figure 2.6 shows how our main areas of expenditure have been well justified by Engineering Justification Papers and the supporting narrative in Supplementary Annexes SA-02 and SA-06.

Figure 2.6 Well justified expenditure

Activity	Core commitment reference	Justification Methods			
		Annex 2a - detailed justification	Annex 5 - stakeholder justification	Annex 6 - expenditure	EJP references (where applicable)
Connections Related Reinforcement	Core commitment 32		✓	Section 4	26 EJPs: EJPs 126-151
General Reinforcement Primary Network	Core commitments 1 and 2	✓	✓	Section 4	42 EJPs: EJP 111, EJP 152-192
General Reinforcement Secondary Network	Core commitments 1 and 2	✓	✓	Section 4	EJP 112
Fault Level Expenditure	Core commitments 1 and 2	✓	✓	Section 4	7 EJPs: EJP 119-125
New Transmission Capacity Charges	Core commitments 1 and 2	✓	✓	Section 4	6 EJPs: EJP 113-118
Asset Replacement	Core commitment 35	✓	✓	Section 5	30 EJPs: EJP 042 to 070, EJP 073
Asset Refurbishment	Core commitment 35	✓	✓	Section 5	

Activity	Core commitment reference	Justification Methods			
		Annex 2a - detailed justification	Annex 5 - stakeholder justification	Annex 6 - expenditure	EJP references (where applicable)
Civil Programme	Core commitment 35	✓	✓	Section 5	
Diversions	Core commitment 35	✓	✓	Section 5	EJP 016
Overhead Line Clearance	Core commitments 14, 21 and 37		✓	Section 5	EJP 071
Flood Mitigation	Core commitment 36		✓	Section 5	EJP 041
Environmental	Core commitments 10-15	✓		Section 5	4 EJPs: EJP 039, EJPs 074-075 and EJP 193
Quality of Service	Core commitments 33 and 34	✓	✓	Section 5	
Worst Served Customers	Core commitments 33 and 34	✓	✓	Section 5	EJP 038
Visual Amenity	Core commitment 14	✓	✓	Section 5	EJP 017
Safety	Core commitment 37	✓	✓	Section 5	EJP 040
Faults Costs	Core commitment 33	✓	✓	Section 6	
Severe Weather Events	Core commitment 33	✓	✓	Section 6	
Inspections, Repairs and Maintenance	Core commitment 33	✓	✓	Section 6	
Tree Clearance Expenditure	Core commitment 33	✓	✓	Section 6	EJP 072
Engineering Management	Core commitments 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31 and 38		✓	Section 7	
Corporate Services	Core commitments 1, 2, 5 and 6		✓	Section 8	
Workforce Resilience	Core commitment 41 and 42		✓	Section 9	
Information Technology and Telecommunications	Core commitments 39 and 40		✓	Section 10	62 EJPs: EJPs 009-015, EJPs 018-037 and EJPs 076-110
Vehicles, Property and Engineering	Core commitment 10	✓	✓	Section 11	8 EJPs: EJPs 001-008

Price Control Deliverables

2.27. 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

- We will spend an additional £64 million above the standard purchase price and replacement rates for internal combustion vehicles 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

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

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

2.28. 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 customers. We determine this value using a robust social value measurement and give priority to the proposals that are most important to our stakeholders. Figure 2.7 shows the list of six CVPs we are proposing. Our CVPs align to our four strategic outcomes, as set out in Chapter 1, and they explain why WPD is best placed to undertake each activity.

Figure 2.7 Our six CVP proposals

CVP	CVP commitment summary	Core commitment	Cost of delivery	Number of customers benefitting	Social value per benefitted customer	Total social value delivered (£m)*
1	**Ensure WPD is a net zero business by 2028,** and adopt a stretching science-based target of 1.5 degrees.	10	£89.1 million	8 million (indirect)	£1.80	**£14.4 million**
2	**Proactively partner with every local authority in our region** to help them develop ambitious Local Area Energy Plans.	3	£2.3 million	8 million (indirect)	£3.49	**£27.9 million**
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.	8	£1.26 million	8 million (indirect)	£0.39	**£3.1 million**
4	**Build decarbonised communities and local energy schemes** by funding solar PV on schools in areas of high economic deprivation.	25	£2.7 million	8 million (indirect)	£2.88	**£23.0 million**
5	**Offer 1.2 million PSR customers** a bespoke smart energy action plan every two years	18	£5.0 million	0.12 million (indirect)	£59.17	**£7.1 million**
6	**Deliver an annual £1 million 'Community Matters' Fund,** funded entirely by shareholders, to achieve positive community outcomes in relation to vulnerability, environment and education.	23	£5.8 million	8 million (indirect)	£2.09	**£16.7 million**

* Figures presented in Net Present Value over ten years, rounded to closest £100,000 where applicable.

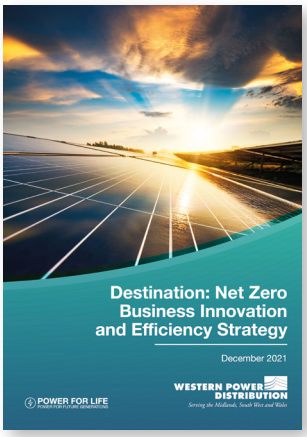
Delivering an environmentally sustainable network

A smart and flexible network

2.29. We will drive our stakeholders' transition towards net zero and transform our network for the future. We will support our customers with the connection of electric vehicle charging points, heat pumps and more localised renewable generation at a huge scale.

2.30. We will achieve this by utilising innovation and digitalisation to drive efficiencies in key processes and services across our business. We have a range of dynamic strategies for Digitalisation, Innovation, Whole Systems and Distribution System Operator that are interdependent and have cross business impact.

2.31. Our overarching Destination Net Zero: Business Innovation and Efficiency Strategy details our commitment to transformational change within the business to deliver net zero for us and our stakeholders.
(see www.westernpower.co.uk/RIIO-ED2/innovation-efficiency-strategy)



2.32. We will provide highly accessible and visible data to drive innovative DSO capabilities. We will also digitalise our planning and forecasting using machine learning and artificial intelligence to optimise our decision making. We will utilise Application Programming Interfaces (APIs) to share extensive operational and flexibility data with the market to avoid operational constraints and encourage new innovation and services led by our customers.

2.33. We will establish innovation and digitalisation champions in our local offices to ensure that we are actively developing innovation and digitalisation at every opportunity and to act as an expert point of contact. The full details of our activities to ensure that WPD operates a smart and flexible network are covered in Chapter 3. However, we have also summarised our core commitments in this area in the following section.

Our smart and flexible network core commitments for RIIO-ED2

Stakeholder top priorities for smart and flexible initiatives:

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.**

2.34. While we have been at the forefront of flexibility, digitalisation and DSO developments in the industry, we will use this as a springboard to accelerate change and generate maximum benefit for customers in RIIO-ED2.

2.35. We have established innovative processes for procuring and using flexiblity services as an alternative to conventional network reinforcement which reduces the cost of connection for our customers and frees up network capacity far earlier than conventional reinforcement. We also have established a digital 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.

2.36. To ensure that our processes are working effectively, enabling flexibility providers to engage fully with the market and identify improvements, we will introduce a customer satisfaction survey specific to this area.

Enabling LCTs to connect

Core commitment 1	**Drive the achievement of net zero across our regions sooner than 2050 in line with stakeholder plans (some areas as early as 2028), by ensuring network capacity is available.**
Core commitment 2	**Ensure customers are able to connect low carbon technologies quickly and easily, with the network being ready to support at least an additional 1.5 million electric vehicles and 600,000 heat pumps by 2028.**

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

2.38. 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 EVs are charged. Together, these proactive actions will enable more LCTs to connect overall, in shorter timescales and at lower cost than if conventional reinforcement was required.

Core commitment 3	**Make it easy for customers to adopt low carbon technologies and achieve net zero in their region much sooner than 2050, by driving the delivery of ambitious Local Area Energy Plans and proactively engaging all 130 local authorities each year via 90 local energy surgeries.**

2.39. It is critical that we are able to free up network capacity in the right areas so our customers can be confident that, when they wish to connect LCTs, an affordable connection will be available in a timely manner. Engagement with local authorities and Local Area Energy Plans (LAEPs) is an essential part of delivering on this commitment.

2.40. It 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 them develop ambitious LAEPs.

2.41. The varying experience and resources among the 130 local authorities in our 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. To help them with their plans, we will hold dedicated surgeries where more detailed discussions can take place with relevant WPD local network staff and dedicated staff who will lead the engagement. We will also recruit four dedicated Local Authority Engagement Engineers to support this commitment.

Producing and using Distribution Future Energy Scenarios (DFES)

Core commitment 4	**Deliver a network to meet the evolving needs of our customers by aligning our future energy forecasts with the plans of local regions and the Electricity System Operator, by updating WPD's Distribution Future Energy Scenarios every 12 months.**

2.42. In 2015, WPD was the first DNO to produce and publish a DFES document and we have done so every year since. The DFES forecasts the volumes and regional distribution of LCT uptake in our region. DFES are key to our continual assessment of the distribution network, helping us to identify and forecast network constraints.

2.43. 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 Assessment (DNOA) process which will determine the most cost effective approach to providing capacity on the network. This in turn will inform our Long Term Development Statement and Network Development Plan that will be published during RIIO-ED2. We will update the DFES each year so that we can use the latest information to inform our network investment plans.

2.44. We will collaborate with the Electricity System Operator (ESO), and contribute to the national Future Energy Scenarios (FES), by providing more detailed information about local developments. This will also enhance our understanding of the assumptions behind the FES.

2.45. Together, these approaches will drive highly accurate, refined and granular DFES that fully reflect the most likely future network needs. Regular engagement with stakeholders throughout RIIO-ED2 will continually improve the DFES analysis.

Assessing alternatives to conventional reinforcement

Core commitment 5	**Keep bills as low as possible and minimise the requirement for load related reinforcement by adopting a 'flexibility first' approach in order to maximise the utilisation of the existing network.**

2.46. WPD will adopt a 'flexibility first' approach to resolve network constraints. We have established innovative processes for procuring and using flexibility services as an alternative to conventional network reinforcement which allows customers to connect more quickly and at lower cost.

2.47. Where constraints are identified, we use signposting and forecasting processes to give flexibility providers a clear picture of requirements. These processes are carried out before conventional reinforcement would need to start and therefore help to identify whether there is sufficient flexibility available to resolve a network constraint. This approach ensures that we consider a flexible alternative for every network constraint. We will use digitalisation to continually refine the process and identify innovative ways to encourage more third parties to consider providing flexibility services.

Core commitment 6	**Unlock capacity from the existing grid and therefore avoid the need for reinforcement, by stimulating the development of flexibility markets and implementing simple, fair and transparent rules for procuring flexibility services, with a six monthly tender and exceptional customer satisfaction for flexibility services.**

2.48. 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 FES while forecasting is a shorter term (up to two year) view of requirements based upon greater certainty of requirements.

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

2.50. 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. We are transparent about the needs of the network and anticipated constraints, pricing structures, contractual arrangements and our methods for dispatching flexibility. We have also established a separate process to ensure our decision making is completely independent.

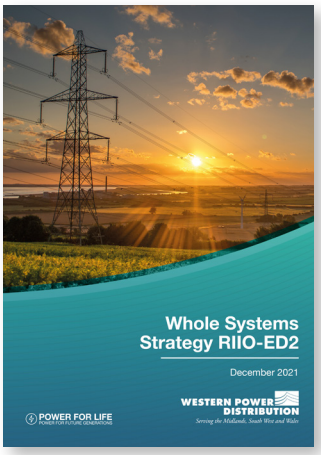
Whole system collaboration

Core commitment 7	**Deliver solutions that achieve the greatest social benefit to customers by utilising a whole system approach for major reinforcement to improve network efficiency. We will undertake three regional collaboration trial schemes by 2025 involving gas, electricity, water, waste, transport and heating sectors.**

2.51. The changing use and operation of the network is impacting the whole energy system. Development of the network therefore needs to be viewed in a wider context to ensure that the most efficient and effective solutions are adopted for customers.

2.52. In RIIO-ED1 we have already worked with National Grid 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. We anticipate that further whole system challenges will emerge during RIIO-ED2, some of which may be initiated by transmission or other DNOs. We will work collaboratively to ensure that network issues are resolved swiftly and effectively by always determining the best solution.

2.53. We have produced a Whole Systems Strategy which details how we will partner with other organisations to ensure we always deliver the most effective solution to meet our customers' net zero aspirations. (see www.westernpower.co.uk/RIIO-ED2/whole-systems-strategy)



Community energy

2.54. Community energy has the potential to have a significant impact on the achievement of net zero. 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.

2.55. We will employ four new Community Energy Engineers who will support community energy groups to realise their great ideas for innovation approaches to benefit communities. This will also support the commitments in WPD's Social Contract and Customer Vulnerability Strategy to roll out successful innovation solutions. We will also hold digital workshops to empower communities to maximise the value from data to deliver net zero. Highly granular and relevant data will be presented effectively to support local area planning processes.

Stakeholder top priorities for community energy initiatives:

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 advisers.

Core commitment 8	**Actively support the expansion of green, renewable energy generation and help local communities to decarbonise and lower their bills, by connecting at least 30 community energy groups to the network each year. We will hold 60 community energy surgeries per year and provide a dedicated WPD community energy representative to assist with connection and flexibility offers.**

2.56. To help unlock the potential in our communities, we will continue to support community representatives with a wide range of 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. Taking this a step further, we will introduce community energy surgeries where we can talk through ideas and the details. We will assist them to come up with the most cost effective solution and we can use our expertise in innovation and digitalisation to support them to do this.

Core commitment 9	**Support a growth in community energy schemes by facilitating their access to available funding streams.**

2.57. To help community and local energy organisations develop new projects, we will partner with them to support their ideas and deliver bespoke network innovation projects. Community energy groups have requested we now go even further and support them to access any available funding streams which could support them to establish projects.

Environment and sustainability

Our Environment Strategy

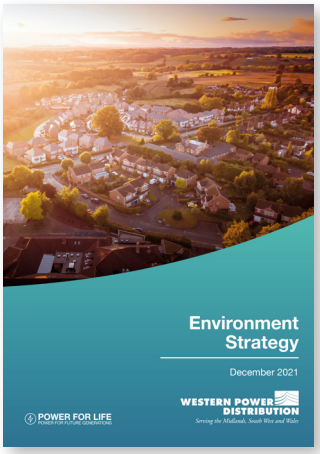
2.58. We are committed to environmental sustainability and achieving net zero. We passionately believe in minimising our impact on the environment and are striving to reduce our own business carbon footprint (BCF). We embrace our social responsibility to respect and protect the environment and believe we should be a role model, inspiring others to follow our lead.

2.59. During RIIO-ED1, we have driven a more proactive, performance driven approach to environmental stewardship, achieving:

- 36% reduction of our BCF.
- 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.

2.60. WPD's Environment Strategy for RIIO-ED2 (see www.westernpower.co.uk/RIIO-ED2/environment-strategy) and separate Environmental Action Plan details our immediate commitments to become a net zero carbon organisation and to ensure that environmental responsibility underpins all of our activities in RIIO-ED2 and beyond.

Our environmental commitments for RIIO-ED2



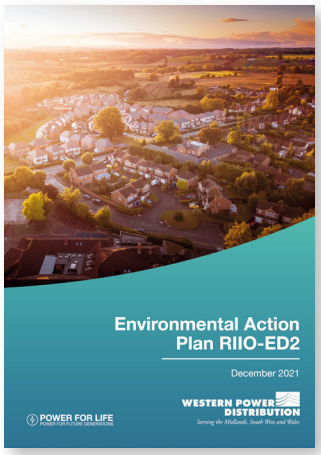
2.61. Working with our internal teams we will develop methodologies that evaluate the environmental impact of our activities and refine the way we run those activities to improve and continuously measure our environmental impact.

2.62. We will use machine learning design activity to develop environmentally considered construction to minimise our impact on biodiversity. We will also utilise data insights to build a 'green supply chain' and share more data with suppliers to help to reduce their own carbon footprint.
(see www.westernpower.co.uk/RIIO-ED2/environment-strategy)

Stakeholder top priorities for environmental initiatives:

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 our 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



2.63. Our RIIO-ED2 Environmental Action Plan (EAP) (see www.westernpower.co.uk/RIIO-ED2/environmental-action-plan) sets out our ambitions to meet our net zero expectations, reduce our environmental impact and allow everyone to benefit from a smart and sustainable future. The EAP also outlines our goal to decarbonise our business operations and significantly reduce our own BCF by committing to the Science Based Target (SBT) initiative and contains further details on our planned environmental actions.

Core commitment 10

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.

2.64. We will become a net zero carbon organisation 22 years ahead of the UK government's 2050 target, by:

- **Reducing our operational business carbon footprint (BCF):** Our annual BCF is a measurement of 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 transport journeys. In RIIO-ED2 we will broaden the scope of our annual BCF to include carbon emissions linked to waste management and additional indirect emissions.
- **Setting Science Based Targets (SBTs):** 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. We have engaged with the SBT initiative and had our more ambitious 1.5°C SBT officially verified, and this will ensure that we limit our global temperature impact to well below 2°C.

- **Measuring 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.
- **Reducing 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.

2.65. It is very important to our stakeholders that we not only avoid our operations having a negative impact on the environment, but we seek to have a net positive impact overall. We will therefore reduce waste, enhance biodiversity, reduce leaks from network equipment, share best practice and work collaboratively with other DNOs and organisations.

2.66. We will deliver the following actions by the end of RIIO-ED2 to reduce our BCF to become net zero by 2028:
- Install solar 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 EVs by 2028.
- Cut carbon emissions from our operational fleet by 50%.
- Install EV 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 BCF when restoring customer supply.

Protecting our local environment

Core commitment 11	**Avoid damage to the environment by reducing the volume of oil leaked from fluid filled cables by 50% by 2028 and replacing 90km of the worst leaking circuits with non-oil alternatives putting WPD on target to remove all oil-filled cables by 2060.**
Core commitment 12	**Significantly reduce our impact on climate change by delivering a 20% reduction in SF_6 losses and drive industry partners to develop technological alternatives to reduce overall volumes of SF_6 on the system.**

2.67. During RIIO-ED2, we will:
- Proactively inject all fluid filled cables (FFCs) that have significant leaks on our network with perfluorocarbon tracer (PFT), a benign chemical that allows quick location and repair of leaks.
- Introduce the use of compounds that can seal leaks on FFCs 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 FFCs by 50% compared to RIIO-ED1 levels.
- Replace 90km of the poorest performing 132kV and extra high voltage (EHV) FFCs on our network.
- 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.
- Replace 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-1987 transformers and a small range of other equipment.

Protect the local and regional environment from damage

2.68. 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.

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

2.70. We will work with Natural England and Natural Resource Wales in relation to our work at Sites of Special Scientific Interest (SSSIs) to ensure we do not adversely affect our country's protected natural assets. We will collaborate with Natural England by implementing a generic assent approval process for low impact works within English SSSIs. This will reduce administrative burden and therefore costs for both Natural England, WPD and our customers.

2.71. We will also establish environmental champions in our local offices to ensure that what we do is sustainable and to act as an expert point of contact.

Monitor our use of resources and reduce waste

2.72. In the past six years, we have significantly reduced the amount of waste sent to landfill. In RIIO-ED2 we will take this to zero. 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, use recyclable packaging and introduce manufacturer 'take back' schemes of increasingly durable packaging.

2.73. We will also investigate opportunities to turn waste materials into a resource for third parties and reduce the overall tonnage of waste per £ of total business expenditure.

Core commitment 13	**Significantly reduce the environmental impact of our operations by achieving zero waste to landfill by 2028 (excluding hazardous waste) and delivering an overall 30% reduction in tonnage of waste produced.**

2.74 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 2.24 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 2.8.

2.75. 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 environmental impact of our operations.

Figure 2.8 Waste hierarchy

Core commitment 14	**Improve visual amenity by removing at least 50km of overhead lines in Areas of Outstanding Natural Beauty and National Parks.**

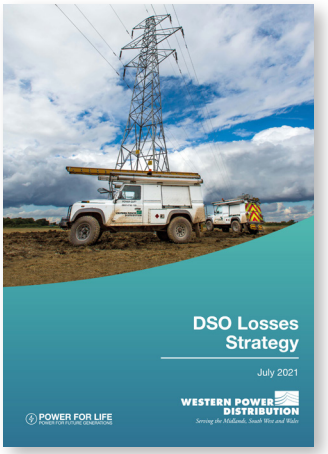
2.76. Improving the visual amenity in our protected and valued landscapes is a duty we take very seriously. We are mindful that the improvement of our Areas of Outstanding Natural Beauty (AONBs) not only provides benefit for the local communities which live in those areas, but also supports economic welfare by making these areas more attractive to the visitors' industry.

2.77. We will continue to coordinate the undergrounding of overhead lines with established steering groups consisting of representatives from AONBs and National Parks to help to identify and prioritise where and when work will take place.

Core commitment 15	**Achieve a 10% net gain in biodiversity (in line with nationally recognised assessment tools) for new major projects and for selected primary and grid substation sites.**

2.78. We must continue to minimise the impact of our business activities on UK protected species of flora and fauna. The decline of native species diversity in the UK is well documented and is of concern. We are conscious that our activities can have an impact on habitats. The UK government's Environment Bill details a requirement for 10% biodiversity net gain on all new projects. We are committed to meeting this requirement through our RIIO-ED2 core commitments and via local partnerships.

Reducing losses



2.79. We are committed to reducing losses associated with our network and have published a Losses Strategy which is available on our website. (see **www.westernpower.co.uk/RIIO-ED2/Losses-Strategy**)

2.80. 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.

2.81. In RIIO-ED2, we will deliver further reductions 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 and therefore reduces 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.
- Continuing to work in collaboration with electricity suppliers and other authorities to further reduce electricity theft and illegal abstraction.

Innovation

2.82. By embracing innovation and digitalisation to dramatically enhance the efficiency of our operations we will improve processes and services across our business to ensure our customers get an excellent, affordable and adaptive service.

2.83. We will further enhance our innovative culture, ensuring it is embedded throughout the business. Our Chief Executive has launched an initiative to embrace innovation, ensuring we evaluate a range of solutions including digital approaches to optimise efficiency. We will effectively capture ideas from staff, stakeholders and innovation projects, and use them to drive improvements.

Stakeholder top priorities for innovation initiatives:

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 rollout.**
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 16	**Keep bills for customers low by delivering an additional stretch efficiency saving of £95 million through RIIO-ED2 (on top of £723 million of efficiencies already included in the plan) by utilising innovation to improve our processes and show a positive carbon impact.**

2.84. 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.

2.85. We will ensure every innovation project delivers a cost and/or carbon benefit as well as a defined customer benefit.

Innovation ideas portal

2.86. The best ideas can come from collaboration. 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.

2.87. During RIIO-ED2, to ensure digitalisation benefits every aspect of our operations, we will develop a new interactive ideas portal aimed at staff, third parties, communities and other stakeholders and incentivise participation. Where appropriate, we will provide small grants to help progress an idea through feasibility assessment and to create a high level project scope.

Sharing network data

Core commitment 17	**Enhance access to data that is tailored to the individual needs of our customers, by making 60% of WPD's network data available via an interactive Application Programming Interface.**

2.88. 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.

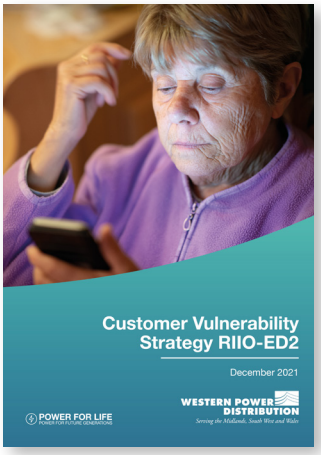
2.89. The Energy Data Task Force has promoted the concept of presumed open data. WPD has been developing ways of making more network data available to third parties and the Energy Data Hub on our website currently allows various data sets to be accessed. We will continue to expand the range of data available 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 to meet their needs. We anticipate that this access will be made through application programming interfaces.

2.90. As we expand the data available and the processes for accessing the data, we must ensure we continue to meet the needs of stakeholders, using the tools and channels which suit them best. We will introduce a satisfaction survey to support our engagement interaction and provide some quantitative analysis of the service we are providing. This will enable us to identify areas of opportunity and focus on specific improvements that will benefit the greatest number of users.

Meeting the needs of customers and network users

Customers in vulnerable situations

2.91. For customers in vulnerable situations, 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 (PSR) for the first time. Our stakeholders consistently tell us this remains a crucial priority. (see www.westernpower.co.uk/RIIO-ED2/vulnerability-strategy)

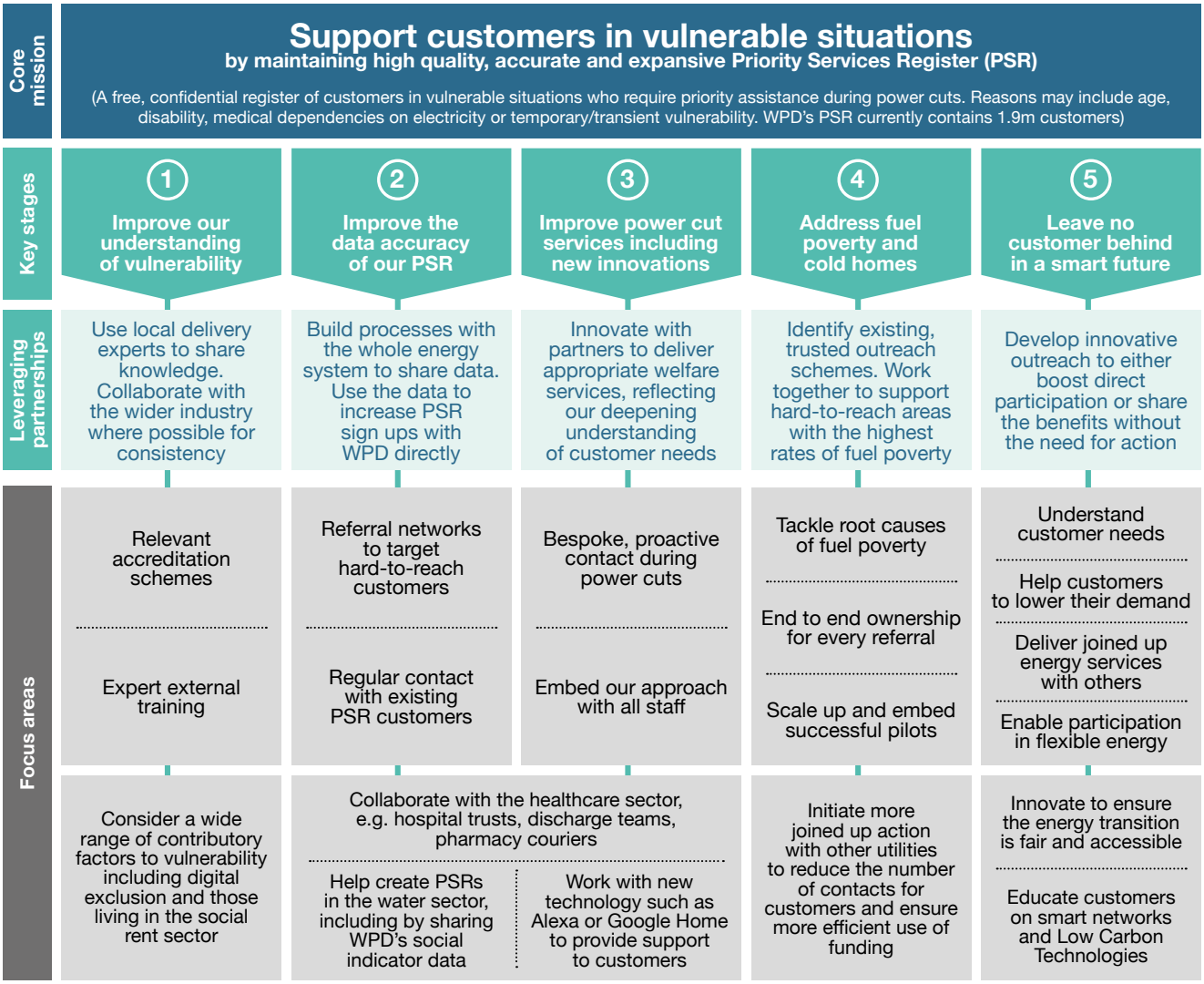


2.92. Vulnerable customers often face additional challenges including difficulties with the costs of household utility bills. In RIIO-ED1, our stakeholders made it clear that we should identify and provide help and support to those struggling with fuel poverty. We have significantly expanded the support we provide and by working with trusted partners, have been able to deliver significant savings of £37 million for over 92,000 customers.

2.93. 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. Our social obligations, digitalisation and innovation teams will work together to develop new services for our vulnerable customers, for example offering voice activated apps (Alexa) that combat loneliness and help customers access energy efficiency advice, additional support and services. We will work with a range of external agencies to improve the data we hold on our vulnerable customers to ensure that we are able to offer them tailored services and additional support.

2.94. Our Customer Vulnerability Strategy is updated annually (see www.westernpower.co.uk/RIIO-ED2/vulnerability-strategy) and is subjected to rigorous external assessment and scrutiny. This has led to significant additions to the actions, including a greater emphasis on addressing fuel poverty and protecting the interests of vulnerable customers during the smart energy transition. Our strategy is summarised in figure 2.9.

Figure 2.9 Supporting customers in vulnerable situations



Our customer vulnerability commitments for RIIO-ED2

Stakeholder top priorities for customer vulnerability initiatives:

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 18	**Ensure customers are not left behind in the smart energy transition by offering at least 600,000 Priority Services Register customers a bespoke smart energy action plan each year.**

2.95. In the transition to a smart network and net zero carbon economy, we promise that nobody will be left behind. Taking that further, we will ensure vulnerable customers benefit from a smart low carbon future, by removing any barriers to entry. We will use a consumer classification model to identify the various capabilities of vulnerable customers and use these to drive new bespoke support services and to update our existing partner outreach schemes to provide more holistic support.

2.96. We will expand the scope of 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 of 60% of WPD's PSR to be offered this service.

2.97. We will deliver extensive and accessible education and support for customers and stakeholders to encourage everyone to embrace the opportunities offered by the smart energy transition and low carbon economy, harnessing digital tools where appropriate. We will also design innovation schemes to enable communities and the fuel poor to benefit from smart systems and LCTs.

Partnerships, outreach services and fuel poverty

Core commitment 19	**Support at least 113,000 fuel poor customers to save £60 million on their energy bills over RIIO-ED2.**

2.98. 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 in RIIO-ED1. This provides an excellent platform to build on and do significantly more.

2.99. 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 more effectively.

Core commitment 20	**Expand the reach of our Priority Services Register to at least 75% of total eligible customers and 80% of customers with critical medical dependencies to ensure those in greatest need receive targeted support services. This will include registering at least 50,000 additional 'hard-to-reach' customers each year.**

2.100. When talking about our approach to vulnerability, we often reference 'hard-to-reach' customers. At the broadest level, we define these as the 41% of eligible customers who are not yet registered to our PSR and who require bespoke outreach via trusted community partners. More specifically, 'hard-to-reach' customers can be those who are less likely to self-identify as needing the PSR, those who might be disengaged from the energy sector, and those whose vulnerability might be hidden from traditional service providers such as their energy supplier.

2.101. Stakeholders tell us that the work we do with partnership agencies to identify those in need of support is vital. When feeding back on our initial draft 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.

2.102. Working with the Centre for Sustainable Energy, we have revised the methodology used to calculate our PSR coverage, which shows we have a 59% PSR reach. WPD's latest data is now based on households and the overall vulnerable situations facing those occupants (therefore considering where vulnerable situations overlap and where there are occurrences of multiple PSR occupants). The methodology is explained in more detail in our Customer Vulnerability Strategy.

2.103. Taking our new baseline of 59% PSR coverage, we refined our target to expand the reach of the PSR to 75% of total eligible customers and 80% of customers with critical medical dependencies. When we tested this level of ambition with stakeholders at a topic-specific workshop, 80% agreed or strongly agreed with the updated commitment.

Customer vulnerability action plan

2.104. 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.

2.105. We will hold annual customer 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

2.106. 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 LCTs, can be used to provide increased resilience for customers in vulnerable situations. 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.

2.107. We will provide crucial advice on what to do in a power cut, including raising awareness of the 105 power cut phone number and increasing the volume of proactive outbound calls so customers do not need to go to the effort of contacting us for updates. We will also establish customer vulnerability champions in our local offices to ensure that we provide an effective and consistent service to our customers and to act as an expert point of contact.

Core commitment 21	**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.**

2.108. Reducing complexity for vulnerable customers is a key focus. 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 over 150 partner agencies and other utilities, we will be able to increase data sharing and achieve a 'one stop shop' service for vulnerable customers wishing to join the PSR while ensuring all General Data Protection Regulations requirements are met. Stakeholders strongly supported this action, but suggested that it should be extended even further, moving beyond utility companies to include telecommunication providers.

2.109. Our customer 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, using the appropriate outreach tools including harnessing digital technology. We will partner with trusted local agencies which can help to extend our support to these areas, ensuring more comprehensive coverage.

Core commitment 22	**Maintain high quality data to allow us to deliver bespoke support to customers in vulnerable situations by proactive contacting over two million Priority Services Register customers once every two years to remind them of our services and update their records (within 60% via direct telephone call).**

2.110. 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. 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 find 'hard-to-reach', vulnerable customers. 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.

2.111. Stakeholders have placed a significant priority on our PSR data cleanse being achieved 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.

WPD's Social Contract

2.112. 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 were the first DNO to publish a Social Contract. It contains additional actions to be delivered as part of our Business Plan and highlights our commitment to making a positive social impact. (see www.westernpower.co.uk/RIIO-ED2/social-contract). 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. We are therefore making clear commitments to do so, going beyond the basic requirements set by regulation and legislation.

2.113. We began consulting with stakeholders to co-create an impactful Social Contract in February 2019 and have engaged extensively with expert bodies, including Citizens Advice and Sustainability First. 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.

2.114. We will use digital solutions to build an 'early warning system' of customer groups that are at a risk of being left behind in the energy transition, potentially due to network constraints, planned third party investment, housing stock etc. We will also digitalise aspects of our energy advice service including automated home surveys for energy efficiency and low carbon technology options.

How our Social Contract was built

2.115. We followed an iterative process to co-create our Social Contract with stakeholders, playing back what we heard after each stage of engagement to check our understanding before updating our approach and retesting our proposals. 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.

Stakeholder top priorities for Social Contract initiatives:

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.

2.116. As well as holding co-creation workshops with stakeholders, we have been a key contributor to the 'Fair to the Future' project, led by Sustainability First. This scheme aims to define a 'sustainable licence to operate' and has heavily influenced the development of WPD's Social Contract.

2.117. As shown in figure 2.10, 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 2.10 The scope of the Environmental, Social and Governance assessment

2.118. Co-creation with stakeholders resulted in the identification of 15 key focus areas to achieve four overarching objectives (see figure 2.11). As part of this, 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.

Figure 2.11 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

2.119. These key focus areas created with stakeholders have led directly to our Business Plan core commitments, which complement and reinforce the wider actions set out within the Social Contract.

2.120. The Social Contract contains an Action Plan, which consists of 36 initiatives, with clear targets and metrics. Progress will be reported annually and it will be reviewed and updated in line with stakeholder feedback and external evaluation.

Core commitment 23	**Support and add significant value to our local communities via a 'Community Matters' social initiative associated with the smart energy transition, vulnerability, environment and sustainability. This will include a shareholder funded annual £1 million community support fund and 1,000 volunteer days per year for WPD staff to support local causes.**

2.121. 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 five options presented for this commitment, 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 rescope 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.

Provide transparent reporting (with clarity on returns and profits)

Core commitment 24	**Deliver enduring, long term support to our communities by publishing an updated WPD Social Contract and performance report every year and maintain our prime Environmental, Social and Governance rating.**

2.122. WPD has 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). 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. The ESG Corporate Rating covers more than 5,000 international and national companies. The way in which it has influenced our approach to the Social Contract includes:

- 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.

2.123. 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

2.124. In RIIO-ED2, we will:

- Produce a robust and long term Diversity, Equity and 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

2.125. In RIIO-ED2, we will:

- Ensure full compliance with the Financial Reporting Council's Wates Principles for the corporate governance of Large Private Companies. We will 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 on governance procedures.

2.126. To ensure the Social Contract itself remains relevant and fit for purpose, it will undergo an annual cycle of delivery, evaluation and improvement. 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 regular communications.
- Publish an annual report of the impacts achieved 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 25	**Build decarbonised communities and local energy schemes by providing £540,000 shareholder funded support per year to install solar PV on schools in areas of high economic deprivation.**

2.127. A critical outcome of our Business Plan is that we are driving the transition to a net zero economy. The uptake of low carbon technologies across our customer base plays an essential part in this. We must ensure that all communities are supported to navigate this rapidly changing landscape, so that everyone can participate in the transition to a greener, more sustainable energy system. To achieve this, we will support schools in areas of high economic deprivation within our region to adopt solar PV at their locations, allowing them to harness renewable energy to reduce their bills. Alongside the provision of solar panels, we will leverage touchpoints with our schools and wider customers to deliver Science, Technology, Engineering and Maths education and outreach, promote our Priority Services Register and fuel poverty services and identify further social and environmental benefits to maximise the value of our interaction with communities.

Customer service

2.128. Delivering great service 'First Time, Every Time' is a 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. It is 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 for the Customer Service Excellence Standard 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."

2.129. 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 more instantaneous services that they can track at every stage). In our sector, we have seen this translate into an expectation for more timely updates, more proactive contact and a wider range of channels to access information 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 as we have embraced digitalisation solutions.

2.130. We will continue to utilise innovation wherever possible to improve the efficiency and effectiveness of existing customer service channels and to also develop entirely new offerings that keep pace with the evolving expectations. For example, the shift towards a net zero future, which stakeholders expect WPD to achieve way ahead of the government's 2050 target, will result in huge volumes of LCTs connecting to WPD's network at a local level. This could see up to 1,600 connections a day from domestic connections for heat pumps and EVs. 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.

2.131. Every customer facing process will have a fully digital pathway option by the end of RIIO-ED2; however for customers who prefer to maintain in person contact this will remain easily accessible. By the end of RIIO-ED2 we will also use machine learning and analytics to predict why customers are contacting us and move them to the most appropriate channel immediately.

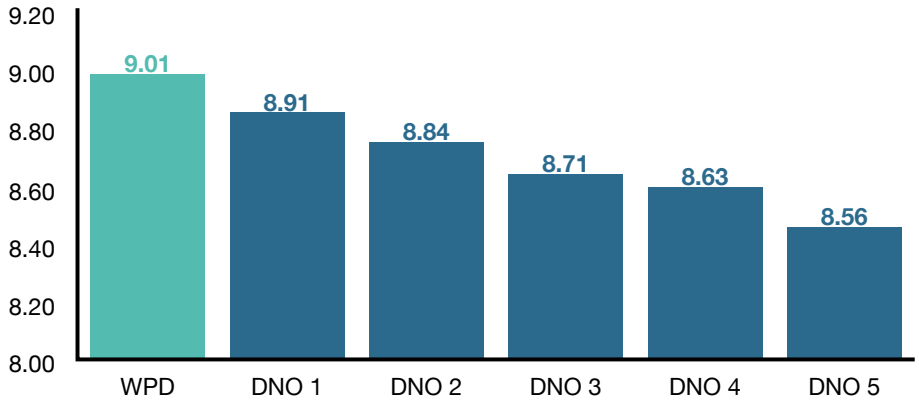
2.132. Any new services in RIIO-ED2 must deliver the same excellent experience for customers as today. That is why we need to measure customer satisfaction effectively, allowing us to identify opportunities for improvement and assuring our customers of our unwavering commitment to provide the highest levels of service.

2.133. 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 service offerings to enable customers to access smart energy services.

2.134. 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. 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 2.12).

Figure 2.12 Broad measure of customer satisfaction 2015-2021

BMCS - average RIIO-ED1 weighted score by DNO group



2.135. We have delivered consistent, exceptional customer satisfaction performance throughout RIIO-ED1. In Ofgem's BMCS, WPD's overall customer satisfaction score for the last six years is 9.01 out of 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 out of 10), John Lewis (85.1% or 8.51 out of 10) and Marks and Spencer (84.1% or 8.41 out of 10).

2.136. 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 2020, we achieved 45 out of 57 'Compliance Plus' ratings (the top UK performer out of 600 companies), with no instances of non-compliance.

Our customer service commitments for RIIO-ED2

Stakeholder top priorities for customer service initiatives:

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 26	**Deliver exceptional service levels by achieving an overall average customer satisfaction of 93% or higher by the end of RIIO-ED2, with separate reporting for emerging technology customers.**

2.137. As well as changes to customer expectations in a smart energy future, we also expect the Covid-19 pandemic to have a lasting impact, for example, with regards to the timing of planned works activities (in light of an enduring increase in home working). We will continue to innovate and harness technology to deliver on customer needs, as they adapt and change.

2.138. 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. 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 27	**Ensure a speedy telephone response to customers by answering calls within an average of four seconds and maintain an abandoned call rate of less than 1%, within our UK based, in-region Contact Centres.**

2.139. 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 telephone 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 appropriate staffing levels to provide a high quality service and fast response.

2.140. 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.

Core commitment 28	**Ensure a speedy social media response to customers by replying to enquiries within an average of five minutes and Webchats in an average of less than a minute, 24 hours a day.**

2.141. Based at our in-house Contact Centres, a 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.

2.142. 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 29	**Provide greater insight on our planned work activities and interruptions on our network by creating an online viewer.**

2.143. 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.

2.144. We will also provide timely information on all network outages, including planned works, using an innovative online power cut map and via 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 30	**When things go wrong ensure we put things right very quickly, by resolving at least 90% of complaints within one day and 99% of complaints within 25 days.**

2.145. Although we strive to deliver excellent customer service at all times, on the rare occasions when customers have a reason to complain, it is very important that we act swiftly and that we learn from these instances to avoid any future repetition.

2.146. 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.

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

Connections

2.148. Each year we build the electrical infrastructure and end connections to feed approximately 40,000 new premises, across four distribution service areas. 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.

2.149. 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.

2.150. Regardless of the type of connection, all of our customers want to be able to connect to the network when they need to and to 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.

2.151. We will continue to deliver a fast and efficient connections service from a customer's initial application, through to the final connection and energisation. Throughout the process we will keep customers informed of the progress and develop systems to provide this information.

2.152. We have introduced alternative connection solutions (including Active Network Management) which enables connections to be made more quickly and at a lower cost, than if conventional reinforcement is needed, and where the customer agrees to the possibility of some form of curtailment when the network is operating at full capacity. Will will inform customers about what alternatives are available to enable them to make an informed choice.

2.153. The continued rollout 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) 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.

2.154. 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 receives the best outcome in terms of customer service and value.

Our connections service commitments for RIIO-ED2

Stakeholder top priorities for connections service initiatives:

1. **Invest ahead of need and undertake forecasting for electric vehicle charging connections to ensure sufficient capacity, e.g. new apartment blocks.**
2. **Increase the speed of the connections process.**
3. **Offer more flexible connections (particularly at 11kV).**
4. **Ensure that information about the connections process is clear and simple for customers without technical backgrounds, especially for heat pumps.**
5. **Hold a series of connections workshops at a local level for customers, using local case studies.**

Connections to support net zero

2.155. We have a critical role to play in ensuring our network can support the growth of LCTs. In RIIO-ED2 we expect the growth of LCT products including EVs, battery storage and heat pumps. Net zero is a legally binding target for the UK and our work to connect LCTs complements the generation already connected and is central to the achievement of this target.

2.156. 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, has resulted in the network being able to connect over 31GW of generation, on a network conventionally designed for 14GW of demand.

2.157. In RIIO-ED2, we will see the focus shift from large scale renewable generation connections 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 EVs and heat pumps with capacities in multiples of 7kW. While our commitment to exceptional customer service remains the same, the increased volumes will necessitate a redesign to our business model to be able to respond effectively.

2.158. 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 million 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.

2.159. We will utilise automated approaches to rollout flexibility to our domestic networks. While we will operate and schedule larger demands and generation on our higher voltage networks, the low voltage network cannot be managed by us in the same way. We envisage flexibility being delivered through supplier tariff signals and aggregation offers.

2.160. 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.

2.161. We will use the innovation tools that we developed in RIIO-ED1 to power this change. Research from our Electric Nation project 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.

2.162. To provide excellent customer service, we must make sure that customers who want a connection, or advice about a connection, find the process as straightforward as possible. Availability and clarity of information is key to mitigating any concerns customers may have. Stakeholders have told us that we must ensure that the connections information we provide can be tailored to meet their individual needs. We will make easily understandable information available through various means, including a move towards digital contact methods, so that customers can make informed decisions and have clarity of process.

2.163. 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. 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.

2.164. Measuring performance against Time to Quote (TTQ) and Time to Connect (TTC) is a 'Business as Usual' activity. However, the expected proliferation of LCTs will place an added emphasis on WPD to ensure our network is ready to connect LCTs with speed and efficiency. Stakeholders have told us that the speed of a quote is not always the most important thing, if this means that accuracy is compromised.

2.165. Innovation and digitalisation have a vital part to play in improving our connections service and we will ensure that our customers see service improvements. We will achieve full digitalisation of the customer connection journey, including self-assessment tools, automated cost estimating, online contract processing, tools to book and reschedule work, and automated customer satisfaction reviews. For example, we will develop innovative online tools to allow customers to self-assess their connection requirements, obtain a cost of connection and enter into connection offer agreements.

Core commitment 31	**Make it as easy as possible for customers to apply to connect individual domestic low carbon technologies by providing a same day connections response via an online self-assessment tool.**

2.166. It is important that we put systems in place that will accommodate high volumes of LCTs and provide a smooth and simple customer journey throughout 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 enquiries 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

2.167. We will continue to hold our annual connections conference to engage with our connections customers and wider stakeholders on specific issues relating to new connections activities and to assess that we are on track to deliver against our commitments – providing a holistic picture of our inter-dependent and inter-linked commitments and promises.

2.168. 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 preferable for many of our customers. However, we will also embrace other platforms, including webinars and video conferencing, which allow for virtual contact without the need for travel time or hosting costs.

Local authority surgeries

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

Powering better customer outcomes through close collaboration

2.170. 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. 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.

2.171. We will continue to work with our industry partners including the National Grid's ESO and Electricity Transmission (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

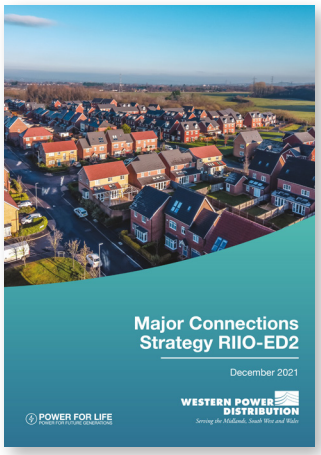
Core commitment 32	**Provide quicker and cheaper connections options for customers by increasing the number of flexible connection offers made, ensuring 100% of schemes receive a flexible alternative to reinforcement where the reinforcement cost is >£75k for LV, 11kV and 33kV connections and >£100k for 66kV or 132kV connections and/or where works will take more than 12 or 18 months respectively to complete.**

2.172. 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, so they can make an informed choice.

2.173. 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

2.174. 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 to deal with any queries.



2.175. 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.

2.176. 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. (see www.westernpower.co.uk/RIIO-ED2/major-connections-strategy)

2.177. We have developed a Major Connections Strategy (see www.westernpower.co.uk/RIIO-ED2/major-connections-strategy) to meet and exceed Ofgem's connection principles and baseline expectations. 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.

Maintaining a safe and resilient network

Network resilience

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

2.179. Our stakeholders continue to place network reliability as a top priority. Power cuts cause inconvenience to businesses, services (including hospitals), domestic life, and can be life threatening for some of our most vulnerable customers. 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.

2.180. 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 customer supplies.

2.181. While network reliability is important, safety remains critical and the two priorities go hand in hand. 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 in school playing areas. We are working on innovations that use machine learning to use proactive and preventative fault identification before power cuts occur. Using insights from LiDAR technology we will also reduce faults from vegetation contact with our network.

Our network performance commitments for RIIO-ED2

Stakeholder top priorities for network performance initiatives:

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 (QoS) in light of asset health and the growth in demand.**
4. **Invest in the network to make it more resilient for Worst Served Customers (WSC).**
5. **Maintain the health of 'at risk' assets and link WPD's scenario planning to this.**

2.182. During RIIO-ED2, we will deliver a range of activities to ensure 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 LiDAR 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 33	**Deliver improved network reliability where on average power cuts are better than one interruption every two years lasting less than 22 minutes (12% reduction in customer interruptions (frequency) and 16% reduction in customer minutes lost (duration)), utilising vulnerable customer data to prioritise network improvement schemes.**

Going further to reduce the number of customers affected by faults

2.183. 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. 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.

2.184. 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. We will install additional equipment to protect the network, including circuit breakers and intelligent fuses, to enable circuits to be subdivided into smaller zones reducing the number of customers affected by a fault.

2.185. During RIIO-ED1, we have targeted protection zones with more than 1,500 customers. In RIIO-ED2, we propose to go further and 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.

2.186. A new initiative for RIIO-ED2 will be to modernise some of the network protection arrangements in the South West, where we will be replacing legacy fuses with new devices that respond better to certain types of fault reducing the number of customers impacted by power cuts.

2.187. 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. 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.

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

2.189. We expect the range of actions that we are carrying out to improve network performance to lead to a 12% improvement in customer interruptions and a 16% improvement in customer minutes lost, relative to underlying performance up to 2020/21. Given the draft proposals provided by Ofgem on RIIO-ED2 targets, which expects significant year-on-year improvement, this means that the proposed £25 million of investment in quality of supply will lead to WPD being broadly neutral under the Interruption Incentive Scheme (IIS). Without the investment, WPD will be incurring IIS penalties.

Tree clearance

2.190. 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.

2.191. We have also changed 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. This approach will make overall routine and tree clearance on the HV and EHV networks more efficient and effective for RIIO-ED2.

Meeting a 12 hour restoration target

2.192. 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.

2.193. During RIIO-ED1, 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. This has been achieved through management focus, technology, resource availability, fast response and, where necessary, deployment of mobile generation to provide temporary supplies. This exceptional service does come at a higher cost than providing a simple repair service, however our stakeholders support our focus on getting supplies back on as quickly as possible and minimising the disruption caused by a power interruption especially in the case of our vulnerable customers.

Core commitment 34	**Improve the service for at least 8,260 Worst Served Customers by undertaking 70 schemes.**

2.194. A small proportion of customers 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.

2.195. In RIIO-ED1, 'Worst Served Customers' (WSC) 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 interruptions each year, which has increased the number of customers that are defined as worst served. Using the revised RIIO-ED2 definition, there were just over 9,000 WSC (see figure 2.13) across the four WPD licence areas in 2020/21.

Figure 2.13 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

2.196. 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.

2.197. 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 prevents faults affecting the rest of the circuit.

2.198. In RIIO-ED2, we are committed to delivering a minimum of 70 schemes across our area to improve supply reliability for our WSC with a particular focus on vulnerable customers. These projects will cost £4.4 million, which will be in addition to the £25.3 million being spent on general network performance improvements.

Core commitment 35	**Counteract deterioration of network assets through an investment of £216 million per annum, delivering a 22% change in risk to keep network risk at similar levels to the start of the price control period.**

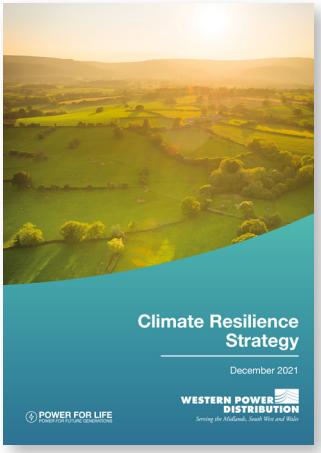
2.199. We have an extensive rolling programme of asset replacement to prevent the deterioration of the network over time. The replacement of assets, including transformers, overhead lines and cables, is prioritised according to the condition of the asset and the risk to the network if it fails.

2.200. 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.

2.201. The asset replacement activity in RIIO-ED2 will broadly offset the degradation of the wider network leading to the overall health of the assets (as measured by the risk metrics) being maintained at similar levels to the start of the price control. 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 070 and 073.

Climate change resilience

2.202. Our extensive Climate Resilience Strategy (see www.westernpower.co.uk/RIIO-ED2/climate-resilience-strategy) will ensure we consider the risks and impacts of climate change to our network. This activity is intrinsically linked to our net zero and decarbonisation efforts, though approaching the issue from another viewpoint.



2.203. 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. We will use this to specifically assess the risks and impacts to our network.

Resilience to severe weather

2.204. 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 major 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 36	**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.**

2.205. 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.

2.206. 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.

2.207. In RIIO-ED2, we will:

- Continue to replace defective poles within 12 months of identifying them.
- Complete our resilience tree clearance programme 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

2.208. 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 through routine inspection of our sites and assets and rectify defects on risk based timescales, tracking the removal of these defects to ensure that the risks are fully 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.

2.209. In RIIO-ED1, we have already 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.

Safety

2.210. 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.

2.211. 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, for 2020/21 the average incident rate is 682 per 100,000 employees.

Our safety core commitments for RIIO-ED2

Stakeholder top priorities for safety initiatives:

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 biannual or annual meetings with stakeholders to share best practice.
5. Ensure contactors comply with similar health and safety standards to WPD.

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

- Further reduce the health and safety risks associated with our activities.
- Continue to comply fully with all health and safety legislation.
- Expand our health and safety activities, 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.

2.213. We have a strong safety culture, confirmed by our staff in our most recent independent Safety Climate Survey in 2019. We will build on this and continue to seize opportunities to enhance this established safety culture in RIIO-ED2. We will conduct two further surveys and follow up with discussion workshops across the business. Trade Union safety representatives will be provided with enhanced feedback and review the results of the survey and any comments received.

2.214. 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 (DSO) techniques and practices.

2.215. 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. 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.

2.216. We will use digitalisation solutions and a range of data to provide the right information at the right time to staff, contractors, customers and stakeholders to support safe working practices by extending our current use of applications but also by looking for innovative new ways to communicate effectively. We will also utilise digital solutions to transform the approach to learning, for example, delivering immersive training using virtual reality headsets.

Improving health and safety communication to staff and contractors

2.217. We lead many collaborative 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 and Safety Executive's Helping GB Work Well programmes.

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

2.219. We will continue to work with our contractors to ensure that safety remains a key priority for them and monitor their safety performance via appropriate site safety visits and contractor audits. We will share learning from safety issues at regular review meetings to influence improvements in safety performance.

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

Keeping the public safe

2.221. 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 serious injury or death. We therefore provide extensive information and education to minimise the risks. 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.

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

2.223. Building on this, 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 37	**Increase the safety of around 200,000 children by delivering 780 schemes to underground, insulate or divert overhead lines that cross school playing areas.**

2.224. 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 significantly reduce 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.

Core commitment 38	**Keep our children safe by sending electrical safety education packs to every primary school in WPD's region and educate at least 80,000 children per year via direct learning.**

2.225. By providing information and education about the hazards associated with electrical apparatus, we can reduce the number of people who may suffer injury from electricity. In RIIO-ED2, we will deliver safety related information to more than one million customers by distributing safety literature and making greater use of social media to reach an even wider audience.

2.226. During RIIO-ED2, we will continue to educate 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.

2.227. 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, as well as Crucial Crew events alongside other emergency services, and have a presence at popular, family exhibitions and shows.

2.228. We will look for innovative ideas on how we can deliver safety education and use digitalisation to improve the scope of the education and the impact of messages.

Business IT security and cyber resilience

2.229. As reliance on systems and technology has increased, and we deliver ever greater digital transformation, the risk of cyber attacks has correspondingly increased.

2.230. The importance of electricity to everyday life and the wider economy is increasing massively, especially with regard to heating, transportation and reliance on internet connectivity. Cyber terrorist sophistication has grown and we have observed real world examples of the impacts that cyber terrorism can have.

2.231. At the same time, our stakeholders are demanding digital interactions with us including online and smart phone interaction and sharing of data. This increased overall connectivity between WPD and the outside world increases the risk of cyber threats.

2.232. It is therefore 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. To do this we follow the four cyber security principles as shown in figure 2.14. Detailed plans and processes are also required to be able to respond and recover in the event of a cyber attack.

Figure 2.14 Cyber security principles

2.233. 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 Network and Information Systems (NIS) compliant. This dedicated team now provides a variety of security controls and services throughout the business.

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

- Take the appropriate mitigating and corrective actions to identify network vulnerabilities.
- Create and maintain well tested incident recovery plans.
- Collaborate and work with third party experts, including those in government, to identify threats.

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

Stakeholder top priorities for cyber security initiatives:

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.**

Our Cyber Resilience IT Plan

2.236. Continuing to deliver cyber secure, reliable and resilient business IT systems will be a key focus in RIIO-ED2. We will achieve this through further investment in, and enhancement of, our existing cyber security systems, controls and processes.

2.237. Working with our Information Resources team and the world's best internet organisations, we will use our data and network as a platform to facilitate energy as a service by developing, deploying and trialling solutions. We will use digitalisation to enhance risk management, defence, detection, and recovery from cyber threats.

Core commitment 39	**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.**

2.238. To protect customers from the threats posed by cyber attacks, the 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.

2.239. 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.

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

2.241. 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 (CNI). 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-02: Our commitments.

Our cyber IT resilience commitments

2.242. 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.
- Ensuring that all customer data is kept secure and all General Data Protection Regulations are met.

Core commitment 40	**Reduce the risk of disruption to our operations and enhance the resilience of our IT network security as we deliver greater digitalisation, by increasing 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

2.243. Our establishment of a DSO function calls for the development of more efficient and digitalised networks to manage power flows across the distribution network. As a result, 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.

2.244. 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.

2.245. 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.

2.246. The work carried out so far by WPD's newly established cyber security team has focused on IT security and is now being expanded to include more OT-focused activities. They are also working alongside DSO 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.

2.247. 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-02: Our commitments.

2.248. Our comprehensive forecast for the RIIO-ED2 OT Cyber Resilience Plan has been built as a result of:

- 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 DSO activities.
- Identifying CNI-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.

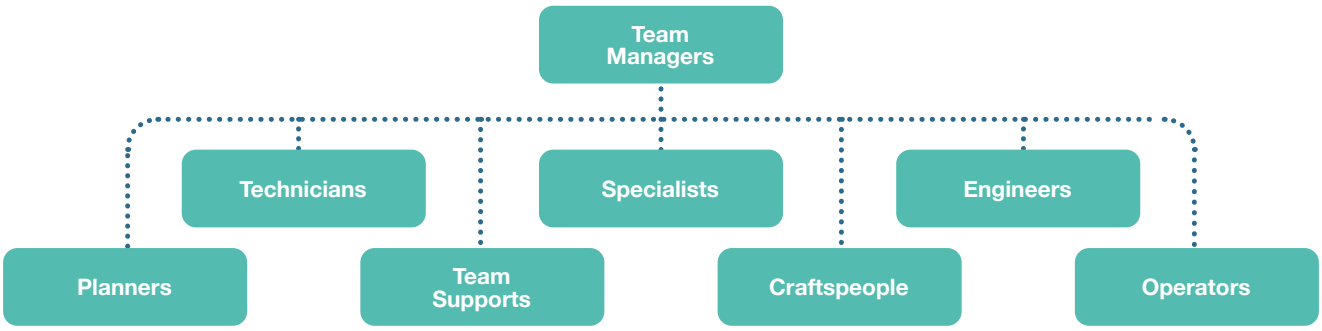
Workforce resilience

2.249. WPD's success is down to the talents and commitment of our staff. We work collaboratively with Trade Unions to create a working environment where staff are empowered to develop, progress and flourish.

2.250. 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.

2.251. A typical licence area consists of a Network Services Manager (NSM) overseeing network operations, between six and nine Distribution Managers (DMs) who can manage between three and eight Team Managers (TMs). Moving down the structure, staff in each geographical area bring more local and specific knowledge to the service that is delivered. 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 2.15 shows the typical structure of a team.

Figure 2.15 Network services' team structure



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

2.253. 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%.

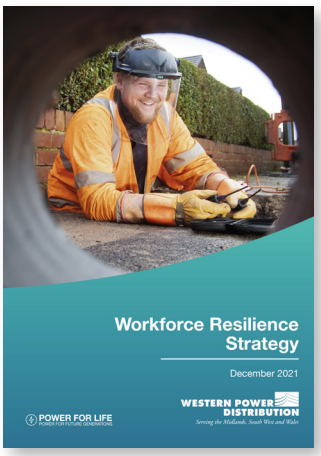
2.254. Some highlights of our delivery in RIIO-ED1 include:

- 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 to 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

Stakeholder top priorities for workforce resilience initiatives:

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.



2.255. 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.

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

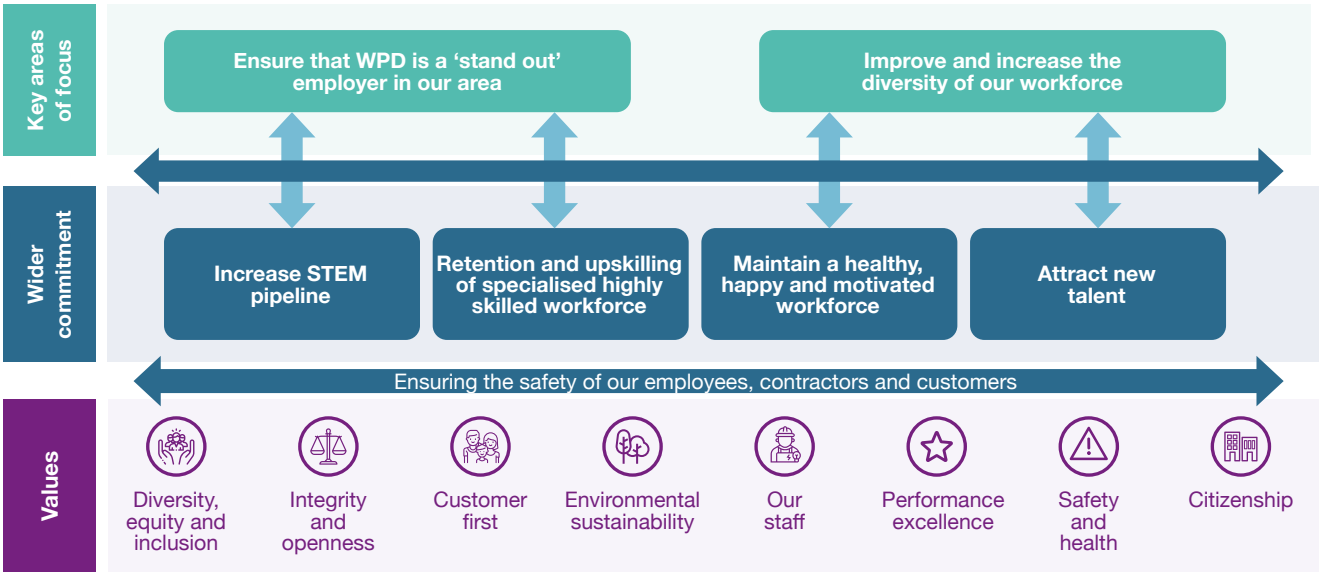
2.257. We will run campaigns to understand how our work environment needs to transform to enable our employees to reach their full potential and implement cultural change. We will focus on continuous development of staff through novel opportunities, re-evaluate our roles and make changes to attract new, diverse members to our workforce.

2.258. Data and digital applications will be used to improve employee engagement and also attract new talent. We will also use it to open up new career paths (e.g. data science) and new digital skill development for employees to ensure we are an inclusive employer.

2.259. Many of these challenges – including the changing energy markets and carrying out DSO 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.

2.260. We have developed two priority areas as part of our Workforce Resilience Strategy (see www.westernpower.co.uk/RIIO-ED2/workforce-resilience-strategy) which are summarised in figure 2.16.

Figure 2.16 Workforce Resilience Strategy



Core commitment 41	Demonstrate exceptional and embedded employment practices by achieving Gold accreditation with Investors in People by the end of RIIO-ED2.

Ensure WPD is a 'stand out' employer

2.261. We will achieve the Investors in People award, a key national standard, gaining at least Gold accreditation. This will put WPD in the top 18% of all UK companies.

2.262. We will promote WPD's 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.

2.263. 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 employees who have a desire to support mental health in the workplace.

Core commitment 42	Achieve year-on-year improvements to the levels of diversity within the business and publish an annually updated Diversity, Equity and Inclusion Action Plan.

Improve and increase the diversity of our workforce

2.264. Innovation is fuelled by a diverse workforce with staff from a range of cultures and backgrounds. It improves staff satisfaction and wellbeing, and ultimately allows us to deliver better outcomes for our customers. During 2020, our CEO launched WPD's 'Respect Charter', confirming our commitment to working together and outlining our aim to:

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

2.265. 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.

2.266. We will 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.

2.267. While there are no numerical targets included in our Business Plan for RIIO-ED2, we have committed to increasing diversity across our workforce from now through to the end of RIIO-ED2. We will aim to increase the diversity of applicants for positions by making WPD more attractive to all protected groups and by continually reviewing our policies and practices to reach a wider audience. As a result, this will drive improvements in diversity and help to determine our enduring strategy going forward.

Workplace wellbeing priorities in RIIO-ED2

2.268. 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.

2.269. Our target for staff absence is that it should be below an average of four days per employee a year.

Resource plan for RIIO-ED2

2.270. We forecast that our staff numbers could potentially increase by 279 during RIIO-ED2. This will enable us to respond to the increased uptake of LCTs which will call for increased network reinforcement and a growing emphasis on data to meet the expectations of our stakeholders.

2.271. 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.

Chapter 3

Delivering a smart and flexible electricity network

For a short video overview of this chapter scan the QR code.

Chapter 3 Contents

3. Delivering a smart and flexible electricity network

Summary

3.1. WPD is leading an energy revolution, delivering a smart, digitalised electricity network to enable net zero for our stakeholder by as early as 2028. We are driving the shift towards a low carbon, net zero future for our customers and work is already well underway to transform the energy grid to achieve this. Over the five year period 2023-2028 we will turbo charge the pace of that change in order to meet the energy needs of our customers today and create a sustainable future for generations to come.

3.2. Net zero cannot happen across our regions without WPD. We take this responsibility very seriously and are determined to be highly ambitious, adaptive and efficient in everything we do. This in turn will ensure that our route to net zero is quick, effective and seamless for our customers. Above all, the smart future must be inclusive for all, so we will ensure no one is left behind in the shift to adopt and benefit from low carbon technologies (LCTs).

3.3. We are transforming our operations, services and processes by delivering unprecedented digitalisation and innovation to meet the needs of our customers in a zero carbon future. The way our customers generate and consume energy is changing rapidly and significantly. As well as supporting the needs of end user domestic customers, we are ready to deliver an energy network and a suite of innovative services to support private and social landlords, community groups, mult-premise businesses, energy service providers, energy suppliers, electric vehicle (EV) charge point developers, car dealers, local authorities and many more.

3.4. The work we will undertake to deliver a smart and flexible network will have a transformative impact on our entire business. We will utilise digitalisation and innovative solutions at every opportunity to improve our service provision for customers, develop entirely new ways of operating and enhance our overall efficiency. Our Destination Net Zero: Business Innovation and Efficiency Strategy sets out our commitment to this transformational change in greater detail. It is supported by a range of dynamic major strategies including Digitalisation, Innovation, Whole Systems and Distribution System Operator which are all interdependent and have extensive, cross business impact.

Our integral role delivering a smart grid

3.5. We are a highly adaptive and innovative business and our impressive track record demonstrates that we can deliver rapid and widespread change. We have been proactively transforming our network since 2015, such that we are now able to connect more than 31GW of distributed, local and green generation on a network conventionally designed for 14GW of demand.

3.6. We have achieved a host of industry firsts in the pursuit of a more sustainable energy future, and we will now accelerate the pace of change from this advanced starting point. We were the first DNO to create Distribution Future Energy Scenarios (DFES) reports to forecast rapidly changing low carbon technology uptakes through to 2050, and the robustness and granularity of these has never been better thanks to extensive, ongoing engagement and co-creation with every local authority in our region. We were also the first network operator to cost the Distribution System Operator (DSO) function, develop standardised DSO services, implement functional separation between our DNO and DSO operations and we already operate the UK's largest flexibility programme. We also spearheaded the largest rollout of flexibility services at 709MW deferring around £40 million of reinforcement costs to date.

3.7. This is just the start. RIIO-ED2 presents an opportunity to go further and deliver more digitalisation and innovation to enhance every service we provide. We have listened to our customers and our Business Plan recognises their huge and expanding appetite for net zero. We will therefore increase our load related investment by 108%, compared to RIIO-ED1, to cater for a further 1.5 million EVs and 600,000 heat pumps on our network in the five year period.

3.8. Our investment will be strategic, targeted and deliver exceptional value for money. Our RIIO-ED2 Business Plan prioritises making efficiencies wherever possible. As a result of the rollout of successful innovation to date we have embedded £723 million of savings into our plan, meaning we will deliver our ambitious commitments with a budget of £6.7 billion rather than £7.4 billion. In addition we are challenging ourselves to go even further and will make an additional efficiency saving of £95 million over the five year period. We will therefore continue to keep customer bills low, even while delivering significant improvements.

3.9. We recognise that there is still some uncertainty over future energy pathways, particularly as we await further government decisions. We have addressed this uncertainty in our plan, proposing an innovative mechanism (as set out in Chapter 7) that can flex the price control to deliver the outputs required by our customers in an efficient way as soon as we receive clear signals for investment needs. This removes the risk of WPD either over or under investing in the network if the pace of the smart energy transition diverts from current predictions.

3.10. Within this chapter we set out our exciting and transformative plans via the following simple structure:

- **What success looks like:** The net zero energy revolution we are driving and our vision for a smart and flexible grid.
- **What this means for our customers:** The new services, tangible benefits and positive outcomes we will deliver.
- **How we will achieve it:** The essential building blocks to achieve the positive outcomes for customers, include the utilisation of smart meter data to improve network visibility, a whole systems approach, company wide digitalisation and a world-class programme of innovation.

A culture of innovation – how our smart and flexible approach influences everything we do at WPD

3.11. Our DSO, Innovation, Digitalisation, Whole Systems and Net Zero Communities strategies cover in detail the actions we will take to revolutionise the network to deliver a smarter grid, maximise utilisation of existing assets before further reinforcement is needed and unlock additional capacity (all of which are vital if we are to drive net zero across our regions). The impact of these strategies stretches to every corner of our business and underpins a culture that extends to everyone working for WPD. They will influence the development and deployment of entirely new ways of working and innovative new services for customers that will drive efficiency in all we do.

3.12. These overarching strategies are supported by a range of supporting strategies covering smart meters, EVs, heat pumps and network visibility, to name but a few. But our approaches are never siloed – our teams work together to collaborate and achieve holistic change across our business, seizing every opportunity to enhance our service offering for customers. For example, our leading approach to digitalisation and open data has enabled significantly more advanced signalling of flexibility requirements, which is an essential component of our DSO strategy and enables the deferment of more costly network reinforcement. This open data philosophy will directly benefit our customers and wider stakeholders by enabling them to use the data to develop new solutions across a range of sectors and feed ideas into our innovation strategy.

3.13. Further examples of our holistic, smart and flexible approach can be seen in the way we interact with customers. Our longstanding expertise in driving agile, dynamic and digital pathways as part of our day-to-day customer service (which has seen customers rate WPD number one for satisfaction across the first six years of RIIO-ED1) has shaped our development of real time, scalable platforms to dispatch our flexibility services. The quality of these platforms, coupled with our commitment to transparency and best practice sharing, has seen them adopted by five of the six DNO groups, meaning our innovative approach is now directly benefitting around 75% of electricity customers in Great Britain.

3.14. Further details of the interconnection between our strategies and the ways in which they are shaping every aspect of our service can be found in the innovation and digitalisation sections of this Chapter. As part of this we demonstrate the far reaching impacts on our plans specifically in relation to the environment, cyber security, customer vulnerability, customer service, connections, social contract and network reliability. For example:

Customer vulnerability	• **DSO approach:** As part of our 'Smart and Fair?' project we will develop a Capability Lens and offer profiling tools, enabling us to model the capabilities of vulnerable customers to participate in a smart, low carbon future. These will be used to: improve access to existing smart energy schemes and services (including flexibility products) and design and implement new interventions to support wider participation in a smart energy market. • **DSO approach:** Once we have worked to support vulnerable and fuel poor customers to develop the capabilities to provide flexibility (via bespoke outreach partnerships with significant input from our DSO teams) we will ensure that our flexibility products are designed with maximum inclusivity to enable them to share in the benefits. • **Innovation approach:** Every WPD innovation scheme will formally consider the impacts and opportunities for customers in vulnerable situations to benefit. This approach will ensure support is available across every key customer touchpoint in our business, signposting support for customers participating in trials and expanding customer referral channels.
Connections	• **Innovation and digitalisation approach:** We will digitalise the customer connection journey, developing self-serve online tools and a customer portal to manage the end to end connections process, including allowing customers to self-assess their connection requirements, obtain a cost of connection and enter into connection offer agreements. • **DSO approach:** Through the continual expansion of flexibility products and constraint managed zones across our network we will ensure that we widen the range and frequency of flexible connection alternatives to conventional reinforcement, therefore facilitating quicker connections at a lower cost.
Network reliability	• **DSO approach:** We will establish a DSO Energy Management Centre that will enable us to make short term flexibility products available to the DNO Control Room during power cuts. This will enable the instantaneous dispatching of flexibility to reduce the burden on the wider network caused by circuits with faults being offline, thereby reducing the risk of secondary faults, limiting the number of customers affected and significantly increasing the speed of restoration for many. Our ambition is that previously prolonged faults may now become short interruptions, restored in less than 3 minutes. • **Innovation approach:** We will use machine learning to achieve preventative fault identification before power cuts even occur.

What success looks like: The energy revolution we are driving

3.15. As set out in Chapter 1, our vision is to lead, not simply facilitate, the drive to net zero. We will enable the achievement of this by as early as 2028 for some local authorities. This will ensure customers can connect their LCTs whenever they want to and ensure the smart energy transition is inclusive of all customers, particularly those in vulnerable situations.

Our energy system will drive net zero

3.16. UK and Welsh government plans for net zero are clear and can only be met by decarbonising heat and transport powered by low carbon electricity generation. This will drive a huge increase in demand for electricity in the years ahead, with rapid growth in EVs, an increase in electric heating solutions and the acceleration of renewable, decentralised generation, such as solar panels and battery storage. WPD is therefore pivotal to net zero success.

3.17. Having already transformed our network to connect high volumes of LCTs and low carbon generation in RIIO-ED1, in the next five years our focus will shift from large scale renewable generation connections to huge volumes of smaller LCT connections, including electric vehicles and heat pumps. 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 is more, all new cars will be electric from 2030, leading to around a million new EV connections every year. WPD serves over a quarter 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 – to provide power for an additional 1.5 million EVs and 600,000 heat pumps specifically in our region.

3.18. This fast increasing level of demand will mean that we need to employ an automated approach to the connections application and acceptance process to ensure a consistent, quality service for our customers. Our market leading automated approach will not only deliver 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 manage capacity in the same way on the low voltage network. So we anticipate flexibility also being delivered through supplier tariff signals and aggregation offers.

3.19. To implement innovative new solutions we need to collect and analyse increasingly diverse and comprehensive network data. As modelling based on maximum demand is superseded by 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 its operation.

3.20. Smart meters will be a core part of real time monitoring on the low voltage (LV) 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 these simple approaches with more accurate smart meter derived load profiles. This is a cost effective way of creating an initial view of our LV networks, with more comprehensive substation level monitoring used at locations where smart meters predict high levels of network demand.

3.21. As set out in our Digitalisation Strategy, our approach to presume all data 'open' will enable other organisations to identify and 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, ensuring that the maximum level of data is shared for others to use and develop.

3.22. Research from the WPD's Electric Nation innovation trial, the largest project of its type in the world, has shown how we can connect more EVs to our existing network through innovative thinking and new services for customers. During RIIO-ED2 we will continue to innovate in order to respond to the changing requirements of our customers. Our Innovation Team has extensive tools and systems ready to deploy to drive our customers' move to net zero in line with the ambitious regional aspirations of local stakeholders. We are already researching new alternatives and expect that, during RIIO-ED2, our focus will move to support high volume connection management.

3.23. Innovative 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 action and drive change. For example, a trial of three-phase electricity to new homes in Wales, has led directly to WPD now being the only DNO to install three-phase LV connections into new homes as standard. This ensures that customers who require a higher capacity connection have the power available to charge EVs and heat their homes using heat pumps.

A regional approach to net zero

3.24. As part of its net zero 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. Research from Citizens Advice shows that 3.7 million UK homes now use 'non-mains gas' heating. There will also be a ban on the sale of diesel and petrol cars and vans by 2030 and hybrid vehicles by 2035. These changes will trigger a significant growth in the ownership of EVs and heat pump heating systems across our regions, requiring extra capacity on our network.

3.25. While this sets the overarching direction of travel, our stakeholders have been clear that they want to see net zero achieved much earlier than 2050, with some local authorities stating ambitious targets of 2028. For this to happen core commitment 1 in the Business Plan is the most critical: to drive the achievement of net zero across our regions sooner than 2050 in line with stakeholder aspirations (some areas as early as 2028), by ensuring network capacity is available.

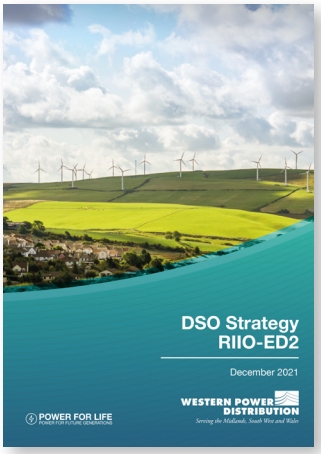
3.26. Our approach to delivering net zero will therefore be local and bespoke to the requirements of each region we serve. We will engage extensively with local stakeholders in order to build tailored plans, mindful of:

Welsh government	Local authorities
The Welsh government's Net Zero Wales Carbon Budget (2021-25) document looks at all aspects of decarbonisation and lays out plans to meet the target of greenhouse gas removal by 2050. It contains 123 policies and proposals across all ministerial portfolios including electricity and heat generation, transport, residential buildings, industry and business, agriculture, land use, waste management and public sector focus.	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. We will therefore work closely with local authorities to help them establish comprehensive LAEPs and then use these plans to inform our future energy scenarios and network investment plans.

Building a Distribution System Operator (DSO) capability

3.27. To enable a greater volume of demand, generation and storage to be connected, our networks are already becoming smarter and more active. This will rapidly accelerate in RIIO-ED2. Creating a more efficient and flexible system will benefit all customers and empower them to be at the centre of the energy revolution.

3.28. We recognise that change is essential to drive performance and efficiency from our network and to ensure it can meet the future energy demands of all our customers. In addition we must co-ordinate transmission and distribution services at a local level with other network and system operators. A more flexible network operation which embraces Distribution System Operator (DSO) functions is therefore essential. The enhanced capabilities we are developing will enable new markets to give our customers the freedom to access other opportunities within the wider energy system.



3.29. As the largest DNO in the UK we have a responsibility to lead the way. We were the first DNO to publish a costed DSO strategy in 2017, which has been frequently updated to reflect changing requirements and industry developments thanks to extensive and ongoing engagement with our stakeholders. The latest version is published as part of the suite of documents that accompany this Business Plan. (see **www.westernpower.co.uk/RIIO-ED2/DSO-strategy**)

3.30. WPD is already well on the way to demonstrate the complete independence of DSO and DNO decision making within our overall business and this will be consolidated and completed in RIIO-ED2. We have proposed independent audit and scrutiny, backed by clear licence requirements. We have created a DSO department which is segregated from the DNO to ensure independence and to negate perceived conflicts of interest. This creates separation while avoiding incurring the costs of duplicating large parts of our overhead costs, including IT costs, which would not deliver value for our customers and would introduce unacceptable delays in the face of the urgent and pressing need to achieve net zero as effectively and efficiently as possible. We also have considerable skills, experience and understanding of the network to develop the most effective DSO capabilities.

3.31. Our investment in DSO capability centres around activities where DNOs are best placed to deliver functionality and aligns with Ofgem's guidance around the roles and activities it expects of distribution businesses, and in particular the cross industry, government and regulator Open Networks project. Many of these functions relate to delivering new connections, creating a smarter grid and sharing data openly. These functions will be embedded across existing WPD teams.

3.32. WPD is a high transaction business, with tens of thousands of network interactions per year. Managing these can be complex; handling them within a single entity with shared drivers but distinct DNO and DSO capabilities, can minimise risk of disruption for customers. A top performing DNO will therefore need to be supported by a top performing DSO, and vice versa. Both functions will drive efficiencies and improve regulated outputs.

3.33. We are transitioning from a network originally designed to deliver passive operation, into one in which demand and generation is balanced locally by a mixture of enhanced sensing and active technical and commercial mechanisms. It will require significant change in our current role, but will facilitate a smarter energy system that is flexible to meet the needs of our users. The essential building blocks to achieve this are set out in detail later in this chapter, but principle among them are:

Enhanced network visibility and monitoring

Understanding how the network is performing is key to its efficient utilisation, so data from sensors and measurement devices is required at more places. Existing maximum demand sensors will be augmented to provide more detailed and frequent data about load and power flow direction. At low voltage, 15,500 of the highest priority substations, based on likely installed capacities, will have monitors installed. At high voltage, in order to facilitate the connection and active management of renewable power generators and energy storage installations, WPD will ensure that it has 100% visibility of the power flows on its network at all 1,800 of its primary substations.

utilising…
smart meter data

Data will be further augmented with smart meter data to provide network information where monitoring is not available or required. We will utilise smart meters to:

- Enhance and refine our network planning models (particularly on our low voltage networks).
- Improve power cut response services.
- Prevent faults by analysing smart meter data to proactively identify potential network issues.

to enable…
smarter more flexible networks

We will oversee a network wide deployment of flexibility, avoiding £94 million of conventional reinforcement by maximising the utilisation of the existing grid. We will offer a suite of flexibility products, funding customers to provide import and export capping at key times of network constraint as an alternative to conventional solutions. We will only reinforce the networks when these solutions cannot deliver what is required.

Seven key strategic principles that underpin our DSO approach

3.34. To ensure we deliver a smart and flexible future that delivers maximum positive outcomes for customers, our approach is underpinned by seven key strategic drivers:

- **Independence and strong governance:** ensure robust governance, independence and separation from the DNO.
- **Maximum ambition:** a plan that surpasses the Ofgem baselines and seeks to deliver significant added value for customers.
- **Deliverable:** while highly ambitious our plans must be deliverable and our track record of leading the industry will give confidence to our customers that we will deliver our promises.
- **Flexibility first:** we will always seek to utilise flexibility as an alternative to conventional reinforcement, to maximise the efficiency of the existing grid, unlocking capacity and therefore keeping costs to customers as low as possible.
- **Touch once to 2050:** when we invest in the network our actions will ensure the grid can match the needs of our customers out to 2050, without the need for reinvestment before that time.
- **Agile to deal with uncertainty:** while we have extremely robust and granular forecasts for future energy demands and LCT volumes, if these differ during the period we will be agile and able to adjust our delivery to match the needs of our customers.
- **Extensive:** we will ensure that our approaches to DSO, whole systems, innovation and digitalisation enhance every aspect of our operations and services for customers.

Independence and strong governance

3.35. Having established DSO capability we are well placed to manage the coordination of services at a local level, therefore reducing complexity and risk for the Electricity System Operator (ESO), resulting in a more efficient and cost effective whole system. As a regulated business with no interests in UK generation or supply, the facilitation of neutral markets is a natural extension of our current role in managing the power across our distribution networks, maximising the utilisation of our existing electrical and communication networks.

3.36. We recognise that within distribution businesses, there may be perceived conflict between the roles of network operator and system operator. We take this very seriously and believe that any potential for conflict can be mitigated by taking appropriate steps with respect to independence and governance. We have already completed organisational changes which segregate our DSO functions from those of the DNO. Each area reports separately to our Operations Director providing accountability at an Executive level and visibility at a wider Board level.

3.37. Our DSO Strategy details the considerable actions we have already taken to ensure the complete independence of DSO and DNO decision making. In RIIO-ED2 we will take this even further and propose independent audit and scrutiny, backed up by clear licence code requirements. In summary we will:

- Establish an independent Distribution System Operator Scrutiny Board.
- Undertake external audits of our DSO capability to provide independent assurance.
- Publish a Network Development Plan that looks 10 years into the future detailing expected investment decisions for DSO interventions.
- Publish metrics to measure the success, competence and independence of the DSO.
- Facilitate competition and best practice sharing across DSOs.
- Formalise the relationship between the DNO and DSO, establishing separate industry codes, licence conditions, data exchanges, policies and processes.
- Review the effectiveness of existing governance arrangements and identify improvement action plans.

Maximum ambition

3.38. Our proposals address every Ofgem baseline expectation. As set out in Chapter 1, it is our strategic intention to lead in this area. We will therefore achieve these baselines quickly and to the highest possible standards; but we will not stop there. We will seek to surpass the minimum standards and at every opportunity. For example, while there is a baseline requirement to take steps to facilitate a competitive market, we are seeking to offer the most comprehensive solution possible. We will focus on the establishment of long term, short term and real time markets, maximising participation in all of these and ensuring that they are complementary and interrelated and do not operate in siloes. This goes significantly beyond the initial expectations for market facilitation.

Deliverable

3.39. As with all aspects of our Business Plan, in relation to DSO we are making stretching and ambitious proposals. As we do so we must also evidence that these are realistic and achievable. We are adamant that we will deliver all our commitments. We have a clear plan for how we will do so and have a fantastic track record that provides the springboard to deliver extensive change in RIIO-ED2. Our DSO strategy sets out 24 examples of where WPD has led the industry in relation to establishing DSO capabilities. These examples include being first to:

- Introduce a functionally separate DSO and a costed DSO strategy.
- Deliver annual Distribution Future Energy Scenarios.
- Publish Shaping Subtransmission reports outlining the network impact assessments of our DFES forecasts.
- Publish comprehensive analysis on assumed customer behaviours against every likely technology type.
- Publish Distribution System Operability Framework articles to seek collaboration to tackle known technical issues.
- Publish Distribution Network Options Assessment and a common evaluation methodology tool to demonstrate transparent approach to optioneering.
- Implement six monthly procurement cycles for flexibility.
- Introduce a dynamic procurement system for flexibility.
- Dispatch flexibility in real time using an electronic Application Programming Interface.
- Implement self-billing process for flexibility services via an online portal.
- Design, build and operate an enduring flexibility dispatch platform through Flexible Power, that has since been adopted by four other DNOs.

Flexibility first

3.40. We will ensure that conventional reinforcement will only take place as a last resort, where flexibility services have been fully utilised and we have maximised the efficiency and capacity of the existing grid. Since conventional reinforcement can take a long time to deliver, this can cause problems and delays for customers who want to connect to heavily loaded parts of the network, at short timescales. They may have to wait until the network is reinforced before they can connect or accept a lower capacity connection.

3.41. Flexibility can provide more granular network capacity increases, better matching the in-year requirements of network users. Flexibility has the potential to manage capacity shortfalls economically and responsively until the need for conventional reinforcement is more certain. Where uncertainty is high, a greater period of operation of flexibility may allow for more optimal longer term investment plans to be developed and implemented.

3.42. In RIIO-ED2, by adopting a flexibility first approach to all load related investment decisions, we have committed that by 2028 we will avoid £94 million of reinforcement by operating the existing primary and secondary networks more flexibly, at a cost of less than £2 million a year in 2023, increasing to around £3 million a year by 2028.

Touch once to 2050

3.43. We have taken a deliberate approach to ensure any reinforcement proposals are optimised for 2050, reducing the potential for deployment of stranded assets to zero. Whenever possible and economic to do so, we have ensured that the adopted solution adds sufficient network capacity headroom which ensures adequate capacity for all scenarios until at least 2050. However, where this is not possible, we have considered and confirmed that any further necessary reinforcement would not in any case require removal or make any of the proposed newly added assets redundant. This embeds a “touch once to 2050” approach in our network development processes.

3.44. Flexibility is also used to defer conventional reinforcement and this can be used to provide more time to assess the certainty of requirements and the scale of new capacity required. We are working with industry within Open Networks to better understand how to value this additional optionality and will employ these improvements within our DNOA processes for recommending network investment.

Agile to deal with uncertainty

3.45. Within RIIO-ED2, we expect there to be a wide range in the potential load related reinforcement scenarios, driven by customer uptake of LCTs and government policy decisions. Our Best View is driven by significant and extensive stakeholder engagement, resulting in a highly certain plan which delivers net zero. We have committed to provide capacity to customers to enable their net zero ambitions at whatever speed they require, but we also recognise that our detailed forecasts may change through the price control on the back of other indeterminate factors, such as the outcomes of network access and forward looking charges reviews, market provision of flexibility, the role of hydrogen in decarbonisation and the speed of technology advancement. These factors, and others, may cause required load related reinforcement to lead or lag our forecasts.

3.46. We have therefore proposed a series of load related uncertainty mechanisms which enhance the deliverability of our plan. They will ensure that we can remain agile in delivering capacity based the magnitude and timing of customer need, while optimising the balance of risks, costs and regulatory burden. More information on our approach to uncertainty can be found in Chapter 7.

Extensive

3.47. We will use innovation, digitalisaton, collaboration and competition to achieve enduring business transformation and enhanced services across our operations. Such innovation can involve incremental improvements as well as more fundamental business change. WPD senior managers across the business are encouraged to identify opportunities to innovate and work smarter for our customers, instilling innovative thinking into all our staff.

3.48. We will seek to achieve benefits and efficiencies in key service areas including:

- A smart and flexible network.
- Community energy.
- Environment and sustainability.
- Innovation and digitalisation.
- Customers in vulnerable situations.
- Social contract.
- Customer service.
- Connections.
- Network resilience.
- Safety.
- Business IT security and cyber resilience.
- Workforce resilience.

3.49. For example, we will deliver several new digital self-serve options, covering customer service enquiries, connections including LCT enquiries, and open data. For vulnerable customers we will ensure no one is left behind in the smart energy transition by delivering bespoke, smart energy action plans to 600,000 customers each year. We will also use digital solutions to build an early warning system of areas that are at risk of facing barriers to participate in a smart future. In relation to customer service, we will adopt a multichannel approach to maximise choice, by providing a digital pathway for all customer interactions as well as retaining direct, in-person services.

What this means for our customers

3.50. This fundamental change in the way we operate as a business and the radical adaptation of the electricity network is all driven to achieve positive outcomes and benefits for our 8 million customers and achieve long term sustainability for generations to come. The impact of our innovative proposals will be in four key areas:

- **Low carbon technologies:** Making it quick and easy for customers to connect their electric vehicles and heat pumps when they want to.
- **Flexibility services:** Keeping costs to customers low by only reinforcing the network when it is the best and most economical solution, while enabling customers to access financial savings in return for managing their energy needs more flexibly.
- **Community energy:** Driving the expansion of community led renewable energy connecting to the network and participating in flexibility and demand reduction schemes to benefit local communities.
- **Open data:** Offering easier and automatic access to extensive network data, with the ability to tailor data requests to the customer's specific requirements and in a format of their choosing. This will drive innovative new services and enhanced local area energy planning.

Low carbon technologies (LCTs)

The key outcome we will achieve for our customers

Customers can easily connect LCTs without delays due to a lack of available network capacity. We will enable volumes of LCTs in our region (ready for at least an additional 1.5 million electric vehicles and 600,000 heat pumps) to facilitate the achievement of net zero well in advance of 2050, driving up the ambitions of local regions.

3.51. During RIIO-ED1 we have already transformed our network to accommodate a significant growth of distributed generation, with the capability to connect 31GW of generation on a network originally designed for 14GW of demand, despite it not being part of the original regulatory settlement. Energy storage is increasingly used alongside generation to store excess power and release it to the network at a later point in time. This highly adaptive and innovative approach is a huge success story that puts us in a strong position to accelerate the pace of change in RIIO-ED2 to take a giant step towards net zero across our regions.

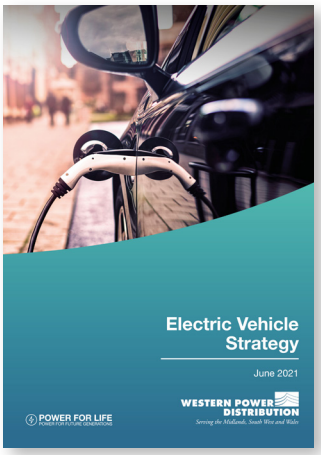
3.52. During RIIO-ED2, we expect further growth in distributed generation and storage, but by far the most significant changes to the way our network is used will be the exponential growth in electric vehicles (EVs) and heat pumps. We have detailed strategies for each of these technology types which we have published as part of our Business Plan suite of documents. We have undertaken extensive modelling and detailed planning, and we anticipate supporting more than a further 1.5 million EVs and 600,000 heat pumps in the period.

3.53. There are a wide range of potential LCT uptake scenario projections depending on a range of factors including government policy and regional aspirations and Local Area Energy Plans. We have worked closely with stakeholders and have undertaken detailed modelling in order to converge these potential scenarios into the most likely view. Details on how we have arrived at our Best View scenario growth projections for LCTs is set out later in this chapter. Crucially, the robustness and granularity of our forecasts is supported by detailed input and shared modelling with many regional stakeholders, including local authorities and local enterprise partnerships. What this means for customers is that we will ensure that the network capacity is ready so that customers can connect huge volumes of LCTs without delay. We are proposing a 108% uplift in load related expenditure, to expand the network and rollout our flexibility service as widely as possible, with only an 8% increase in engineering management and support to achieve this. The LCT volumes we expect can be seen in figure 3.1.

Figure 3.1 WPD Best View of the minimum volume of LCTs anticipated in RIIO-ED2

Technology	At the start of the period (2023)					At the end of the period (2028)					Difference: LCTs we will cater for during the five years of RIIO-ED2 (WPD total)
	West Midlands	East Midlands	South Wales	South West	WPD TOTAL	West Midlands	East Midlands	South Wales	South West	WPD TOTAL	
Large scale solar generation (GW of installed capacity)	0.971	1.922	0.772	1.676	**5.342**	1.290	2.784	1.090	2.036	**7.200**	**1.858**
Onshore wind generation (GW of installed capacity)	0.050	0.409	0.548	0.354	**1.362**	0.050	0.414	0.587	0.407	**1.458**	**0.124**
Other distribution connected generation (GW of installed capacity)	1.445	2.208	0.893	0.954	**5.500**	1.505	2.353	0.944	1.074	**5.876**	**0.376**
Battery storage (GW of installed capacity)	0.251	0.357	0.027	0.155	**0.789**	0.347	0.430	0.065	0.223	**1.065**	**0.276**
Electric vehicles (total number)	255,510	184,320	34,863	73,734	**548,427**	859,665	739,693	168,661	318,053	**2,078,872**	**1,530,445**
Heat pumps (total number)	72,205	95,738	30,839	66,068	**264,850**	248,492	352,980	109,712	181,870	**893,054**	**628,204**

Electric vehicles (EVs)



3.54. The number of EVs is expected to increase rapidly 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 originally planned. The adoption of EVs is also being accelerated by the creation of local government clean air zones and the availability of a wider range of EVs from manufacturers.

3.55. Our Electric Vehicle Strategy (see **www.westernpower.co.uk/RIIO-ED2/Electric-Vehicles-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.

3.56. 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 area charging hubs, on-street and at people's homes. EV charging will therefore increase demand on the network and require more capacity to be made available, particularly on the low voltage network. We expect market led solutions, including supplier price signals and aggregator offers, to incentivise charging outside peak network use hours and minimise the need for reinforcement.

3.57. EV batteries need energy for charging but also provide an opportunity to put power back into the network, particularly to provide flexibility during short periods where the network faces constraints due to high demand. We have already developed significant innovations to utilise vehicle-to-grid technologies and these will be rolled out as 'Business as Usual' during RIIO-ED2.

3.58. 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 that of a small town. Our Project Take Charge will create a rapidly deployable pre-wired containerised substation to provide a solution for high capacity connections. This will be rolled out in RIIO-ED2.

Heat pumps

3.59. Heat pumps are a key part of the UK's plans to achieve net zero by 2050. In its 2020 Energy White Paper, the government announced its intention for a 20 fold increase in the number of heat pumps being installed to 600,000 each year by the end of 2028.

3.60. We are leading the way in this area. In 2020, we became the first DNO to publish a bespoke Heat Pump Strategy (see www.westernpower.co.uk/RIIO-ED2/Heat-Pumps-Strategy) which is updated annually following extensive stakeholder engagement. 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.

3.61. The biggest challenges when providing power for heat pumps will be linked to domestic properties. We anticipate that this will lead to the need for service upgrades for around a third of all heat pump installations. 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, which will provide valuable information to us on new build homes fitted with heat pumps. This project will be completed by 2023, ahead of RIIO-ED2 commencing and we will therefore utilise the learning about the cumulative impact of heat pumps in volume and use this to deliver better network planning and a range of mitigation steps in RIIO-ED2.

3.62. In situations where LCTs will be retrofitted to existing properties, this may result in a need for network reinforcement, where flexibility services cannot unlock the required capacity. We have accounted for this in our forecasts for anticipated load related expenditure. 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 heat networks

3.63. As well as the ground breaking Eco Homes project in South Wales, we are also leading a redevelopment project at the former 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.

3.64. We expect that the growth of storage, energy managed homes and domestic flexibility will help us manage the network more efficiently and avoid overloading it. Where energy is being generated, stored and used locally, we anticipate this will reduce the customers' impact on our network. We are currently working to model this and will factor this into our network planning.

3.65. We expect that supplier led agile tariffs and price signals will be key to help us manage demands and move them away from peak times.

3.66. Heat networks will be straightforward for us to accommodate on our networks, with the required input energy being provided at one central point rather than individual homes. Where heat networks include generation elements, this could also support our network. We are monitoring plans for heat networks in the Cardiff Council area in particular and will monitor the demands to understand how it will impact on the wider network, in order to launch connection solutions bespoke to this technology.

Flexibility services

The key outcome we will achieve for our customers

We will expand the rollout of flexibility services by making it as easy as possible to provide these services. This will help to maximise the efficiency of the existing network, avoiding the cost to customers of carrying out conventional network reinforcement. We will allow all customers to gain fair access to our networks and systems and will provide advanced sight and greater certainty of WPD's flexibility requirements so that providers can better plan ahead and make longer-term investments. When connecting to the grid, more customers will be able to choose between a conventional reinforcement solution and a cheaper and quicker flexible solution.

3.67. 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.

3.68. We are also developing a front loaded payment mechanism to catalyse investment in energy efficiency measures, building on the revenue potential of flexibility. Network areas which would benefit from flexibility may also benefit from energy efficiency measures which reduce network loadings at cardinal points assessed by the DSO. A specific energy efficiency proposition should deliver low risk, long term network utilisation reductions at an economic level.

3.69. Research from the 'Smart and Fair?' initiative, set out in our Customer Vulnerability Strategy, will directly inform the development of our energy efficiency product. Utilising insights from this research programme we will identify potential technical and contractual barriers to uptake so that these can be reduced to ensure we provide targeted, accessible information and our product can maximise opportunities to support vulnerable customers.

3.70. We will use our social indicator data and findings from 'Smart and Fair?' to support the identification of areas where flexibility and/or energy efficiency measures would generate the greatest social value and create a methodology to capture this in our cost benefit analysis, in order to target customers when developing flexibility tenders. By engaging with aggregators, suppliers and other industry participants who will be enabling participation in domestic flexibility we can identify opportunities to target vulnerable customers and build flexibility advice into the support our Priority Services Register and fuel poverty support partners provide, leveraging our existing energy efficiency and tariff switching interventions to unlock further value for customers.

3.71. The key purpose of flexibility is to enable us to maximise the efficiency and utilisation of the existing network in order to offset the need for conventional reinforcement and to provide additional capacity for new connections. It has additional benefits of making flexibility services available to our DNO Control Centre as additional tools to aid network balancing to improve network resilience and to increase overall system operability.

Offsetting the need for conventional reinforcement

3.72. 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 DSO through flexibility markets. The extent to which flexibility is used will be determined by an industry standard cost benefit analysis.

3.73. We have been pioneering the use of flexibility solutions during RIIO-ED1, which provides an excellent foundation on which we will build. Our track record is a vital part in helping us to ensure we can lead the way throughout RIIO-ED2 as more demand connects to the network.

3.74. There are four types of flexibility services:

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

3.75. 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 up live information access to other platforms, improving the cyber resilience of the IT systems and scaling up as operational volumes increase.

3.76. Work to identify the need for flexibility will begin at an earlier stage than plans for conventional reinforcement. This will give us time to assess if there is sufficient flexibility available and to carry out conventional reinforcement, where it is not available. By creating an investment trigger for flexibility, 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.

3.77. Flexibility can 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, which means we can keep costs to customers low and only reinforce the network when we are convinced that we have maximised the utilisation of the existing network.

3.78. WPD's Distribution Networks Operation Assessment (DNOA) process provides a systematic methodology to recommend a single investment option. 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 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 costs. However, if network requirements are reduced by changes in demand or generation, flexibility costs may also fall. 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.

Significantly expanding access to flexibility markets in RIIO-ED2

3.79. As set out in Supplementary Annex SA-03: Delivering a smart and flexible electricity network, we will take extensive steps to open up the flexibility market during RIIO-ED2. We will utilise significantly enhanced, granular forecasting, including WPD's Flexible Power website that provides a map of our flexibility requirements and 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. The availability window details the time of day, day of the week and month of the year when power capacity is required and a forecast of the total energy needed.

3.80. During RIIO-ED2 we will significantly expand the routes for customers to provide flexibility services. Long, short and real time markets will be developed and mechanisms to establish competition between these routes will be implemented to ensure a dynamic and inclusive market develops. We will also significantly enhance the suite of tools available as part of our 'Flexible Power' dispatching platform to stimulate greater market participation, as well as simplifying and streamlining our procurement processes.

Provide additional capacity for new connections

3.81. As well as providing additional capacity to manage load related constraints, we will utilise flexibility at every opportunity to provide additional capacity for new connections coming onto the network.

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

3.83. 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 depending on the level of uncertainty they are comfortable with: one option will be to pay the costs for flexibility and assets retrospectively on an annual basis (which is highly accurate but will not be known precisely upfront), 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 (and therefore WPD takes on the risk if demands differ to the forecasts). We will manage the constraints using flexibility and take on the risk and responsibility for doing so.

3.84. Our customers have two options for flexible connections:

- **Timed Connection:** A simple way to provide flexibility at fixed times, without the need for communication or monitoring.
- **Load Managed Connections:** This provides real time, granular control of demand by making 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.

3.85. In RIIO-ED2 we will significantly lower the threshold for connections to receive a flexible offer of this nature. Currently customers receive a flexible alternative for schemes where the reinforcement cost were more than £125,000 per MW and/or where works will take more than two years to complete. In RIIO-ED2, 100% of customers will receive a flexible offer where:

- LV, 11kV or 33kV connections: Total scheme cost is greater than £75,000 and/or works would take more than 12 months to complete.
- 66kV or 132kV connections: Total scheme cost is greater than £100,000 and/or works would take more than 18 months to complete.

3.86. To give an idea of scale, while we expect connection volumes to increase significantly in RIIO-ED2, if they were to stay at RIIO-ED1 levels the impact of this threshold change would have seen an additional 1,200 major, large scale connections receive a flexible offer in the five years.

Community energy

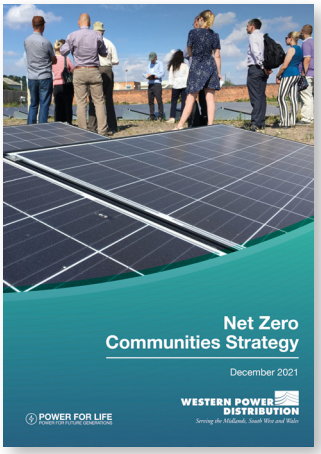
The key outcome we will achieve for our customers

Community groups with less knowledge and expertise of the connections process will receive tailored support to develop their schemes. This will increase their confidence and understanding of our processes, so that they find it easier to gain access to our network, significantly increasing the amount of green energy generation connected to the system. We will build their capabilities to enable local communities to participate in, and benefit from, flexibility markets to unlock capacity in each region.

3.87. Community led renewable energy projects and energy demand reduction services have an essential role to play in the nation's efforts to tackle climate change. 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. We will ensure the network can connect new community owned generation at scale. As set out in the opening context to this chapter, net zero will be regionally delivered and therefore community energy groups are key to driving a fairer energy system that does not leave the vulnerable behind, as they are well placed to identify those in greatest need of support and act as a trusted body to engage them and provide ongoing support.

3.88. Without timely and effective support from WPD, 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 the energy sector. We therefore recognise that we need to provide additional support to communities and local energy collaborators. We will therefore introduce a dedicated Community Energy Engineer in each of our licence areas to act as a means of access and support. Each will provide a clear focal point for community groups to help them develop and deliver their plans.

3.89. We have already helped more than 100 community energy schemes connect to the network during RIIO-ED1. Our high quality engagement programme, which has been underway since 2014, has also 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.



3.90. Building on this excellent platform, in RIIO-ED2 we are committing to go significantly further and connect at least a further 150 community energy schemes across the five year period. We will hold 60 Community Energy Surgeries a year, with at least two in each local distribution area, led by these local WPD teams who are experts in the local network. This will 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.

3.91. We have published a comprehensive 'Net Zero Communities Strategy' (see www.westernpower.co.uk/RIIO-ED2/communities-strategy), which is updated annually following ongoing stakeholder engagement. Our 'Connecting Community Energy' guide will continue to assist any local energy group looking to develop its own renewable energy project and connect to our network. In addition, supported by the Centre for Sustainable Energy, we have developed our 'Community-Based Network Innovation' guide, which has already supported our collaboration with community energy groups on several innovation projects.

3.92. Our extensive innovation programme will continue to develop new business models and enable us to build a clearer understanding of the best way to manage a decarbonised and decentralised electricity system with local communities at its heart. Examples of the wide range of community based innovation projects already underway, is shown in figure 3.2.

Figure 3.2 Community focused innovation projects

Smart Energy Isles	The Smart Energy Islands is an EU-funded project on the Isles of Scilly, to build and operate 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 ANM zone, so that generation can be better managed and local flexibility can 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, DC circuits and time of use tariffs were trialled in homes to test their impacts and cost effectiveness.
Sunshine Tariff	A local community group, Wadebridge Community Energy Network, 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 provides local electricity substation data to communities to help them understand the network and plan low carbon projects. Seven community groups get 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 EU-funded project led by Centrica created a local energy market and tested flexible demand, generation and storage across homes and businesses. We contributed by 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, thereby improving the 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 and removing the barriers in the process to increase participation. It 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.

Open data

The key outcome we will achieve for our customers

We will provide our customers and stakeholders with automatic access to extensive network data, with the ability to tailor data requests to their specific requirements and in a format of their choosing. This will enable flexibility markets to flourish and enable the development of a wider range of innovative products and services by third parties in the energy sector to devise new ways of lowering carbon emissions and driving towards net zero. We will ensure data is shared in a timely, accurate and complete manner, to enable end users to meet their aims.

3.93. Digitalisation of the energy system is at the heart of WPD's transition to build a smart and efficient energy system. It will provide enhanced insights into our existing infrastructure, which will enable us to improve our operational performance by maximising the value, efficiency and effectiveness of our existing assets before new network is required. In addition, it will enable us to deliver timely data and solutions in the right format to meet the needs of our customers and stakeholders.

3.94. We have set out a bold vision for the role that digitalisation and data will play in transforming our business and delivering net zero for our customers and stakeholders. Our plans have been shaped by engagement with a wide range of stakeholders, and are fully focused on the delivery of outcomes for the communities we serve.

We will deliver the key recommendations of the Energy Data Taskforce report and beyond. Our digitalisation and key data developments will deliver:

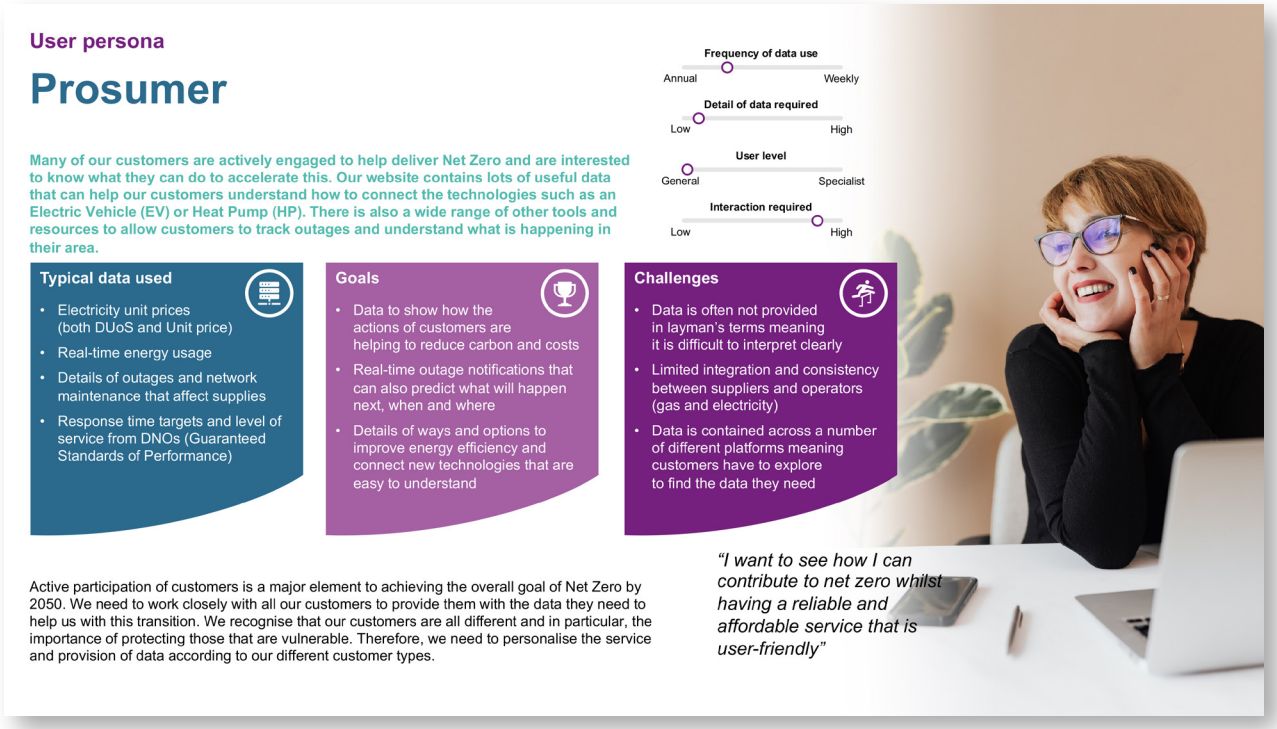
- **Improved data management**
- **Increased network insight and operation**
- **Improvements in service areas identified as key priorities by our stakeholders.**

3.95. Our proposed suite of projects represents a total investment of £36 million, that will achieve a collective lifetime net present value of £593 million. We have produced Engineering Justification Papers on a project by project basis to explain how our total expenditure in this area has been compiled, using engagement with key stakeholders including industries that are well advanced with digitalisation such as telecommunications to ensure our proposals are in line with best practice. We are delivering exceptional value to customers as a result of our efforts in this area, with a return on investment of £17 for every £1 spent. We believe that this represents significant value for money, and will unlock tangible outcomes including better choice, better customer experience, better access to our data, new markets and services and considerable efficiency savings in our operations. Our programme will also deliver the Data Best Practice guidelines and help us to exceed the DSO baseline expectations set by Ofgem.

3.96. For open data, our starting point is that all data should be presumed open unless proven otherwise for privacy, security, commercial or confidentiality reasons. We will continue to enable our customers to maximise the value of data by creating increased visibility of current and future data, through the use of single source data portals. This will enhance access and utilisation of our data to unlock wide ranging value and benefits. We were the first network operator to provide our data through an online data catalogue called 'Connected Data'. It utilises the Dublin Core metadata standard and ensures a consistent level of supporting information is provided with each dataset. In RIIO-ED2 we will deliver a comprehensive Open Data Platform for our customers. As part of this, in order to enhance access to data that is tailored to their individual needs, we are committing to make at least 60% of WPD's data available via an interactive Application Programming Interface.

3.97. With regards to the way we make data available for customers it is clear that their capabilities, needs and expectations are wide ranging from those that seek raw data and have a sophisticated knowledge of complex datasets and will be seeking to overlay this with their own systems, through to those with a more limited knowledge who require pre-interpreted information they act on straight away. To maximise the usefulness and accessibility of our data, we have therefore developed a range of user personas (an example can be found in figure 3.3) to ensure that we are catering for the needs of all stakeholders.

Figure 3.3 An example of a data user persona

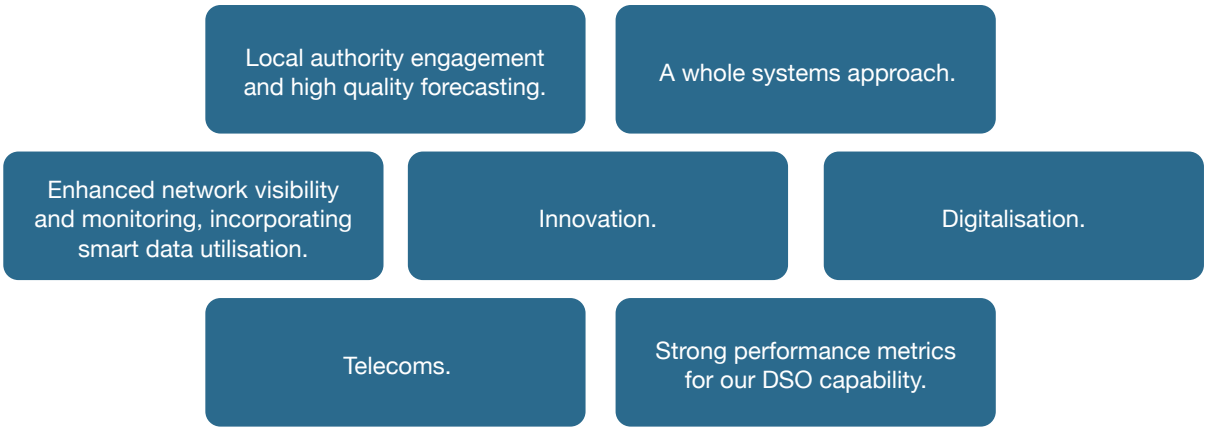


3.98. We are also planning to create a digital user community, and perform analysis of the data requests we receive from the ENA portal, and the popularity and use of data available on our Connected Data portal. When co-creating our RIIO-ED2 plans, stakeholders highlighted a number of key priorities in relation to open data that have directly informed our approach. For example:

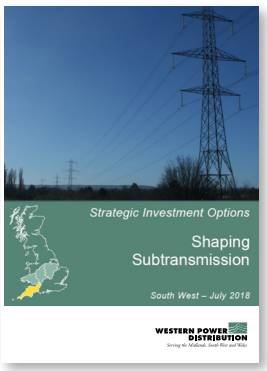
Customer/ stakeholder feedback	How this has shaped our approach
A common data language across the industry would help customers make better decisions with their data	• We will continue to progress our work on a 'common information model' for the industry, which will provide a standard data language for all participants. • We understand that access to our data is vital to support the ongoing development of the electricity and wider energy system. Because this data is used by a range of customers and stakeholders, we also recognise that it may need to be presented in different formats. • 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 date 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 demonstrating our commitment to make our data available for this purpose.
Introduction of a customer satisfaction measure for open data	• Our Connected Data portal already has functionality to enable our customers and stakeholders to provide feedback on the quality of our open datasets. • In RIIO-ED2 we will proactively survey customers and stakeholders to understand their satisfaction with our open data provision. • 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.
Increasing customers 'Energy IQ' by making data more readily available	• We have introduced a Business Plan commitment '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 Application Programming Interface (API).
Value of data beyond energy and industry collaboration	• We have an ambitious vision for our data to be used to deliver whole systems outcomes across sectors. We will collaborate on several whole systems projects over RIIO-ED2, and are currently part of the 'West Midlands Regional System Operator' project, exploring ways that better collaboration can help to decarbonise Coventry. • We will ensure data is both discoverable and searchable. This means making it accessible outside WPD and continuing to collaborate with the wider industry. • We will continue to develop our Connected Data Portal to further improve the availability of, and access to, our data and complementary datasets in three main formats (Visualised, raw data download and via an API).
Focus on self-serve design	• We will be delivering several new digital self-serve options, including for customer service enquiries, connections and open data. We have introduced a Business Plan commitment: To provide a same day response for customers by introducing online self-assessment tools for individual domestic low carbon technology applications.
Moving to a smarter, digitalised network should not come at the cost of addressing existing capacity constraints	• Our digitalisation and data approach for DSO includes investments in our data management to ensure that we have better data to predict where capacity constraints might be over the RIIO-ED2 period, and intervene early to give our customers better choice. • Digitalisation and data also enable innovative connection offers, such as flexible connections which allow customers to connect to our network in areas of constraint.

How we will achieve it: The essential building blocks

3.99 Having set out the tangible benefits our customers will receive as a result of our development a smart and flexible energy system, it is important to understand the essential steps we must take in order to achieve them. We have clear plans for how we will achieve this and the remainder of this chapter therefore sets out the fundamental building blocks that are key to our successful delivery for customers. This includes:



Local authority engagement and high quality forecasting



3.100. Since 2015, we have been creating highly accurate and granular Distribution Future Energy Scenario (DFES) reports. (see: **www.westernpower.co.uk/distribution-future-energy-scenarios**) From 2020, our DSO team is now producing these reports annually to forecast rapidly - changing low carbon technology uptakes up to 2050. The DFES projections have been aligned to the latest National Electricity System Operator (ESO) scenario forecasts which are available when the DFES process is carried out. 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 and in RIIO-ED2 will be replaced by our forthcoming Network Development Plan. We take this information on future growth and compare the costs and benefits of potential different solutions through our Distribution Network Options Assessment using an industry agreed assessment tool to put forward an investment recommendation.

3.101. The pathway to net zero will be local, with timescales and precise action plans bespoke to each region. As part of our extensive stakeholder engagement programme, WPD has therefore engaged all 130 local authorities in our area to build joined up energy plans that reflect their bespoke needs and proposals, putting us on track to drive the achievement of net zero well ahead of the 2050 target set by the UK government and Net Zero Wales'.
WPD sought the following data from the local authorities:

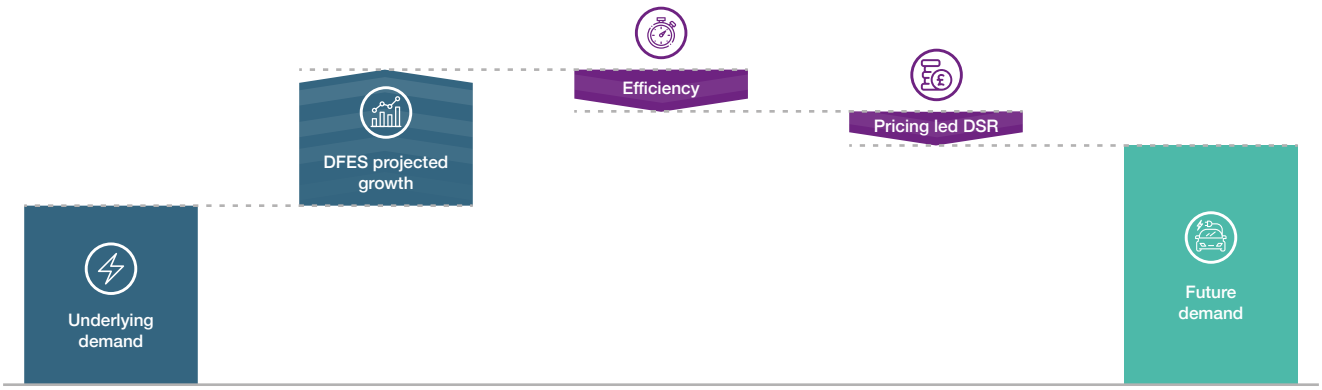
- General data based around a local energy strategy, declaration of a climate emergency and setting a target date to reach net zero.
- Availability and comparison of datasets.
- Technology projections for EVs, heat pumps, new industrial, commercial and domestic developments, generation including solar, wind and battery storage.

3.102. As part of the interactions, WPD shared DFES projections which provided electricity supply area data specific to each local authority area. Our Distribution Managers in each region held meetings with local authority energy representatives to review the assumptions and projections. This resulted in a range of responses, with some local authorities being more ambitious than their DFES indicated and other local authorities finding the interaction helpful to assist them in formulating their LAEPs in the first place.

3.103. The feedback from local authorities has been used to refine the allocation of growth projections across the WPD licence areas, which makes them more representative of local requirements and more certain that they will be required. We will maintain these enduring relationships with the local authorities, meeting on an annual basis, as a minimum, to feed into the annual review of WPD DFES scenarios and use this data to feed back regional information into the ESO FES.

3.104. The precise pace of change and the specific route to achieve net zero carries some uncertainty and is dependent on a wide range of legislative and commercial considerations that are outside of WPD's direct control. We have utilised a huge range of available data sources, conducting comprehensive modelling and leading extensive engagement with relevant stakeholders including local authorities, local enterprise partnerships, devolved administrations, central government, the Energy Networks Association and Ofgem. This has led to the most accurate possible forecast of future network loads and constraints and changes in customer energy use WPD expects to see in the RIIO-ED2 period.

Figure 3.4 Components considered when calculating future demand



3.105. To establish our Best View of the investment required on the network for RIIO-ED2 we utilised established national forecasts and combined them with local information to generate local forecasts. The common cross sector scenario (used in the gas distribution and transmission price controls) developed in 2019 has been referenced, but we are now able to go significantly further and be more granular, as a result of the depth of our engagement with every local authority in our region, and the impact of more recent political commitments, such as the banning of combustion engine vehicles by 2030.

3.106. To define the current WPD Best View, which is net zero compliant, 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 LAEPs to be assessed using criteria derived from Ofgem guidance to gauge the ambition, engagement and deliverability. The WPD Best View growth projections are tempered with extra characteristics to account for future changes in consumer behaviour. 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.

3.107. 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. 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. The underlying assumptions and datasets are published in our DFES customer behaviour assumptions report.

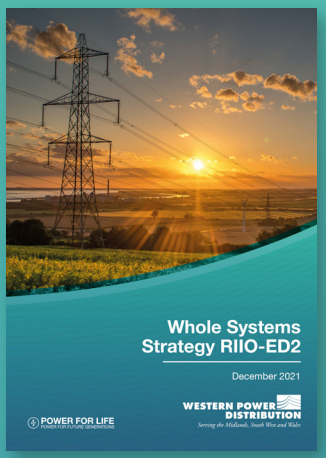
3.108. The forecast is based on: WPD Best View projected growth driving demand up and efficiency and pricing led DSR reducing the impact of the demand growth. The projections show that future demand will be higher than current demand, with a 12% increase in demand between the end of RIIO-ED1 and the end of RIIO-ED2.

3.109. 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.

A whole systems approach

3.110. Delivering net zero in the most efficient way for our customers and wider communities requires innovative thinking and extensive collaboration across a range of vectors, including heat and transport. We will consider every possible option when developing our network to make sure we deliver the most cost efficient outcome to match our customers' energy requirements. Where there are opportunities for solutions to be delivered by other organisations, our early competition decision making processes will ensure that the most cost effective solution for the customer is prioritised. Whole systems will be considered prior to the design phases of any large projects.

3.111. Our whole systems approach is detailed within our Whole Systems Strategy (see **www.westernpower.co.uk/RIIO-ED2/whole-systems-strategy**). We recognise that to achieve net zero a whole systems approach is vital and we have therefore established a new whole systems management team to provide a dedicated focus to ensure that we respond to and influence changes in technology, markets, customer behaviours and regulatory policies across all relevant vectors and sectors.



3.112. We recognise that a whole system approach needs to be embedded within our organisational culture to ensure that whole systems thinking is always an automatic consideration in our approach and interaction with stakeholders. We will therefore undertake training and development with relevant teams to enable individuals to understand and implement whole systems thinking and techniques into their work. We will seek stakeholder input into this training to ensure that we target appropriate activities. Our four Local Authority Engagement Engineers will be key recipients of this training, together with planning staff, and teams interacting with a range of external stakeholders as part of their day to day roles.

3.113. During RIIO-ED2 we will undertake enhanced stakeholder engagement focussed on whole systems. Workshops with a range of stakeholders from different sectors and vectors, including local authorities and major energy users, will aim to identify potential partnership opportunities and challenges which that require a whole system approach.

3.114. Our focus will extend beyond our own network, and traditional collaboration with other DSOs and the transmission network. A whole system approach, which engages and collaborates with all stakeholders across a wide range of sectors including gas, electricity, water, waste, transport and heating is essential if we are to drive improvements in network efficiency and deliver the most effective low carbon delivery solutions with the greatest social return on investment. To achieve this we will understand, respond to and influence changes in technology, market, behaviour and policy and regulation across all the relevant vectors and sectors. Our proactive approach to lead whole systems collaboration will be both informed by national trends, but with an increasingly localised energy system, it will also be critical that we understand, respond to, and influence joined up approaches at a regional and local level. Further, we recognise that our whole systems role will need to evolve over time, as the energy transition accelerates, and as progress occurs at different rates in other sectors and vectors.

3.115. Due to the increasing complexity of the energy sector in a smart, flexible, more dynamic energy future means there is a fantastic opportunity for WPD to achieve significant synergies and efficiencies, as well as improvements in resilience and service levels. For example, influencing the location and timing of demand by different users of the grid, including generators, could:

- reduce the need for investment in reinforcing the grid, reducing bills for all households and businesses; and
- reduce the cost of connections to the grid and network use charges for generators and demand e.g. by co-locating demand and generation it might be possible to realise benefits of behind the meter business models.

3.116. To ensure we deliver the most effective whole systems approach possible, we will identify interrelationships before undertaking major investments, embedding whole systems criteria into our early competition decision making process. By adopting whole systems thinking, we will identify challenges as well as opportunities that would not be clear by analysing individual energy systems. We believe that the whole system is comprised of four 'layers' to create a complete whole energy system. In RIIO-ED1, layers one and two of our whole systems framework have become part of our 'Business as Usual' approach to whole systems. In RIIO-ED2 we will significantly expand this to layers three and four to take the most holistic view of whole systems:

1. **'Very Narrow' Whole System:**
   – Collaboration and coordination between electricity distribution and transmission networks to achieve optimal system outcomes and net societal benefit.

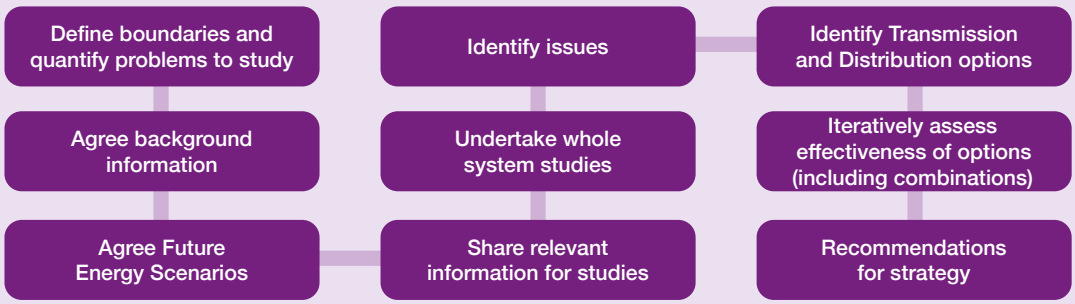
2. **'Narrow' Whole System:**
   – Collaboration and coordination between the Electricity Distribution and Transmission, Gas Distribution and Transmission, ESO and GSO.

3. **'Broad' Whole System:**
   – Collaboration and coordination between other energy vectors including power generation, transport, heat, battery storage and hydrogen.

4. **'Very Broad' Whole System:**
   – Collaboration and coordination between other utilities and societal systems including water, health, telecommunications, waste, heavy industries and the built environment.

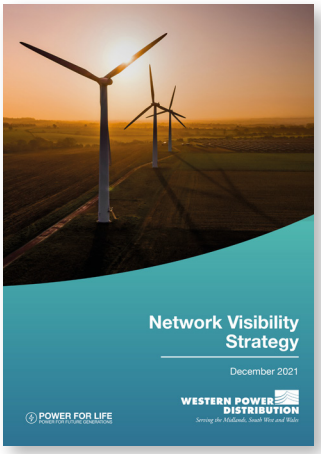
3.117. Our Whole Systems Strategy outlines the key projects that we will deliver within RIIO-ED2. As part of this we will publish an annual whole system coordination register to inform our stakeholders of all the co-ordinated actions across the electricity sector. We will also drive more ambitious and relevant coordination and cooperation that are 'broad' and 'very broad' via the ENA as outlined in our ambitious whole system framework for RIIO-ED2. This will include working with other energy sectors to put whole system coordination and collaboration into policy.

3.118. Our action plan contains a wide range of actions to introduce collaborative network studies, innovation schemes and joined up processes. Key examples and the benefits they will lead to for our customers, include:

Item	Description
Increase in flexibility – including Stackability (Level 2: Narrow)	**Context** • Flexibility service providers (FSPs) are increasingly seeking to dynamically "stack" revenues which means both stacking of multiple streams in the same time period, as well as moving between revenue streams in different time periods to take advantage of opportunities at different times of the day. We have been pioneering the use of flexibility solutions during RIIO-ED1 and will continue to lead the way. **Actions** • In RIIO-ED2 we will further analyse the potential opportunities to address network constraints through ANM and other tools such as Stackability. • We will further analyse the three important factors for a flexible asset when considering whether to stack revenues from different streams which include: - Baselining (i.e. the level against which delivery of the service in question will be assessed) . - Procurement timescales for different services. - Penalties for non-delivery. **Outcomes** • With the ENA, we investigated the ability of flexibility service providers to dynamically stack revenues. These providers would reduce constraints on the network while avoiding expensive network reinforcement and minimising consumer costs. • They are capable of moving between revenue streams much more readily than they are able to stack revenue streams leading to better coordination.
Regional Development Programmes (RDP) (Level 3: Broad)	**Context** • The RDPs provide detailed analysis of areas of the network which have large amounts of Distributed Energy Resource (DER) and known transmission and distribution network issues in accommodating that DER. • The conventional methods would require agreeing changes in approach at industry forums before making changes to the way the industry works. This can take time and deals with hypothetical situations, whereas the RDP approach solves a real issue with real solutions. **Actions** • The analysis innovates and pushes the boundaries of current thinking with a 'design by doing' approach to resolving issues. By focusing on the options for a specific case study that has a pressing need to improve outcomes for customers, it is possible to make faster progress. • The RDP process involves a number of stages before recommendations for future strategy can be derived.  **Outcomes** **RDP2 - South West** • A joint study between the ESO and WPD concluded that, due to the likely higher penetrations of renewables in that geographical area, additional capacity for generation was required. • It identified that, in the short term, flexibility was the most economical. **RDP4 - Midlands** • This study looks at the issue of demand constrained networks due to the connection of energy storage. This study concluded that, although energy storage could potentially increase demand at times of high demand, it was unlikely to do so and that flexibility would be a more economical solution than conventional reinforcement. In RIIO-ED2, we have committed to undertake three regional collaboration trial schemes by 2025 involving a combination of gas, hydrogen, electricity, water, waster, transport and heating sectors. Our ambition is to broaden our RDPs in order to further improve network efficiency. In RIIO-ED2 we will utilise a whole system approach for major reinforcement. We intend to ensure delivery of solutions with the greatest social return on investment.

Item	Description
Peak Heat (Level 3: Broad - heat)	**Context** • With our ongoing work in publishing DFES and forecasting emerging technologies, we identified that heat pumps will play a prominent role in the future energy system. As a result, domestic heat electrification could have a major impact on low voltage (LV) and medium voltage distribution network peak loads. • As a result, understanding further the resultant load profiles of these new electricity loads and technology shifts (e.g. from Economy 7 storage to heat pumps), the impact they may have on networks, and the opportunities they present for flexibility will provide whole system benefits for our customers as we become more informed with additional information and data.
	Actions This project is comprised of the following work packages: • **WP1: Archetype creation** (to establish physical demand characteristics). • **WP2: Heat market landscaping** (assess the range of technologies potentially available and mechanisms that could be used to deliver low carbon electric heating, including domestic thermal storage). • **WP3: Customer modelling** (Exploring the impacts on customer load profiles of a range of technologies). • **WP4: Area typology modelling** (Representative mixes of house archetypes will be modelled for four representative LV distribution network community types). • **WP5: Cost Benefit Analysis** (Draw together all the findings from the research to identify the potential lowest cost options.
	Outcomes • The project will create demand profiles that can be incorporated into main business planning tools for future network development planning and load growth modelling. • The project also assesses and investigates how heat pumps operate in different types of buildings (e.g. construction, size) and regions of our network. • We will also analyse how thermal storage as an enabler to flexibility compares to other flexibility sources. This includes assessing the overall economic case for these sources versus upgrading the network.

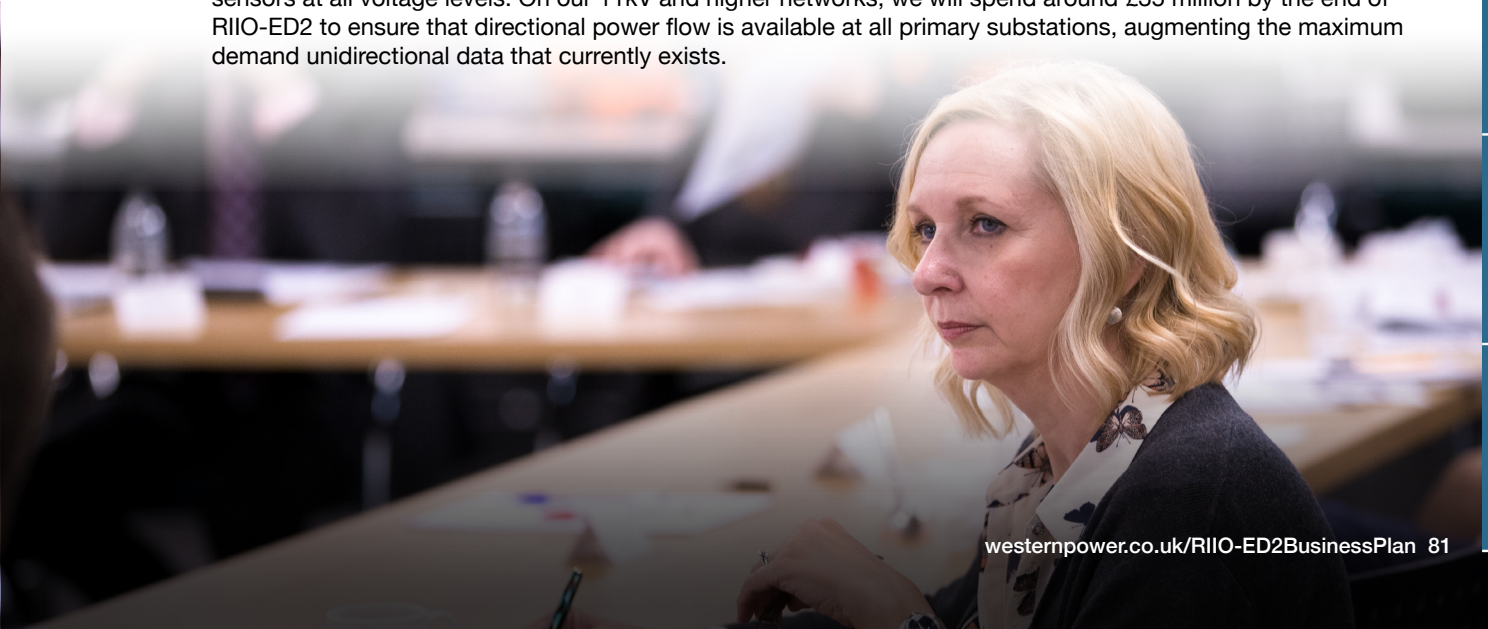
Enhanced network visibility and monitoring



3.119. Maximising the efficiency and utilisation of the existing network requires innovative sensors and measurement devices on our system to capture critical data and operate our network automatically. We have published a comprehensive Network Visibility Strategy, (see www.westernpower.co.uk/RIIO-ED2/network-visibility-strategy) which outlines the monitoring requirements we will build to develop smart networks, improve network design and enhance network security. The successful operation of these new systems requires good quality, reliable and timely data on the state of the network. In RIIO-ED2 we will carry out significant work to upgrade WPD's data acquisition capabilities.

3.120. 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. Whichever mitigation option we use, the need for accurate, network wide, reliable real time data allowing real time analysis of the network remains crucial.

3.121. We will utilise this significantly enhanced network visibility to improve our network design as the growth of distributed generation and LCTs has a significant impact on the information we require. In the past we needed little more than the maximum demand at a substation to ensure the adequacy of the network. We must therefore be proactive ahead of major increases in LCTs and significantly upgrade our measurement capability by adding more sensors at all voltage levels. 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.



3.122. In addition, 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 to reduce the risk of faults and power cuts. During RIIO-ED2, we will therefore introduce or upgrade the power quality measurement at 434 substations where there are over 35,000 customers connected at the bulk supply point intersection with the transmission grid. The impact of an outage due to overloading would therefore be highly significant.

3.123. Figure 3.5 shows the projects we will undertake to deliver enhanced network visibility and monitoring.

Figure 3.5 Our RIIO-ED2 Network visibility and monitoring projects

Project Title	Background	Project Details
Distributed Energy Resource Supervisor Control And Data Acquisition (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 connections are apparent.
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.
EHV monitoring for smart systems	WPD has been rolling out innovative smart solutions during RIIO-ED1, including ANM 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 LCTs 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 addressed in order to prevent damage to network assets or to prevent protection mal-operation resulting in significant load loss events
LV Network Monitoring	To address the climate crisis, customers are increasingly adopting LCTs including rooftop solar panels, EVs, and heat pumps. Electric vehicles, in particular, have the potential to add very large levels of demand coincident with existing periods of maximum demand.	Monitoring at LV will provide greater visibility of the loads, allowing proactive measures to be taken in real time and providing a more accurate view of reinforcement requirements, deferring the requirement at some sites. It will also provide verification of modelled information, enabling improvements to the modelling assumptions.
Internet Protocol Substation	Original protection and SCADA were electro-mechanical systems. More recently these have been replaced by electronic versions, but often manufacturers have used their own bespoke software and communications standards. Modern systems have become standardised onto Internet Protocol (IP) communications.	This project will test this IP approach to protection and SCADA to establish the working practices and policies for wider deployment.

Smart meter data utilisation

3.124. As outlined in our Smart Meter Strategy (see www.westernpower.co.uk/RIIO-ED2/Smart-Meters-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.

3.125. The installation of smart meters marks a huge step change in the visibility of the operational status of the LV network, over which there has historically been very limited real time information. 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 smart meter consumption data we receive is anonymous and has been agreed though a Data Privacy Plan approved by Ofgem.

3.126. We expect the vast majority of our customers 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. In RIIO-ED2 we will go significantly further, unlocking benefits from smart meter consumption data that are only now possible as we reach a significant density of installed smart meters on each section of our LV network. We expect smart meter installs to increase quicker than LCT take-up and this will provide us with early insight into where network reinforcement will be needed.

3.127. Utilising smart meter data will help us to transform existing business activities including fault management, network planning and asset management. The benefits grow further as the number of smart meters increases. To capitalise on these benefits, we have established interfaces with national smart meter data repositories that hold data from across the UK, established data storage systems and have created procedures that help us understand and interpret data using existing WPD's own processes.

3.128. Figure 3.6 sets out a number of the benefits we will deliver for customers as a result of smart meter data use:

Figure 3.6 Example benefits of smart meters for WPD customers

Benefit	How we will deliver this
Improved power cut response	Smart meters will be instrumental in alerting us to a loss of supply and allowing us to restore power quickly. 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 tackle faults. 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. 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, localised issues on the LV network. The ability to check the status reduces the possibility of teams leaving the area while customers are still off supply, ensuring the best possible service for our customers, even in challenging circumstances.
Proactive power cut prevention	Smart meters measure both voltage and current. This data relates to the network rather than to the individual and therefore does not need to be anonymised. It can be used to identify loading helping to identify potential generation or demand loading issues on LV networks. Voltage data can then be supplemented with aggregated load data to show whether a particular section of the network is highly loaded. We can use this data as an early warning of potential issues on our network, allowing us to take proactive action to avoid potential faults. It lets us identify substations with predominantly high or low voltages 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 before power cuts occur.
Enhanced network planning	Network planning at LV uses load profile templates to determine whether reinforcement is needed. Smart meter data is being used to verify and refine these load profile assumptions. Our estimates show that 80% of customers on a circuit must have a smart meter, 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. This will help us to refine the generic assumptions used for planning and open the opportunity for further, tailored analysis.

3.129. Looking to the future, we are not just delivering a better service today, but innovating for tomorrow, too. The electrification of transport and heating plus 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. Through our extensive innovation programme we will be at the cutting edge of these developments to unlock improved ways of working to benefit our customers in the long term.

Innovation

3.130. Innovation is the cornerstone of sustained growth and prosperity within our local communities. It runs through all areas of our business. We will continue to be a highly innovative and forward thinking company in RIIO-ED2, building on the largest innovation programme in the UK which was established in the last regulatory period.

3.131. Our innovation programme develops the solutions, skills and processes we need for a decarbonised and intelligent electricity distribution network, affordable for all our customers and which leaves nobody behind in the smart energy transition. 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. That was achieved by solutions designed, implemented and successfully trialled as part of our innovation programme.

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

3.133. 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 actively seek to secure funds from both the NIA and SIF to continue our extensive innovation programme.

3.134. Our focus in the RIIO-ED2 period will be on using 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.

3.135. We will dramatically increase our innovation activities in the RIIO-ED2 period by delivering two innovation programmes instead of one:

Business innovation programme	This will focus on the rollout of previously proven innovation and projects that can enable our business to operate more cost efficiently and deliver new and enhanced services to customers on an enduring basis. It will be funded through Totex. **We will also create an Innovation Coordination Rollout Team with dedicated resources to drive ambitious business wide change.**
Innovation programme	This will focus on projects to revolutionise the network to deliver a smart, low carbon energy transition. It will be funded through a number of mechanisms including external streams such as NIA and SIF. This will include additional WPD funded research and development, separate to Ofgem funded schemes. **This demonstrates significant WPD leadership, as no other DNOs do so outside of Ofgems schemes.**

Business innovation programme

3.136. We are rising to the challenge of changing our business culture, so that innovation is celebrated, rewarded and embedded within every strand of our business. This will ensure that we identify and act on opportunities to work smarter in every service area, empowering our teams to think differently and to trial new solutions that challenge and evolve existing processes in order to match the changing customer service expectations and energy needs of our customers. We define 'business 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. It also encompasses the rollout of successes from our innovation programme.

3.137. We will deliver business innovation projects through our new Business Innovation Programme which will be funded through Totex.

3.138. We have already started preparing for the delivery of our new Business Innovation Programme in RIIO-ED2, by updating our existing innovation framework to capture how it applies to business innovation projects. We have even started applying that framework in the delivery of our specific business innovation projects. This enables us to test the updated framework and identify further changes required before applying it to our Business Innovation Programme in RIIO-ED2.

3.139. Our expanded internal Innovation, Coordination and Rollout Team will consist of business analysts and change project managers to support our wider teams, offering guidance, support and innovation subject matter expertise and ensuring that best practice is shared widely across the company. This team will support our senior managers and ensure learning is shared across the company. They will measure business innovation progress, comparing performance across departments and benchmarking with a range of external comparators. Senior managers in every department will be specifically tasked with identifying opportunities for innovation and instilling this ethos across all of our staff. A Programme Board led by our Directors will provide oversight and track performance, with reporting and day-to-day co-ordination of new initiatives overseen by our Innovation Manager.

3.140. 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 scary, complicated or difficult. We will drive business innovation in all we do, encourage continuous improvement and positively embrace change. We will adapt our culture by celebrating and rewarding innovation by introducing internal performance metrics and creating a competitive spirit between our teams to encourage efficient delivery and the widespread adoption of innovative solutions. We will introduce innovation ambassadors in each of our main business teams. Our detailed approach for this and how we plan to maximise the adoption of innovation is captured in our Destination Net Zero: Business Innovation and Efficiency Strategy, and our Innovation Strategy.

3.141. We will ensure our business innovation development and delivery is holistic and never siloed. Our 'Destination Net Zero: Business Innovation and Efficiency Strategy' is underpinned by core strategies including DSO, Network Visibility, Innovation, Digitalisation, IT and Workforce Resilience, but will seek to ensure the benefits are achieved as widely as possible in our business. For example, taking the three Ofgem output categories and the 12 business focus areas within these (against which our 42 core commitments are structured) we have proposals for how we will utilise innovation to drive ongoing enhancements in all these areas, as shown in figure 3.7:

Figure 3.7 The wider business impacts of our Innovation Strategy

Ofgem output category	Business area	Innovation commitment
Delivering an environmentally sustainable network	A smart and flexible network	Building on our innovation work that designed and developed our first centralised, intelligent network operation systems, we will work with our control systems team to roll out those systems in our remaining areas. This will increase network efficiency and provide detailed visibility of network operation.
	Community energy	Working with our Community Energy Engineers, we will support community energy groups that have great ideas for innovation projects that can provide benefits to communities. This will also support our Social Contract and vulnerability commitments where we will rollout solutions proven in innovation.
	Environment and sustainability	Working with various internal teams such as Major Projects, Network Services, local planning, Engineering Design and Primary System Design teams we will develop methodologies that evaluate the environmental impact of our activities and refine the way we run those activities to improve and continuously measure our environmental impact.
	Innovation and digitalisation	By implementing our Innovation Strategy, we will develop the skills and tools we need to achieve net zero. Our Innovation Strategy supports all of the main outputs through the delivery of our two innovation programmes.
Meeting the needs of our consumers and network users	Customers in vulnerable situations	It is our priority to ensure that we offer the best support possible to our vulnerable customers and we will use innovation so that we can continue doing that in the future. Working with our social obligations team, we will run programmes that will make the way we identify vulnerable customers more efficient and create new ways of interacting with those customers to adapt to their changing needs. This will include assessing the customer journey of our vulnerable customers to ensure that it is suitable for them and tailored to their needs as per our customer service commitments. Our aim is to ensure all of our services are equally accessible.
	Social contract	Our programme of work with our social obligations team will look at how we can make the process of providing our customers referrals to the appropriate services that can help them, quicker, easier to understand and effortless for the customer. We will learn from other industries to adapt our process.
	Customer service	We will focus on understanding how customer needs and behaviour has changed and will continue to change, while at the same time identifying our internal functions that need to adapt to continue providing excellent customer service. This applies to every activity that involves interaction with customers including contact during power cuts, connections and general enquiries for example, working with our Contact Centre, Network Services and Network Planning teams. This will include all customers including those in vulnerable situations.
	Connections	Working with our connections policy, local planning, and Primary System Design teams, we will continuously assess what connection types our customers need and develop new connection products to meet those needs.
Maintaining a safe and resilient network	Network resilience	Building on our previous work on pre-fault detection and network monitoring, we will work with our Network Services teams to rollout systems and technologies that will prevent faults from happening while minimising the resource, time and costs required to do that.
	Safety	We will run a programme of work with our Safety Team which will embed within our business processes and policies our previous learning from the analysis of safety incidents.
	Business IT security and cyber resilience	Working with our Information Resources team and the world's best internet organisations, we will use our data and network as a platform to facilitate energy as a service by developing, deploying and trialling new solutions.
	Workforce resilience	Engaging with our staff from all departments, we will run campaigns to understand how our work environment needs to transform to enable our employees reach their full potential and implement cultural change. We will focus on continuous development of staff through novel opportunities, re-evaluate our roles and make changes to attract a new, diverse workforce.

Innovation programme

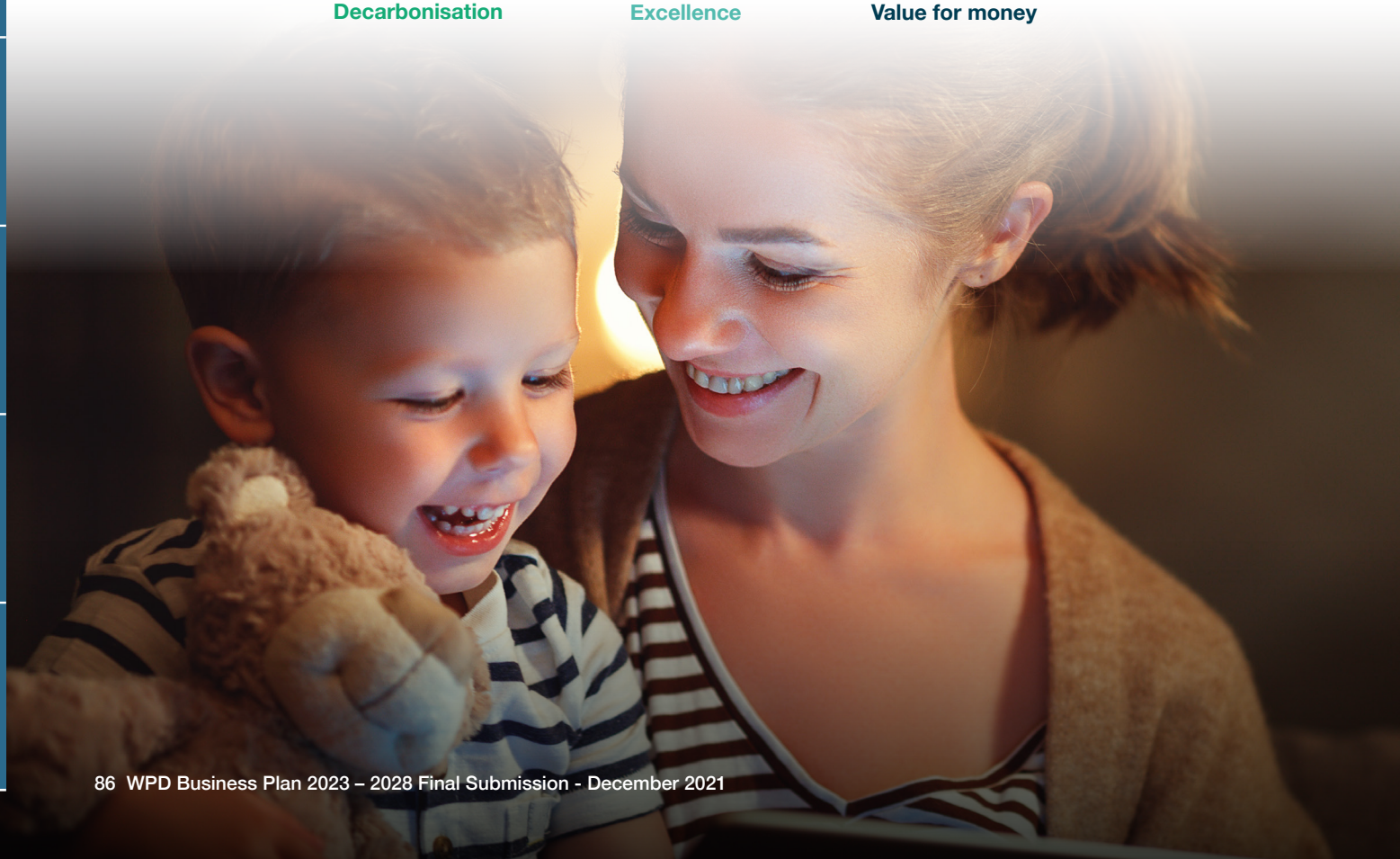
3.142. Our RIIO-ED2 Innovation Strategy (see www.westernpower.co.uk/RIIO-ED2/innovation-strategy) provides detail on our innovation ambition, our values and priorities, our strategic plans for RIIO-ED2 and our approach to changing our culture to embrace and reward innovation within the business. It will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

3.143. To date, we have delivered more than 120 projects investing over £80 million in innovation. The ultimate measure of success is the extent to which this has led us to do things differently and improve the efficiency of our operations. We have embedded £723 million of savings into our RIIO-ED2 Business Plan as a direct result of the wide reaching benefits and rollout of innovation.

3.144. 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. Team members are drawn from internal resources including employees of all levels, and well as external support from outside the organisation to bring in fresh ideas.

3.145. 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. To achieve our innovation ambition we believe it is important to have clear values that align with our ambition. It is our values 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. Our three core values are:

Figure 3.8 Our innovation core values



3.146. We have developed a strong framework, documented within our Project Governance Guidelines, for creating and delivering our projects which is based on internationally recognised project management methodologies (PRINCE 2) and have applied that in the projects we delivered so far. 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.

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

3.148. Our core innovation programme in RIIO-ED2 will deliver projects funded through external mechanisms such as Ofgem innovation funding, BEIS competitions, InnovateUK, calls and initiatives connected to the Energy Systems Catapult and other national and international schemes.

3.149. We welcome the continuation of NIA funding and the introduction of the new SIF 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.

3.150. Being able to use our NIA allowance throughout the entire price control period in RIIO-ED2 rather than having annual allowances, will enable us to make the most of our funding and provide the best value for money to our customers. This is because we will be able to use the expected underspend in Year 1 (due to the time taken to set up the first projects) of the price control period during the remaining years of the period, which we expect will enable us to increase the overall usage of our allowance by 20%. We are therefore asking for £30 million of NIA allowance for the entire RIIO-ED2 period, reflecting our expected usage and our actual average spend in RIIO-ED1. More details on this can be found in our Innovation Strategy. We are forecasting a spend of £30 million, which aligns with our actual average annual NIA spend RIIO-ED1. We have delivered a leading programme in this time, so projects with this spending level are appropriate for the rate of key new innovations required in RIIO-ED2 as part of the total NIA allowance.

Digitalisation

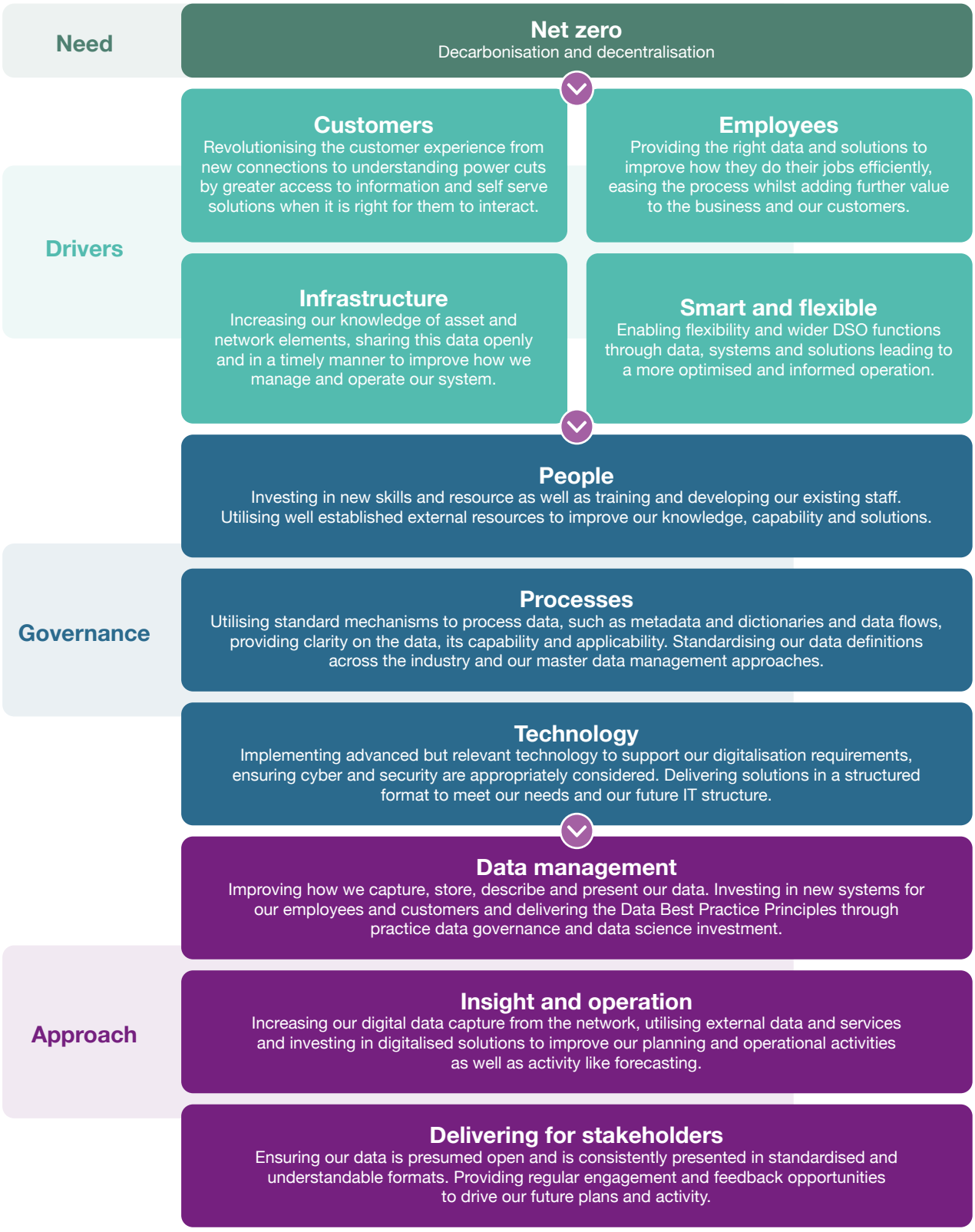
3.151. Moving from a legacy analogue system to a modern, digitalised energy system, is a critical step in enabling the UK's transition to net zero carbon emissions while keeping the lights on for customers. The utilisation of good quality and accessible data is key. We are clear on the need to provide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

3.152. Our data and digitalisation activities are informed by extensive and ongoing engagement with data users and a wide range of stakeholders. We have developed a comprehensive Digitalisation Strategy and associated Digitalisation Action Plan (see www.westernpower.co.uk/RIIO-ED2/digitalisation-strategy) which sets out in detail our plans for a smarter energy system and increased sharing of data.

3.153. To understand the scope of digitalisation, we must distinguish between digitalisation (using data), digitisation (collecting data) and open data (sharing data). We use 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.

3.154. We have demonstrated significant improvements in our data management processes through targeted project activity to understand our datasets, improve their quality, and understand third-party use cases. 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. 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 DNO to share its complete high voltage asset and connectivity data in Common Information Model format.

3.155. We have carefully considered the needs and drivers behind our investment in digitalisation and data and have grouped our approach into themes that will enable us to deliver in a way that maximises the benefits and positive outcomes for our customers. Our approach will be anchored by strong governance, which includes people, process and technology, to ensure we are delivering the most holistic digitalisation transformation possible.



3.156. In addition to this section of the Business Plan, there are several other supporting documents that should be read including Annex SA-03: Smart and flexible network and our Digitalisation Strategy and Action Plan, which set out our approach to deliver:

- **Robust data governance:** Establishing rules and systems to maintain a consistent approach to data improvement and management, including identifying appropriate data owners and safeguards for confidentiality and quality of customer data in particular.
- **Improved data quality:** Steps we will take to ensure all data is accurate and reliable, including enhanced data collection systems using innovative new iPad applications for our field staff, replacing manual processes and therefore mitigating data errors.
- **Utilisation of external data and services:** How we will harness data from a wide variety of sources and third parties. For example, vulnerable customer data can be improved by better sharing between peer organisations across a wider range of industries than ever before, including water, telecoms and transport.

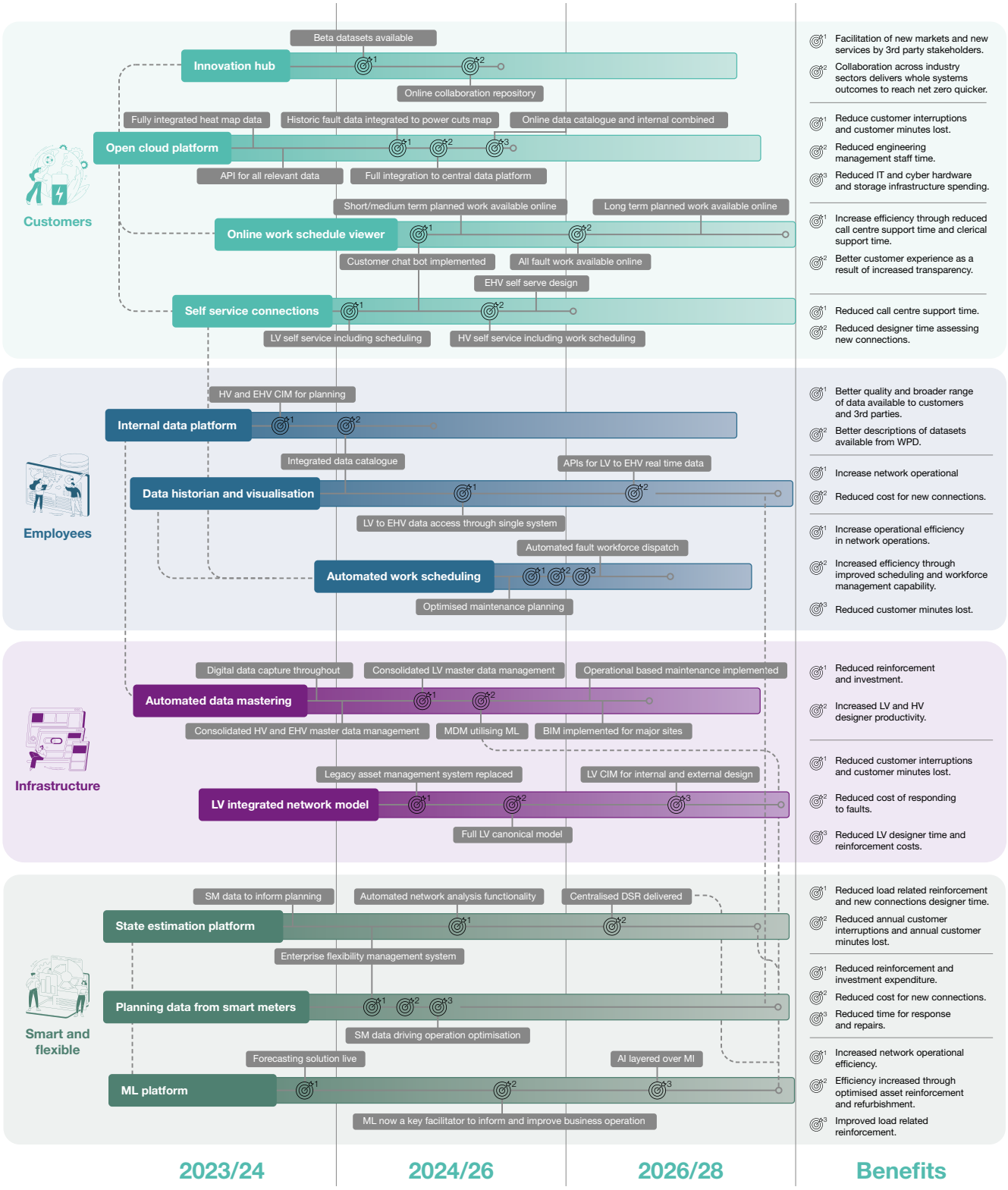
3.157. We know that digitalisation and data can deliver better outcomes for our customers, including improved experience when connecting LCTs, new services to support vulnerable customers, better choice of communication channels, improved network reliability and better access to our data for customers. It can also stimulate entirely new markets and innovative services. For example, taking the three Ofgem output categories and the 12 business focus areas within these (against which our 42 core commitments are structured) we have proposals for how we will utilise digitalisation to drive ongoing enhancements in all these areas shown in figure 3.9.

Figure 3.9 The wider business impacts of our Digitalisation Strategy

Ofgem output category	Business area	Digitalisation commitment
Delivering an environmentally sustainable network	A smart and flexible network	We will provide highly accessible and visible data to drive DSO functions, digitalise our planning and forecasting using machine learning and artificial intelligence to optimise our decision making. We will utilise Application Programming Interfaces (APIs) to share network operational data, and flexibility data with the market to avoid operational constraints and encourage new innovation and services that are customer led.
	Community energy	Providing digital workshops to empower communities to maximise the value from data to deliver net zero. Highly granular and relevant data will be presented effectively to support local area planning processes.
	Environment and sustainability	Use of machine learning design activity to develop environmentally considered construction. We will minimise electricity lost by heat by analysing historical data patterns and adjusting network operations through machine learning processes. We will also use data insights to ensure that we build a 'green supply chain' and sharing more data with suppliers to help to reduce overall carbon footprint.
	Innovation and digitalisation	We will implement an Innovation Data Hub, including leading-edge data to be used by researchers and academics to speed up the transition to net zero. We will use digital tools to identify, plan, manage and assess business innovation and improvement.
Meeting the needs of our consumers and network users	Customers in vulnerable situations	Digitalisation can be used to offer new services for our vulnerable customers, for example offering voice activated apps (Alexa) that combat loneliness and help customers access energy efficiency advice, additional support and services. We will work with other parties (peer organisations and cross sector) to improve the data we hold on our vulnerable customers to ensure that we are able to offer them tailored services and additional support.
	Social contract	Use of digital solutions to build an 'early warning system' of areas that are at risk of being left behind in the energy transition, potentially due to network constraints, planned third party investment, housing stock etc. We can also digitalise aspects of our energy advice service including automated home surveys for energy efficiency and low carbon technology options.
	Customer service	Offer an Amazon style of digital engagement with immediate customer response across multiple channels, 24/7. Every customer facing process will have a fully digital pathway option. By the end of RIIO-ED2 we will use data, machine learning and analytics to predict why customers are contacting us and move them to the most appropriate channel to get them the quickest response.
	Connections	We will achieve full digitalisation of the customer connection journey, including self-assessment tools, automated cost estimating, online contract processing, tools to book and reschedule work, and automated customer satisfaction reviews.
Maintaining a safe and resilient network	Network resilience	We will use machine learning to utilise proactive and preventative fault identification before power cuts occur. Using insights from LiDAR technology we will reduce faults from vegetation and asset health assessment.
	Safety	Use data to provide the right information at the right time to staff, contractors, customers and stakeholders to support safe working practices. We will also utilise digital solutions to transform the approach to learning, e.g. immersive training using virtual reality headsets.
	Business IT security and cyber resilience	Use digitalisation to enhance risk management, defence, detection, and recovery from cyber threats.
	Workforce resilience	Data and digital applications will be used to improve employee engagement and also attract new talent. We will also use it to open up new career paths (e.g. data science) and new digital skill development for employees to ensure we are an inclusive employer.

3.158. Figure 3.10 is our Digitalisation Roadmap, providing a high level overview of the key projects, their timelines, outputs and benefits:

Figure 3.10 Our digitalisation road map



Telecoms

3.159. WPD operates a powerful in-house telecoms network that delivers inter-office data communication, mobile voice communication and SCADA between electricity assets and control centres. 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.

3.160. 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 further enhance 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. We will need to meet significant challenges, in relation to the increase in 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.

3.61. Our ambitious telecoms plans (see figure 3.11) 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.

Figure 3.11 Key deliverables of our RIIO-ED2 telecoms work plan

Project Title	Description
Power flow monitoring	Due to the increasing complexity and challenges brought by connecting LCTs and distributed generation on our local networks, 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.
LV monitoring	As huge volumes of domestic LCTs connect to the grid, to ensure the network operates efficiently and reliably we need to gather large amounts of data by installing additional communications devices to deliver enhanced monitoring on our LV networks.
Private Long Term Evolution network	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. Subject to regulatory consent, we will upgrade WPD's radio-based telecoms system to a modernised, private LTE solution to enable improved, resilient and secure communication capability. It will have 100 times more capacity than the current system, will overcome bandwidth constraints and will be quicker and more cost effective to deploy, and is scaleable to keep pace with future network growth and data demands.
Replacing remote terminal units	Remote Terminal Units (RTUs) are microprocessor devices that are installed at substations to swiftly send critical messages from the equipment to the control systems. During RIIO-ED2 we plan to modernise 2,000 substation RTUs, which have reached the end of life, with cyber secure IP enabled RTUs providing enhanced two-way data traffic that will increase system monitoring capability.
'Public Switched Telephone Network' switch off	Public Switched Telephone Network (PSTN) is the current UK standard for phone line connections to all homes and businesses which do not use a fibre connection. For WPD, approximately 1,400 third party telecoms connections will need to be replaced with a suitable alternative and migrated to WPD's private network. We use PSTN connections for a variety of purposes including phone lines, alarm systems and CCTV systems at substation sites.
Fibre network expansion	WPD uses a combination of fibre optics and microwave for communications across our telecoms network. We will increase the number of fibre optic installations to our substations, because they provide greater bandwidth. Disruption to customers and cost will be minimised by co-ordinating works with planned network outages and excavations required as part of our asset replacement work.
Telecoms sites	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. Some existing sites will be refurbished to modernise the associated equipment delivering enhanced cyber security and greater resilience to outages.
Backhaul upgrades	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 IP networks and firewalls. Some devices will be upgraded as they are either no longer supported or require a cyber security enhancement.

Strong performance metrics for our DSO capability

3.162. As a more flexible network develops, the range of metrics required to assess performance and drive excellence for our customers must grow to reflect the new activities we undertake. Existing measurements of customer satisfaction, time to quote, customer minutes lost and costs for specific works will also be adapted to draw out performance in flexibility.

3.163. Metrics will follow the structure of the sector specific baseline standards for DSO as set out by Ofgem. Where topics can be counted or measured, quantitative measures will be used. Where measurement is not possible, customer survey and stakeholder evidence will be used to create a qualitative view. Metrics must be suitable for the requirement. This is assessed by considering their relevance, focus, robustness and transparency, appropriateness, verifiability, attributability and proportionality.

3.164. In the sections below, we give details of how metrics can be established for each of the roles in the baseline standard. Metrics are being developed further by all DNOs in conjunction with Ofgem. A more detailed view will be developed on the completion of this work. To ensure our set is transparent, we would aim to focus on more quantitative indicators which can be supported by base data. We expect that the set of metrics will be refined and developed to provide the best mix for performance measurement.

Role 1: forecasting and network planning

Forecasting

3.165. This set of metrics looks at how we share forecasting of our network capacity to inform customer decision making and provide the market with the visibility of forecasting accuracy and therefore confidence to base decisions upon it. We must provide the customer with extra data to inform decision making in regard to connection choices, Flexible Services Assessment and the identification of constraint areas.

3.166. Quantitative measures can be used to assess data inputs, data gathering and forecasting accuracy. Qualitative measures will include industry engagement reports and stakeholder engagement.

Network asset data quality

3.167. This set of metrics assesses how sharing network asset data can make it easier for flexibility providers to engage in distribution flexibility markets, improving liquidity and increasing the opportunities to use flexibility as an alternative to investment (where it is lower cost). Improved information on network constraints not only improves participation in flexibility markets but can also help network users understand where they can participate in other markets and develop innovative business models - delivering benefits across the system. Tools such as capacity heat maps enable a wide range of stakeholders (DG developers, IDNOs etc.) to self-serve by indicating capacity headroom and where they can connect at a lower cost.

3.168. Quantitative measures can be used to assess data quality, data volume and customer satisfaction. Qualitative measures will include the definition of data types and scope, data triage systems and presumed open measures.

Role 2: network operations

Coordination between the ESO and DNOs

3.169. This set of metrics looks at how we coordinate and optimise network operations through the sharing of operational data to deliver whole system efficiency savings and benefits. Sharing allows the ESO to make informed decisions regarding dispatch of flexibility services and how they operate their own services, operate the transmission, and prevents reductions in quality of supply.

3.170. Quantitative measures can be used to provide counts of data exchanges and formats. Qualitative measures will include industry engagement between the ESO and DNOs, reports on delivery and standardisation and communications processes.

Efficient dispatch of distribution flexibility services

3.171. This set of metrics assesses how we encourage the operation of a decision making framework for dispatching DER in real time that is efficient and transparent. This will drive best whole system outcomes by promoting overall system security and resilience, coordination across services, maximising liquidity and ensuring dispatch of DER is economic and efficient.

3.172. Quantitive measures can be used to count self derogations against standards, error corrections issued against instructions and late data events. Quantitive measures will include the definition of a decision making framework and stakeholder feedback on the efficiency of DNO systems.

Role 3: market development

Flexibility market volume and value

3.173. This set of metrics looks at how we use flexibility services that will support our ability to more actively manage the network ensuring a resilient and secure supply that is cost effective by reducing the need for traditional network investment.

3.174. Quantitative measures can be used to provide market volume metrics, market value metrics and quality measures for commercial processes. Qualitative measures can be used to provide annual audit evidence of DNO transparency.

Efficient, user-friendly and accurate processes, contracting and procurement

3.175. This set of metrics assesses how we ensure that a wide range of participants can easily access DNO Flexible Power products and services. We aim to offer visibility of products at tender stage, allow user friendly procurement, and to ensure contracts offer customers flexibility to stack benefits from the wider market.

3.176. Quantitative measures will include volume of Flexible Power offered, contracted and dispatched. A customer satisfaction index will measure overall performance. Qualitative measures will include the definition of an industry standard prequalification process and understanding of customer groups and their requirements through engagement.

Chapter 4

We keep our promises

For a short video overview of this chapter scan the QR code.

Chapter 4 Contents

4. We keep our promises

Summary

4.1. 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 set of stretching commitments for RIIO-ED2, driving a smart, sustainable energy revolution for the communities we serve. In this chapter, we explain what we have learned from our work during RIIO-ED1. It details how our experiences and successes have shaped the business towards four distinct, but inter-dependent outcomes we will now deliver in RIIO-ED2. These are:

1. Sustainability:
Lead the drive to net zero as early as possible.

2. Connectability:
Customers can connect their electric vehicles, heat pumps and renewable generation.

3. Vulnerability:
First class vulnerable customer support programme where everyone benefits in a smart future.

4. Affordability:
Maintaining excellent customer service, safety and network performance and transforming the energy grid for future generations, while keeping bills broadly flat.

Our performance today will drive our plans for tomorrow

4.2. Our strong track record of delivering excellent levels of performance for customers underpins confidence that we can build on the successes of RIIO-ED1 to deliver our holistic plans for RIIO-ED2. 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 sustainable, reliable and innovative network for everybody.

4.3. Alongside an exceptional innovation programme and industry leading network performance, maintaining first class customer service and the safety of our customers, contractors and staff and the general public are our top priorities.

4.4. In RIIO-ED1 we have delivered exceptional performance in the areas of our core, traditional responsibilities as a Distribution Network Operator (DNO) and we were the only DNO to be fast tracked by Ofgem. We have proven that we keep our promises to customers and deliver on our commitments. We have worked tirelessly to supply safe, reliable and affordable power for our customers, led the way in net zero, and protected the most vulnerable in our communities and helping to tackle fuel poverty. In this period, we have:

- Been rated the industry's top performing DNO for overall customer satisfaction since 2015, with an average score of over 90%.
- Made over 5 million proactive calls to vulnerable customers and maintained a minimum of contact once every two years for every customer on our Priority Services Register, achieving 95% satisfaction, while having a 58% increase in registered customers from 1.2 million in 2015 to 1.9 million in 2021.
- Helped 92,000 fuel poor customers save more than £37 million on their energy bills since 2015.
- Been the highest rated utility company in Ofgem's Stakeholder Engagement and Consumer Vulnerability incentive for eight years.
- Delivered a 38% reduction in power cuts and a 48% reduction in power cut duration.
- Reduced our business carbon footprint by 36%.

4.5. At the same time, we have adapted rapidly, utilising innovation and digitalisation at every opportunity, to keep pace with the significant changes in the way power is generated and energy has been consumed over the last six years. We recognised the need to adapt and be flexible to the changing energy landscape. We therefore:

- Became the first DNO to publish a Distribution System Operator (DSO) plan.
- Spearheaded the UK's largest rollout of flexibility services (709MW contracted since launch), not just contracts signed but with services being utilised and dispatched across our regions.
- Created new platforms to dispatch flexibility services that five of the six DNOs are now using to the benefit of all UK customers.
- Will invest an extra £59 million to support the green recovery from Covid-19, increasing available network capacity for demand growth by 617MW – equivalent to connecting 171,000 heat pumps or 385,000 domestic electric vehicle chargers. £44 million of this will be invested before RIIO-ED2 commences.

4.6. 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.

4.7. We know that using in-house regional resources is key to the delivery of a tailored, cost effective and efficient service to all our customers, with a focus on ensuring our most vulnerable customers are protected and supported. 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.

4.8. Further detail on our track record is included in Supplementary Annex SA-04: We keep our promises.

Enabling increased volumes of low carbon technology connections

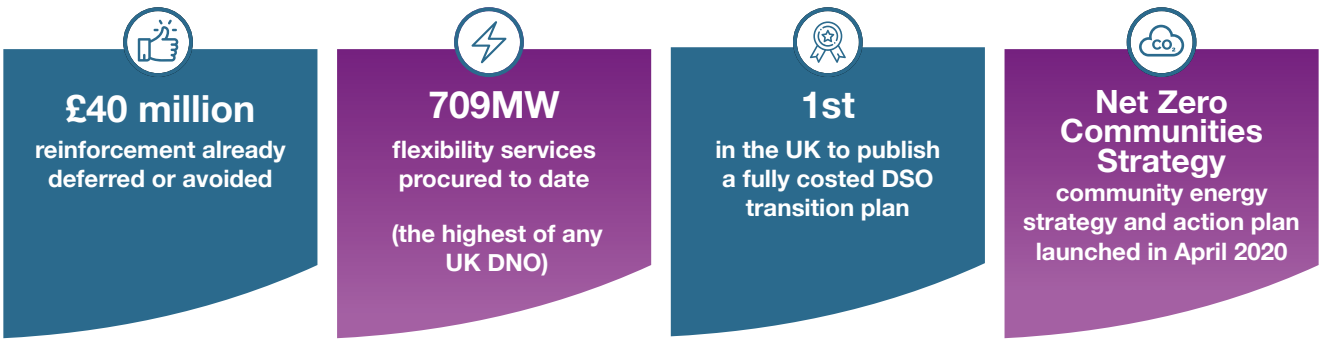
4.9. We have experienced seismic changes in the way that electricity is generated and consumed by our customers over the course of RIIO-ED1. As a result, the scope of WPD's activities has developed beyond the commitments made in our RIIO-ED1 Business Plan, and we have gone even further to meet the needs of our communities and their changing habits and expectations – all while ensuring our strategic priority of delivering industry leading first class customer service continues to be met.

4.10. The work we are delivering today supports our ability to achieve a decarbonised network for our customers – helping everyone, especially our most vulnerable customers, benefit from a smart 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 leader in Distribution System Operation

4.11. We were the first DNO 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 2017, 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 4.1 shows the highlights of our achievements.

Figure 4.1 Highlights of our DSO activities impact



Producing Distribution Future Energy Scenarios (DFES)

4.12. In 2015, we were the first DNO to publish a DFES document, forecasting the volumes and regional distribution of LCT 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.

4.13. 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

4.14. 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.

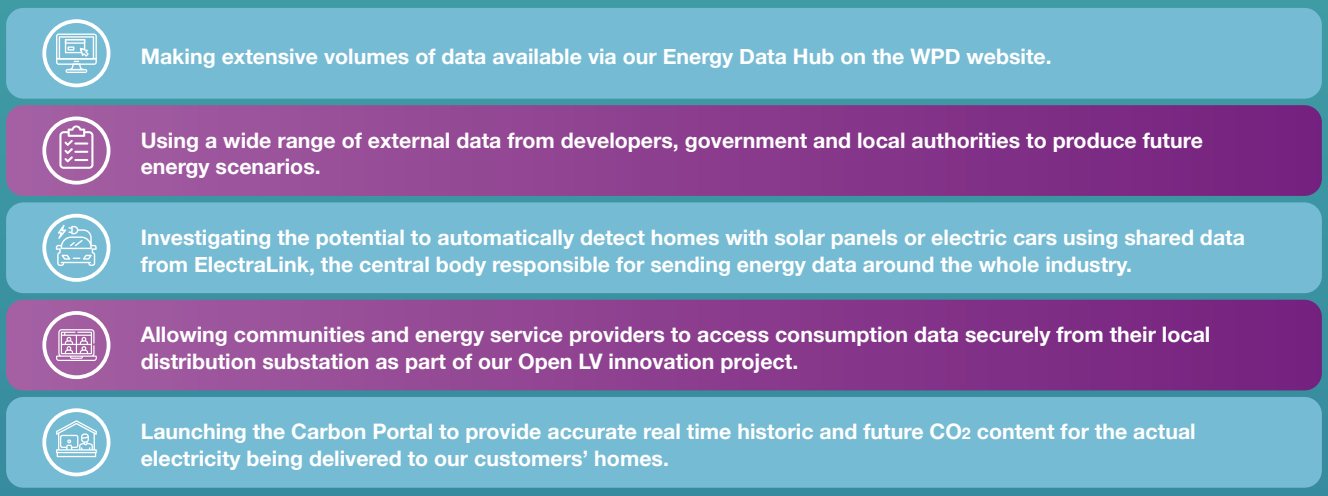
4.15. We were the first DNO to commit to a six monthly procurement cycle for flexibility services through our customer facing flexibility brand, known as 'Flexible Power'. We have also implemented weekly processes for identifying short term flexibility need and use an electronic, automated dispatch platform.

Sharing our network data with our stakeholders

4.16. 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. The digitalisation of the energy system underpins our RIIO-ED2 strategy. It will boost innovation, deliver even better performance and help all of our customers benefit from a smart and sustainable future. It is key to building a smart and efficient energy system and forms a central tenet of our long term plans.

4.17. Key activities undertaken during RIIO-ED1 to support digitalisation in RIIO-ED2 are shown in figure 4.2.

Figure 4.2 Key activities supporting digitalisation during RIIO-ED1



Supporting the green recovery and net zero

4.18. 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 2050 target of both the UK and Welsh government. We have connected over 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 31GW of distributed energy resources.

4.19. We have committed to spend up to £44 million in the remaining years of RIIO-ED1 to support the green recovery, with a further £15 million already committed for RIIO-ED2. We will invest in our extra high voltage network and high voltage network to boost network capacity, allowing LCTs to connect to our system and accelerate the green recovery. This activity will also play a central tenet in our network performance goals for the period ahead.

Electric vehicles (EVs) and heat pumps

4.20. We recognise that the necessity of EVs and heat pumps to drive net zero ambitions will change our business significantly, altering daily load profiles and increasing the amount of power used. We are taking a proactive approach to ensuring the success of this widespread change. We were therefore the first DNO to publish an Electric Vehicle 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 4.3).

Figure 4.3 Our Electric Nation case study

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.

4.21. Looking ahead at 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.

Innovation in RIIO-ED1

4.22. We are continually innovating, to enhance the efficiency of our business and drive down costs for our customers. Our innovation strategy touches on all areas of our Business Plan and supports our most pressing ambitions – to deliver great performance and customer service, to support our most vulnerable and to lead the industry towards net zero. 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 drive positive outcomes can be found in figure 4.4.

Figure 4.4 Innovation activities undertaken during RIIO-ED1

Innovation activities	Benefits
Adoption of 'Agile Auditing'.	Quicker delivery of key audit findings to enable business managers to act on opportunities as soon as possible.
Launched bespoke services for the 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 enable our front line staff to communicate directly with deaf customers on site.
Introduced the WPD support application, 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 and data quality.
LV network investment forecasting tool.	Quicker LCT connections and improved business efficiency, data quality and digitalisation.
Customer enquiry tracker.	Improved customer service, business efficiency and replacement of legacy system.
Hazardous waste application.	Improved regulatory compliance, business efficiency and digitalisation.
LV Connectivity Model.	Creation of an LV connectivity model in Electric Office enables users to simulate electrical traces on the network. simulation of feeder changes and associate customers to feeders and load analysis, It also supplies circuit based data to other products - e.g. LVConnect, that are essential for transition to DSO.
Introduced Geographic Information System (GIS) data to the helicopter camera system.	Camera using inertial navigation system recognises the asset it is looking at and displays this on the screens within the aircraft.
Use of LiDAR data for engineering.	LiDAR system tested for accuracy on 132kV line refurbishment, saving approximately £20,000.

Figure 4.4 Innovation activities undertaken during RIIO-ED1 (continued)

Innovation activities	Benefits
Continual development of Active Network Management (ANM) systems which were first rolled out in 2014, but full scale business rollout required significant further development, including working with the ANM suppliers to develop their systems to work more efficiently.	Allows more customer connections without the need to upgrade our network.
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' & 'What3words' into the Contact Centre.	These applications give greater flexibility and clarity to passing on emergency information for call takers, control and field staff. Particularly useful for network damage and fault incidents.
Automation of the production of health indices.	The production of health indices requires the processing of data about 1.7 million discrete assets and 7,700 km 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 data sets 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 the ability to filter data by 28 different criteria.
The new incident reporting information system (IRIS).	This replaces the old NAFIRS system but with the capability to track the impact of network incidents down to individual customers. Our external auditors said this was the first reporting system they had seen in the UK that was able to report down to this level of detail.
Application 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 Key Performance Indicators (KPIs) to be produced online rather than having to use paper methods.

Supporting community energy

4.23. 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. As part of our commitment to this during RIIO-ED1, we have undertaken key activities as shown in figure 4.5.

Figure 4.5 Key activities supporting community energy during RIIO-ED1

Radical reduction in our own environmental impact

4.24. During RIIO-ED1, we have led the way on reducing our business carbon footprint and protecting the environment from the impact of any of our activities (see figure 4.6). We regard this as an even higher priority going forwards and crucial in supporting our wider drive towards net zero.

Figure 4.6 Highlights of our environmental performance during RIIO-ED1

36%
reduction in business carbon footprint

60km
of fluid filled cables removed

83%
reduction in tonnage waste sent to landfill

33km
of overhead lines removed in Areas of Outstanding Natural Beauty

A track record of industry leading social commitments

4.25. We are a purpose led organisation with an important role to play, not just to provide outstanding service to customers, but to do business in a way that supports the wellbeing of the communities we serve.

4.26. We are committed to supporting our diverse regional communities and at the heart of this is a robust and continually evolving customer vulnerability strategy. We have invested £12 million since 2015 to support our vulnerable and fuel poor customers, continually expanding our activities to meet their needs.

4.27. 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 4.7. 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, spearheading 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. We consistently work to innovate in the area of customer vulnerability, finding new and improved ways to help our customers when and where they need it most.

Figure 4.7 Highlights of our social obligations performance during RIIO-ED1

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

5.3 million
proactive contacts to customers to update Priority Services Register records in the last six years

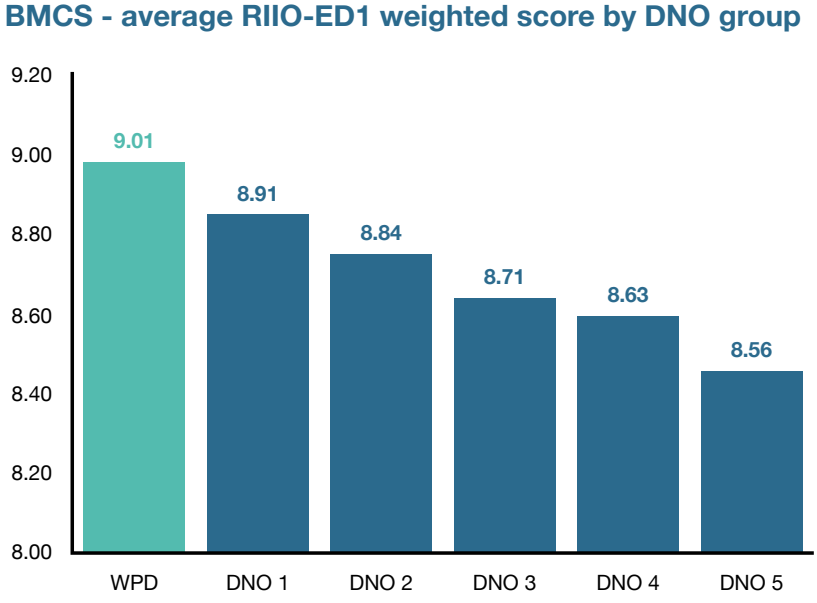
£37 million
bill savings for 92,000 fuel poor customers supported by WPD in the last six years

1.9 million
customers on our Priority Services Register

Proven delivery of excellent customer service

4.28. We are determined to remain industry leading in delivering excellent service to the 8 million customers we serve. 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 4.8).

Figure 4.8 Broad measure of customer satisfaction 2015 - 2021



4.29. 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. 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.

4.30. 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.

4.31. 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'.

Network performance innovations

4.32. 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 4.9).

An external view on our performance

International Engage Awards 2020

2020 ENGAGE AWARDS WINNER

Gold
Best Customer Service Team

Gold
Best Customer Contact Strategy in a Crisis

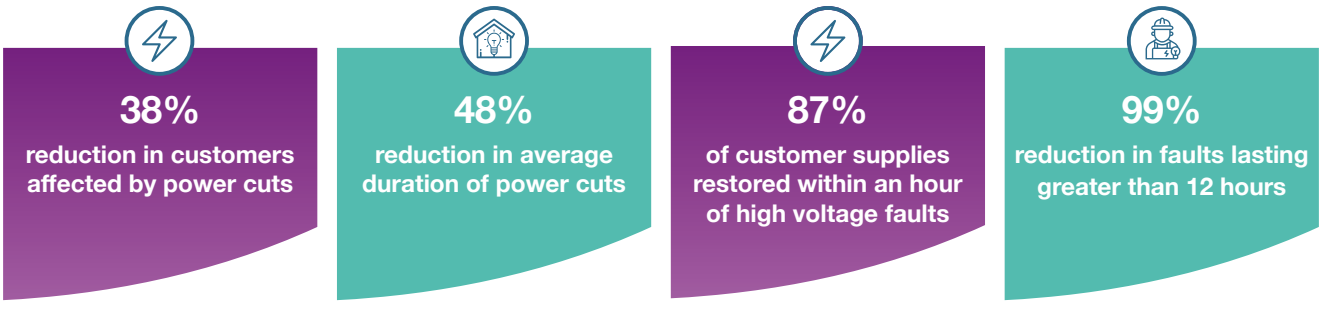
Gold
Best Innovation in Customer Engagement

Bronze - Best use of Training

Steve Hurst, Chair of the International Engage Awards judges said:

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

Figure 4.9 Highlights of our reliability performance during RIIO-ED1



Management of asset health

4.33. 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 prioritise which assets are removed.

4.34. In RIIO-ED1, the main measure of delivery for 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 six years of RIIO-ED1.

Proven safety record

4.35. The safety of our staff, contractors and the general public is always at the top of our agenda. We strive to achieve the very 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 4.10.

Figure 4.10 Highlights of our safety performance during RIIO-ED1

Our expenditure in RIIO-ED1

Total expenditure (Totex)

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

4.37. We invest the money we receive from our customers effectively and efficiently to make our network more reliable, secure and to deliver industry leading performance. This investment also ensures we have the capacity to meet future connection requirements underpinning our net zero strategy and ongoing performance measures.

4.38. 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 4.11). Expenditure has progressively been brought in line with targets. 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.

4.39. We are proud of our track record in RIIO-ED1 to date. We have delivered and surpassed our 76 original commitments, while also adapting to emerging activities and challenges including DSO, responding to cyber threats, Covid-19 and the green recovery. Our achievements in innovation, which underpins all of our commitments, 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 4.11 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	1,107	1,090	8,401
Allowance £m	1,091	1,087	1,026	1,052	1,035	1,026	1,044	1,068	8,429
Variance £m	26	79	-21	-119	-77	0	63	22	-28
Cumulative variance £m	26	105	83	-36	-113	-113	-50	-28	
Cumulative variance %	2%	5%	3%	-1%	-2%	-2%	-1%	0%	

4.40. We manage our Totex expenditure as the WPD group. This means that the outturn position in each of our four DNOs has a slightly different position, reflecting different drivers in each area. We are actively managing these challenges and opportunities in each area to forecast an overall outturn just under Totex allowances. Figure 4.12 shows the position for each DNO.

Figure 4.12 Our Totex performance during RIIO-ED1 by DNO

Totex by DNO				
£m	**Expenditure**	**Allowance**	**Variance**	**Variance %**
West Midlands	2,558	2,515	43	2%
East Midlands	2,546	2,549	-3	0%
South Wales	1,266	1,311	-45	-3%
South West	2,031	2,054	-23	-1%
Totex	**8,401**	**8,429**	**-28**	**0%**

4.41. In Supplementary Annex SA-04: We keep our promises, we review the key activities in Totex and the position in each DNO and explain how these have contributed to our overall Totex performance in RIIO-ED1.

Proven efficiency in the cost of delivery

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

4.43. 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, and will continue to be, extremely important to us as we worked together with stakeholders to co-create the RIIO-ED2 plan for WPD.

4.44. We continue to lock in the efficiency improvements introduced through RIIO-ED1 and to benefit from them in the last part of the current price control period. 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'. Through this approach, we are the market leader in DSO and flexibility and this will continue into RIIO-ED2.

Return on Regulatory Equity (RoRE)

4.45. 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.

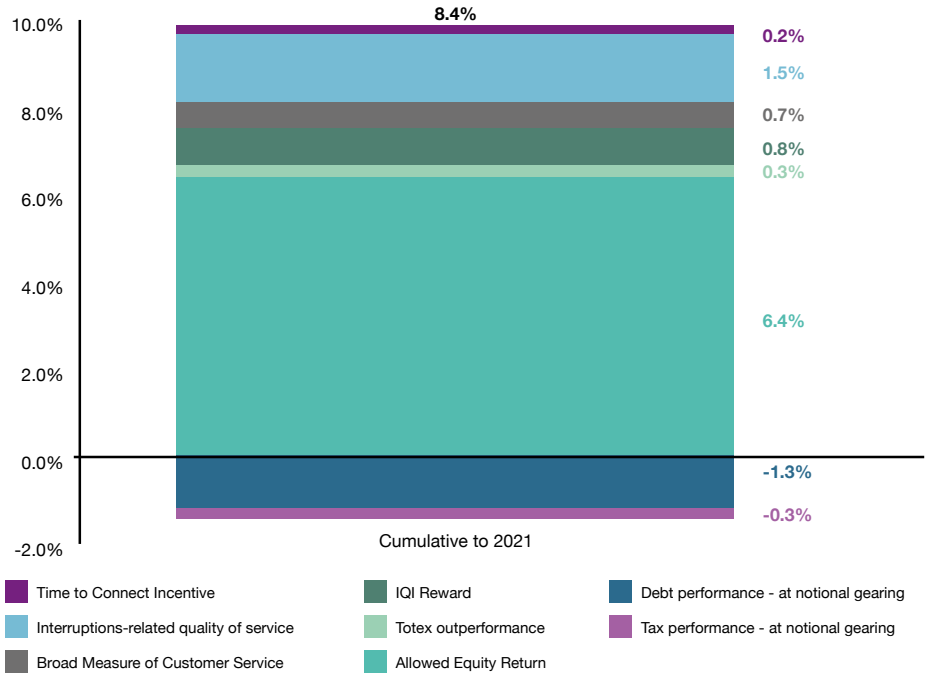
4.46. WPD was allowed a 6.4% cost of equity as part of its fast track settlement. Drivers of RoRE include performance under the Totex Incentive Mechanism (TIM) and performance against output incentives. Totex underspends and incentive rewards increase network operators' returns, while overspends and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

4.47. WPD's RIIO-ED1 to date RoRE, (see figure 4.13) including financing and tax, on a notional gearing basis, is 8.4%. This is taken from our Regulatory Finance Performance Reporting (RFPR). RoRE 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 CustomerService (0.7%).

4.48. 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%).

4.49. These are offset by: a -1.3% underperformance 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.

Figure 4.13 WPD's RIIO-ED1 to date RoRE - notional gearing basis, including financing and tax



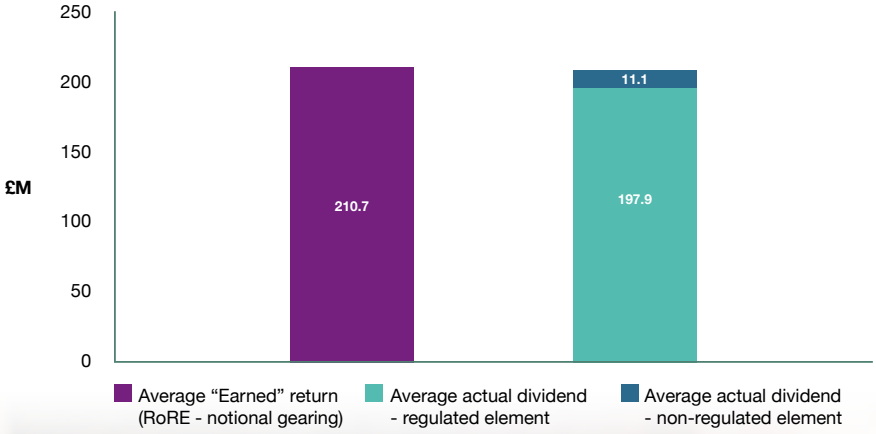
Note: Incentive on Connections Engagement, Losses Discretionary Reward scheme, network innovation, penalties and fines have a value which rounds to 0.0% and are therefore not shown.

Data source: WPD's 2020/21 RFPR submission.

Financial returns to shareholders

4.50. 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 4.14 presents RoRE returns and shows the element of dividends not related to the regulatory business, as reported separately in WPD's RFPR. Note that the presentation of dividends in figure 4.14 also includes cash paid out to finance interest and debt maturities for loans taken out elsewhere in the WPD group.

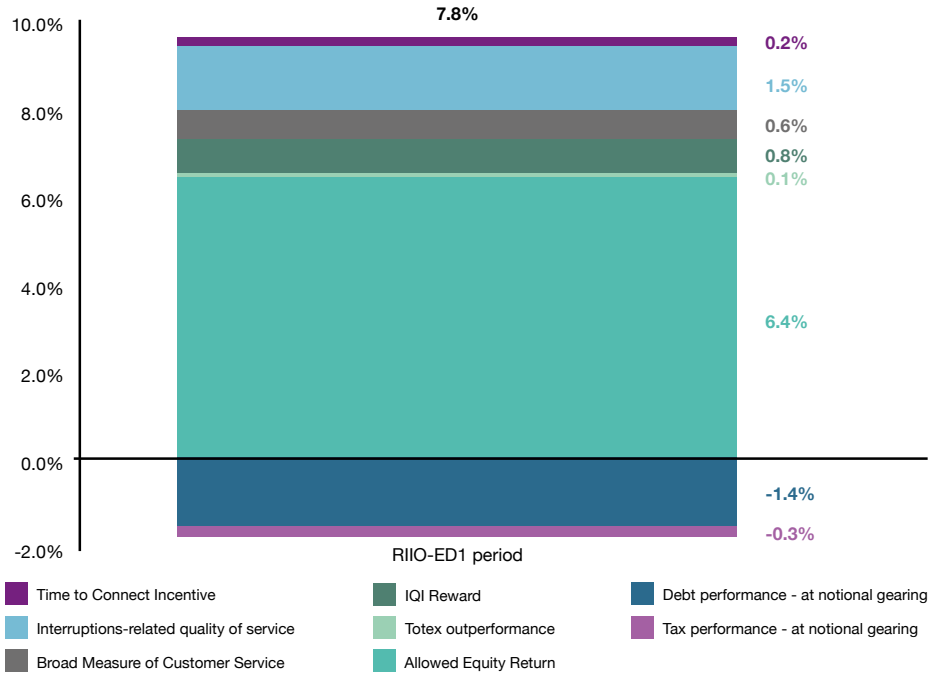
Figure 4.14 WPD's average dividends earned and paid out in RIIO-ED1 (to 2020/21, £ million in nominal prices)



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

4.51. Figure 4.15 sets out a provisional view of WPD's Total RoRE for the RIIO-ED1 period.

Figure 4.15 WPD's forecast RIIO-ED1 total RoRE - notional gearing basis, including financing and tax



Note: Incentive on Connections Engagement, Losses Discretionary Reward scheme, network innovation and penalties/fines have a value which rounds to 0.0% and are therefore not shown.

Data source: WPD's 2020/21 RFPR submission.

4.52. WPD's forecast RIIO-ED1 RoRE returns included in our July 2021 RFPR submission reflect:

- Our stable financing structure over the RIIO-ED1 period, with levels of gearing kept close to Ofgem's notional level of 65%. Based on our July 2021 RFPR submissions, 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 innovation 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 4.17.
- 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 1.5% under the Interruptions related Quality of Service (QoS) incentive.
- Our voluntary return of £96.7 million (nominal prices) 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 savings since 2015/16.
- The impact of WPD's cost of debt allowance being £178 million (nominal prices) 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 £305 million (nominal prices).
- 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 £305 million of interest payments which should have been covered by Ofgem's cost of debt allowance.

Chapter 5

Giving customers a stronger voice

For a short video overview of this chapter scan the QR code.

Chapter 5 Contents

5. Giving customers a stronger voice

Summary

5.1. Building on an impressive track record during the last regulatory period, our RIIO-ED2 Business Plan focuses on delivering excellent customer service, harnessing the benefits of a smart future, driving industry leading sustainability plans, and prioritising digitalisation and innovation. We will do all of this while supporting our most vulnerable customers, tackling fuel poverty and ensuring bills remain affordable for everyone.

5.2. We have undertaken our most comprehensive and inclusive stakeholder engagement programme ever. Using a co-creation approach, we have developed the Business Plan from a blank sheet of paper, ensuring it is prepared with our customers, for our customers and contains ambitious, impactful commitments.

5.3. More than 25,000 stakeholders have had their say (over 7,300 via direct, in person engagement) as part of a rigorous consultation programme that will continue beyond the submission of this final Business Plan. Insights from more than 70,000 bill paying customers and their representatives have also informed our approach and proposed commitments for RIIO-ED2. This has allowed us to:

- Build a comprehensive understanding of the expectations of our broadest ever range of stakeholders, both today and for the long term.
- Deliver a first class, far reaching stakeholder engagement programme, in terms of:
  - Size and breadth of programme.
  - Scope of influence.
  - Engagement led by 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 stakeholders.
- Demonstrate that engagement has influenced our decisions at every stage of the preparation, development and refinement of the Business Plan.
- Set new standards of transparency and accountability by sharing the full Business Plan for consultation on three occasions and promoting through all key channels.
- Deliver the most ambitious and efficient Business Plan possible, achieving exceptional outcomes for customers.

5.4. Further detail on our customer engagement is included in Supplementary Annex SA-05: Giving customers a stronger voice: Enhanced engagement.

Figure 5.1 Highlights of our engagement with stakeholders

How we built our plan

5.5. Our expertise and experience of engaging stakeholders for the last decade and forging long term relationships with them, allowed us to anticipate some of their priorities and therefore likely key focus areas in our Business Plan. These included the impetus to deliver on the net zero ambitions of the UK and Welsh governments 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.

5.6. However, we are careful never to assume what our customers want. It is therefore vital that we always ask open, non-leading questions to understand stakeholder requirements. In some areas, stakeholders wanted us to build on our track record of delivery and achieve incremental improvement, but in others they wanted to propose entirely new ways of operating.

5.7. 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.

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

5.9. 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

5.10. As part of the RIIO-ED1 process, we followed a three stage engagement approach, with a further two stages 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. By contrast, this Business Plan is built on an even more comprehensive seven stage engagement process, including consultation on three published drafts of our plan (see figure 5.2). Five of these stages have now been completed, with a further two to follow after the plan's submission.

Figure 5.2 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 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 preferences and expectations for service improvement levels.	Nov 2019 – June 2020
Stage 3: Business Plan development	Co-create early commitments with stakeholders. Develop initial costing for each commitment.	First draft of commitments (grouped under outcomes and priorities). Initial costing for commitments (and therefore the 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 – Mar 2021

Figure 5.2 Stages of our stakeholder engagement process for RIIO-ED2 (continued)

Stage	Objective	Deliverables	Approx. timing
Stage 5 a/b: Business Plan acceptance testing/gap analysis	Detailed view of customer acceptability of the overall plan and core commitments: **5a** - Up to the first submission Business Plan to Ofgem (July 2021). **5b** - Changes up to final submission Business Plan (December 2021). Identify refinements to commitments based on stakeholder feedback. Present the final plan to stakeholders for review (and voting) before submission to Ofgem.	Stakeholder approval of the final plan. Establish preference for new and revised commitments. Establish acceptability of Consumer Value Propositions.	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

5.11. 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 5.3). 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 5.3 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					●	●	●
Uncertainty mechanisms	5.0		●	●	●	●	●	●
Efficiency	4.8						●	●
Data assurance	3.5						●	●

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

5.12. We also conducted a benchmarking exercise via an independent research expert to 'horizon scan' the best practice approaches adopted by a range of water, gas, transmission and rail companies for their latest price control reviews and identify opportunities to go further and deliver an industry leading stakeholder engagement programme. We learned that most 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 'from scratch'. We challenged ourselves to deliver a programme that moved significantly beyond these standards. We targeted maximum stakeholder input in our decision-making, achieving new standards of power sharing with stakeholders by reaching negotiated, collaborative Business Plan settlements. Full details of our approach and the key deliverables from our engagement programme are set out in detail Supplementary Annex SA-05: Giving customers a stronger voice: Enhanced engagement.

Engagement timeline and key activities

5.13. We have engaged stakeholders spanning a range of knowledge and interest sectors under the headings of expert interested limited knowledge and future customers. Engagement with stakeholders from specific sectors was never carried out in isolation. We shared their feedback with stakeholders from the other sectors and used it to build consensus and inform the content of our future engagement.

5.14. An example of the way in which our engagement methods are tailored to stakeholder knowledge and interest level can be found in figure 5.4.

Figure 5.4 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 5a: Acceptance testing	Stage 5b: Gap analysis
1	Customer Panel	1	38	-	30	29	-	28
2	Topic specific bilateral and expert workshops	1	1,187	-	1,349	11	-	555
3	Connections Customer Steering Group and Distributed Generation Owner Operator Forum	1	128	-	122	98	-	62
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	81
8	Local network investment and net zero workshops	1 2	229	-	206	-	-	129
9	ICP and IDNOs conferences	1 2	63	-	53	-	-	-
10	Social obligations conferences	1 2	53	-	57	-	-	17
11	EV conferences and workshops	1 2	-	-	550	-	-	-
12	Strategy development workshops	1 2	-	-	-	258	-	137
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	-	-	453
17	Quantitative research surveys - Major connections customers	3	273	-	1,574	-	-	1,037
18	Quantitative research surveys – Distributed generation customers	3	64	-	384	-	-	224
19	Power cut follow up surveys	3	131	-	-	-	-	-
20	Social value and willingness to pay - qualitative workshops	3 4	-	48	-	10	-	103
21	Social value and willingness to pay - quantitative surveys	3 4	-	1,188	-	1,280	-	1,544
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	1,635
		Total	3,341	1,236	6,825	3,846	3,779	6,013
	Total number of stakeholders engaged		25,040					

Synthesis and triangulation of stakeholder feedback

5.15. It was essential to build our Business Plan with stakeholders in stages, allowing the findings from each stage to influence and form the foundations for the next.

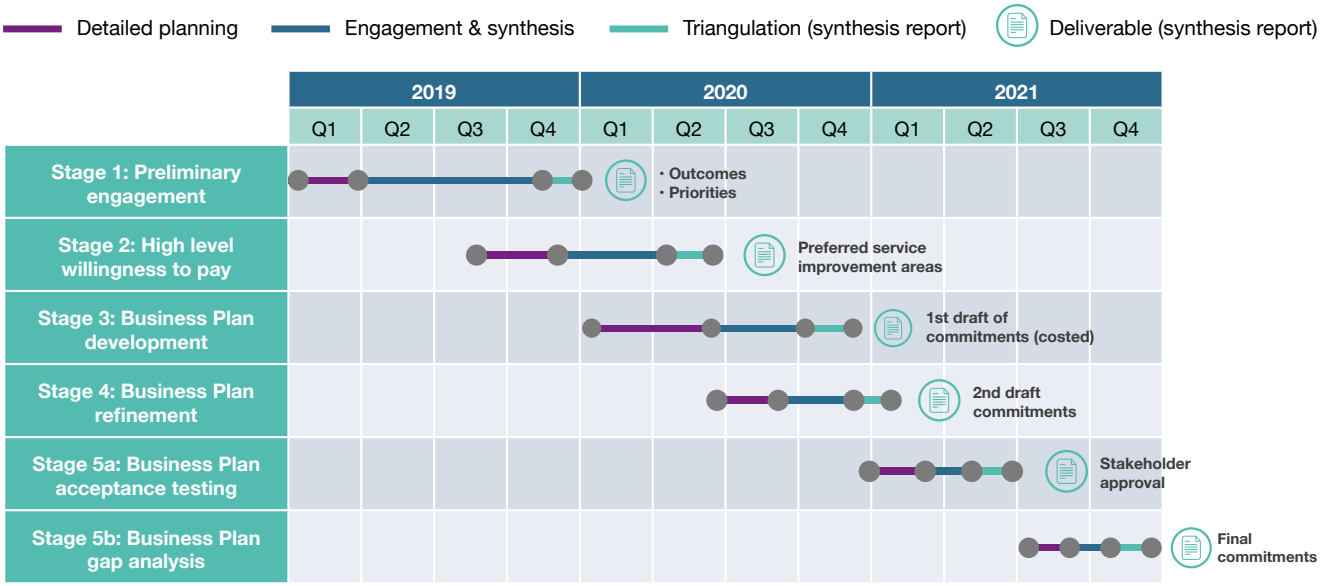
5.16. We put robust systems in place, including independent assurance and oversight, to record and organise:

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

5.17. This resulted in synthesis reports that were published at the end of each of our five engagement stages (see figure 5.5). 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 the reports, therefore removing the risk of any unintended bias in interpreting what stakeholders had told us. The reports were then shared with the Customer Engagement Group (CEG) to be scrutinised, clarified and challenged to ensure key feedback was not left out. The reports demonstrated:

- The chronological stage at which customers and stakeholders influenced the development of the Business Plan and in what way (e.g. brain-storming high level priorities from a 'blank piece of paper' or signing off specific service levels).
- 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 5.5 RIIO-ED2 engagement programme



5.18. The reports enabled stakeholders to review the consolidated feedback at a single source, making it possible to track our transparent co-creation process all the way through - from the engagement conducted, to the feedback collected and finally to the decisions made in response.

5.19. We 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 results compared to the initial questions and hypotheses. When discussing complex issues, conflicts are normal. Our engagement programme was built to highlight these and then ensured that a measured compromise was achieved based on responses from all relevant parties.

5.20. We delivered ongoing triangulation using purposefully selected engagement methods that allow for live debate of conflicts, resulting in a consensus and/or compromise position. This enabled stakeholders to raise their own priorities but to always consider these in the wider context of the priorities of others, with WPD purposefully playing back feedback received from other groups and forums so that audiences could consider the wider spectrum of views we had received. Through discussions and negotiations, we then built consensus around key priorities that gained support from stakeholder segments wider than just those originally proposing them, and in so doing helped to enhance the justifications and acceptability of the commitments WPD has proposed to address these points. This is preferable to discovering stark differences post event that later call for additional consultation. Figure 5.6 shows two examples of conflicts in stakeholder feedback.

5.21. A comprehensive list of conflicts we have managed is presented in Supplementary Annex SA-05: Giving customers a stronger voice: Enhanced engagement.

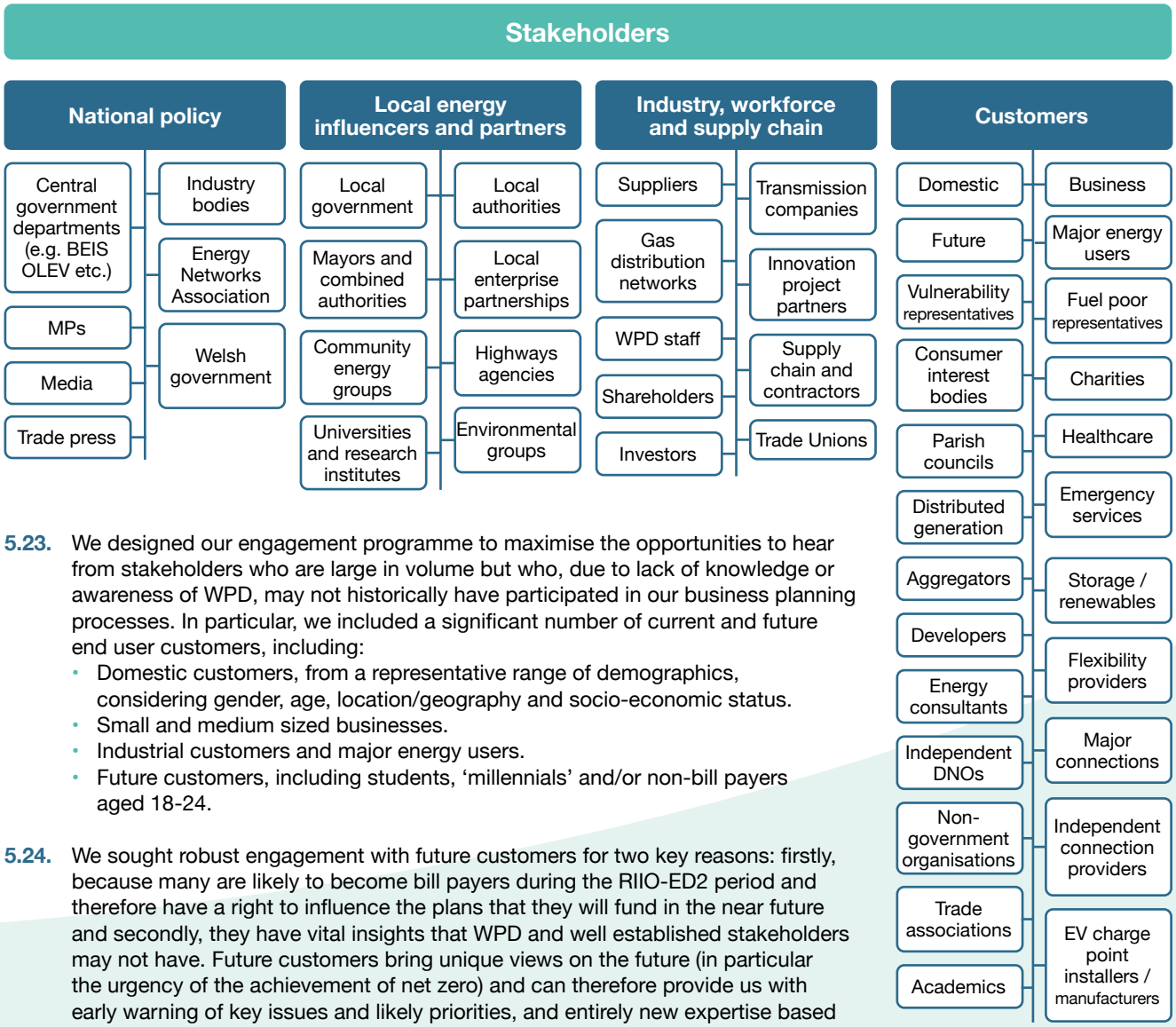
Figure 5.6 Examples of conflicts in stakeholder feedback that WPD has managed

Topic	Example conflict	Resolution
Fuel poverty	Within specialist stakeholder discussions, such as WPD's customer vulnerability conferences, 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 within 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 other 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 other agencies are better placed to deliver. The compromise position ultimately agreed was for us 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, greenhouse gas removal 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 UK and Welsh government's 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. Greenhouse gas removal will only be used 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. Based on present day knowledge of the technological capabilities currently available, WPD will be able to reduce over two thirds of its carbon footprint to zero by 2028. In the meantime, greenhouse gas removal 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 as 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 by around 2043 without the added benefit of greenhouse gas removal. But we are instead proposing to drive additional environmental benefits in the meantime.

An inclusive approach

5.22. We adopt the widest possible definition of a stakeholder as 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, wherever possible, reaching a consensus that works for everyone. Extensive details on the inclusivity of our engagement, including the involvement of hard-to-reach and future customers, can be found in Supplementary Annex SA-05. The types of stakeholders we serve are summarised in figure 5.7.

Figure 5.7 Types of stakeholders that have participated in WPD's engagement programme and contained in our database



5.23. We designed our engagement programme to maximise the opportunities to hear from stakeholders who are large in volume but who, due to lack of knowledge or awareness of WPD, may not historically have participated in our business planning processes. In particular, we included a significant number of current and future end user customers, including:

- Domestic customers, from a representative range of demographics, considering gender, age, location/geography and socio-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.

5.24. We sought robust engagement with future customers for two key reasons: firstly, because many 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, they have vital insights that WPD and well established stakeholders may 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 new expertise based on them generally being a highly technology-savvy audience. For example, their input has helped to shape our ambitious proposals to utilise innovation and new digitalisation approaches to enhance services across the business in RIIO-ED2. 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.

5.25. Our 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 150 meetings. Of these, over 130 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.

473 future customers and more than 12,000 domestic and business end user customers have been engaged (as well as representatives of these groups at our wider stakeholder events), with customer input present in 19 of WPD's 26 engagement methods.

5.26. We co-created our Business Plan with stakeholders using an iterative process, resulting in the most scrutinised, well justified, stakeholder endorsed plan we have ever produced. To achieve this, our approach was guided by five key principles:

- **Inclusive –** Our plans are designed to deliver for all stakeholders, including the hard to reach and seldom heard voices. We have explicitly targeted and represented these within 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 engagement stage (see figure 5.5 for an overview of our engagement stages). 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 proactively reach out to stakeholders so they do not need to contact us and do not exclude any group. We have built trust by ensuring engagements include the full range of stakeholders and have demonstrated a lasting commitment to acting on their feedback. We use it to influence short and long term planning, extending beyond the five year RIIO-ED2 period.

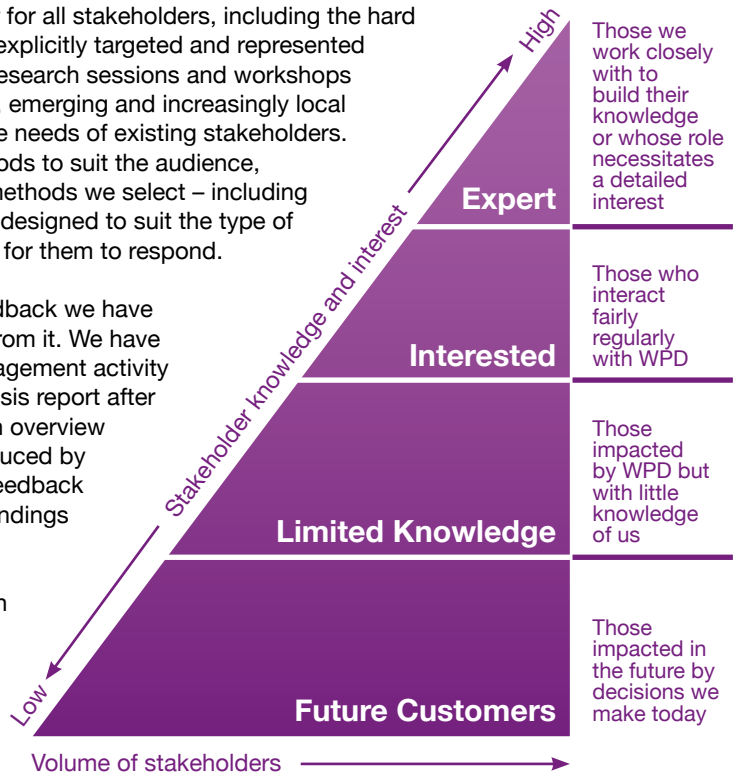


Figure 5.8 Knowledge and interest levels of our stakeholders

- **Purposeful –** The intention of every engagement is to learn, improve and co-create our plans with stakeholders. Our focus is always on meaningful, two-way engagement that shares decision-making power with stakeholders and directly shapes our actions. We avoid short survey responses and other information gathering that makes it difficult for stakeholders to offer detailed responses.

- **Expert-led –** Our engagement programme is led by expert business owners, with significant experience who direct 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.

5.27. 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.

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

5.28. 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 the overarching outcomes that our plan must deliver, as set out in Chapter 1.

5.29. We have engaged more than 25,000 stakeholders (7,300 of these were direct, in person engagements) at over 280 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.

5.30. The objective of the six sessions was for stakeholders to propose Business Plan commitments from a blank page, not just commenting on pre-proposed actions. They were briefed by the relevant responsible WPD manager on some of the influencing factors and key context for each topic, before taking part in roundtable 'co-creation surgeries'. 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.

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

- We are already fulfilling the commitment and it will therefore continue in RIIO-ED2.
- 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.

5.32. The scale and value of our co-creation process identified 325 focus areas, over 1,000 suggested actions. An illustration of the types of issues raised and suggested actions by stakeholders are detailed in Supplementary Annex SA-05: Giving customers a stronger voice: Enhanced engagement.

Building on initial feedback

5.33. We began our RIIO-ED2 consultation programme in early 2019 to maximise the time and opportunities for stakeholders to have their say in our planning process. We have delivered unparalleled transparency, publishing three draft plans for stakeholders to feed back on, resulting in unprecedented levels of refinement and support in this final submission Business Plan.

First draft Business Plan consultation

5.34. In January 2021, 11 months before final submission to Ofgem, WPD was the first Distribution Network Operator to publish a first draft Business Plan and an accompanying 'Have Your Say' consultation, inviting stakeholders to help to challenge and refine our proposals.

5.35. We sent the first draft Business Plan, consultation and invitations to a webinar and workshop series to 17,000 stakeholders (identified in figure 5.7). Ofgem, BEIS, Ofgem's Challenge Group, Welsh government, MPs and local authorities were all offered bilateral meetings to discuss the plan in detail. We also launched an online hub enabling stakeholders to provide consultation responses to some or all of our plan, depending on their time and levels of knowledge and interest. We also made it as simple and accessible as possible for the widest range of potential participants, producing short explanatory videos, while raising awareness of the plan through social and traditional media.

5.36. 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 specific actions to deliver a low carbon future. We presented various options for investment, costs, the service improvement each option would deliver and the impact on the average domestic electricity bill. We also asked stakeholders to indicate areas where they would like us to go further than our initially proposed baseline, and to suggest entirely new commitments.

5.37. As well as achieving an excellent rate of direct responses, we ran a series of face to face and online workshops for stakeholders and bespoke surveys with end user, bill paying customers, to take them 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 accurately captured and considered. A full breakdown can be found in Supplementary Annex SA-05: Giving customers a stronger voice: Enhanced engagement.

Figure 5.9
Our first draft Business Plan consultation

First consultation – what we learnt

5.38. 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 levels of ambition. It revealed an early view of the acceptability of WPD's first draft plan as shown in figure 5.10.

Figure 5.10 Percentage of customers who did not request changes or alternatives to the core commitments

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

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

5.39. But as anticipated, there were a number of areas where stakeholders implored us to go further. As a result of their feedback, ahead of publishing a second draft for further stakeholder input, we:

- Increased the ambition and scope of 60% of our core commitments, most notably in relation to environment and sustainability, where targets in five of our seven final core commitments became significantly more ambitious.
- Introduced four new commitments
- Reworded 11 core commitments to ensure they delivered clearer outcomes
- Streamlined and consolidated our core commitments from 67 to 58.

5.40. The full range of changes made from the consultation are set out in Chapter 2.

Second draft Business Plan consultation

5.41. Our commitment to transparency and maximising the opportunities for stakeholder scrutiny led us to publish a second draft Business Plan in March 2021, along with an accompanying stakeholder consultation. This was before many other DNOs had published a full plan for the first time.

5.42. Stakeholder feedback led to further significant refinements in the core commitments proposed. Learning from the first draft publication and the need to cater for those with varying levels of time, we produced a 'summary in under 10 pages' of our overall plan. We set out 14 specific questions covering the overall acceptability of the plan, potential bill impact, WPD's Best View of future energy needs and the new commitments.

5.43. We again sent the second draft Business Plan to around 17,000 stakeholders and invited them to participate in a follow-up webinar and stakeholder workshops. In addition, we ran a targeted local media campaign including extensive coverage in regional newspapers and radio stations 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 give us their views either via social media surveys or by responding to our consultation via email, post or online.

Figure 5.11
Our second draft Business Plan consultation

5.44. 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 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.

5.45. 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 and therefore enhancing the volume of end users inputting to our proposals, which has been a key area of scrutiny and challenge from the Customer Engagement Group throughout.

5.46. To accompany the consultation, we ran a webinar and an interactive and innovative 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.

5.47. In total, WPD received 1,004 responses to this consultation.

Second consultation – what we learnt

5.48. The key headlines from stakeholder feedback included 84% support for WPD's overall Business Plan, and stakeholders stated that WPD's four new core commitments were extremely acceptable (72% - 78% acceptability range) ahead of further refinement to come. A full breakdown can be found in Supplementary Annex SA-05: Giving customers a stronger voice: Enhanced engagement. Support for WPD's overall Business Plan was very high as follows:

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

Third consultation - first submission Business Plan to Ofgem

5.49. In July 2021, WPD delivered its first submission Business Plan to Ofgem - our third published draft for stakeholders in the consultation process.

5.50. Following the considerable second consultation feedback received, we made further enhancements, with 75% of the core commitments being updated with clearer benefits or outcomes to reflect the priorities of stakeholders. We consolidated our core commitments to a new total of 45.

5.51. The Business Plan was made available online, alongside a shorter overview of the Business Plan, a guide on how to navigate the plan, Board Assurance and Redaction Explanatory Statement to provide stakeholders with a complete picture of the updated plan. All associated annexes and strategy documents were also made available for full accessibility and transparency of our Business Plan preparations to date. All this content was published to offer full context and explanation of our future plans and how we intend to deliver on our commitments.

5.52. Again, a 17,000 strong stakeholder distribution list received details of the plan, along with invitations to a webinar and stakeholder events. Further enhancing the accessibility of our plan and to maximise the ease of understanding for a variety of audiences, we broke down the core focus areas of the plan into segments and presented our commitments using an interactive map **https://yourpowerfuture.westernpower.co.uk/RIIOED2-interactive-map**. The map allowed stakeholders to navigate around an illustrative town scene and click onto parts of the town that symbolised a commitment area and discover more. The map was used by over 700 stakeholders in the first month.

5.53. We held a live webinar which included a presentation of the plan along with a Q&A session with our RIIO-ED2 Business Plan Manager. This was closely followed by a series of four workshops that focused around the twelve categories of commitments within the plan, broken down into relevant sections to better target the workshops to stakeholders' interests. We also used the opportunity to present and gain acceptability for our Consumer Value Propositions (CVPs).

5.54. In addition, we conducted further rounds of Willingness to Pay and Acceptability surveys with end users to ensure that the plan and commitments continued to reflect end users' current views, while also confirming that customers were supportive and endorsed our final submission. Robust quotas were set to ensure we achieved a representative cross section of customers, considering region, age, gender, social grade and a mix of business and domestic customers. A further 200 face to face interviews took place with customers considered to be digitally excluded and hard to reach (over 75s and fuel poor). The results are set out later in this chapter.

Third consultation – what we learned and how our final Business Plan has changed

5.55. Since the completion of the first submission Business Plan, in the five months from July to this final submission Business Plan, we have engaged with more than 6,000 stakeholders. When considered in the context of 2,800 stakeholders having their say in the three years building up to WPD's fast tracked plan for RIIO-ED1, this is a huge step change we have delivered, crystallising our strategic commitment to co-create our Business Plan with a broad and diverse audience of stakeholders, end user bill payers and future consumers.

5.56. Formal challenges from the Customer Engagement Group, Ofgem's Challenge Group as well as detailed feedback from our wider stakeholders, including Citizens Advice and Welsh government, led us to identify areas for improvement and potential gaps to address in our plan. Significant changes we have made as a result, include:

- Our final 42 core commitments have been consolidated and refined, ensuring measurable outcomes and targets for every one.
- This Business Plan is now based on expenditure to achieve WPD's Best View, which represents the most realistic uptake of LCTs and demand growth.
- Clearer quantification of the efficiencies we will deliver for customers, including £723 million of embedded savings, and a commitment to achieve £95 million of further savings in RIIO-ED2.
- A new Destination Net Zero: Business Innovation & Efficiency Strategy and Whole Systems Strategy.
- Clearer explanation and examples of how innovation and digitalisation will transform services for customers, driving efficiency and cutting edge thinking across WPD's entire business.
- Better demonstration of the comprehensive justifications and wide range of options evaluated for our core commitments and areas of major discretionary expenditure.
- A new Supplementary Annex SA-02A: Our commitments – Justification analysis.
- Updates of DSO, Digitalisation, Environment, Major Connections and Customer Vulnerability strategies.
- A reduction to six final Consumer Value Propositions.
- A revised uncertainty mechanism for load related reinforcement.
- An updated expenditure total and financing parameters (including cost of equity of 4.96% (5.8% in the first submission Business Plan in July 2021).

5.57. These changes have been communicated to stakeholders and we have tested acceptability of the overall plan through qualitative and quantitative engagement methods.

Business Plan acceptability research

5.58. After engaging so extensively with stakeholders to co-create and refine our Business Plan, we have then robustly tested the acceptability of the resulting final plan with a broad, representative range of end user bill payers.

5.59. We have achieved exceptional levels of customer support for our Business Plan such that:

- 80%-82% of end users found the Business Plan to be highly acceptable.
- Only 4% of customers consider our plan to be unacceptable.
- 68% found the proposed bill to be affordable or very affordable, with only 7% finding the plan unaffordable.

5.60. These results are all the more impressive as the final research was undertaken in October 2021, during a time of headline national news about soaring wholesale energy prices leading to multiple supplier failures and concerns about millions of customers defaulting to the energy price cap and the need for future bill rises to account for this. We therefore found greater consumer nervousness about energy prices and the need to keep bills as low as possible than in our first round of acceptability testing in March 2021. However the acceptability of WPD's final plan remains extremely high.

Figure 5.12: Headline results from our Business Plan Stage 5b acceptability research with customers

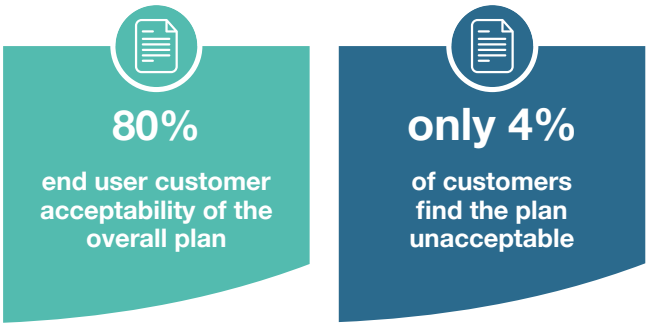


Figure 5.13: Headline results from our Business Plan Stage 5b affordability research with customers

5.61. The full results and explanation of our methodology can be found in detail in Supplementary Annex SA-05: Giving customers a stronger voice: Enhanced engagement. In short, before starting our research we first 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:

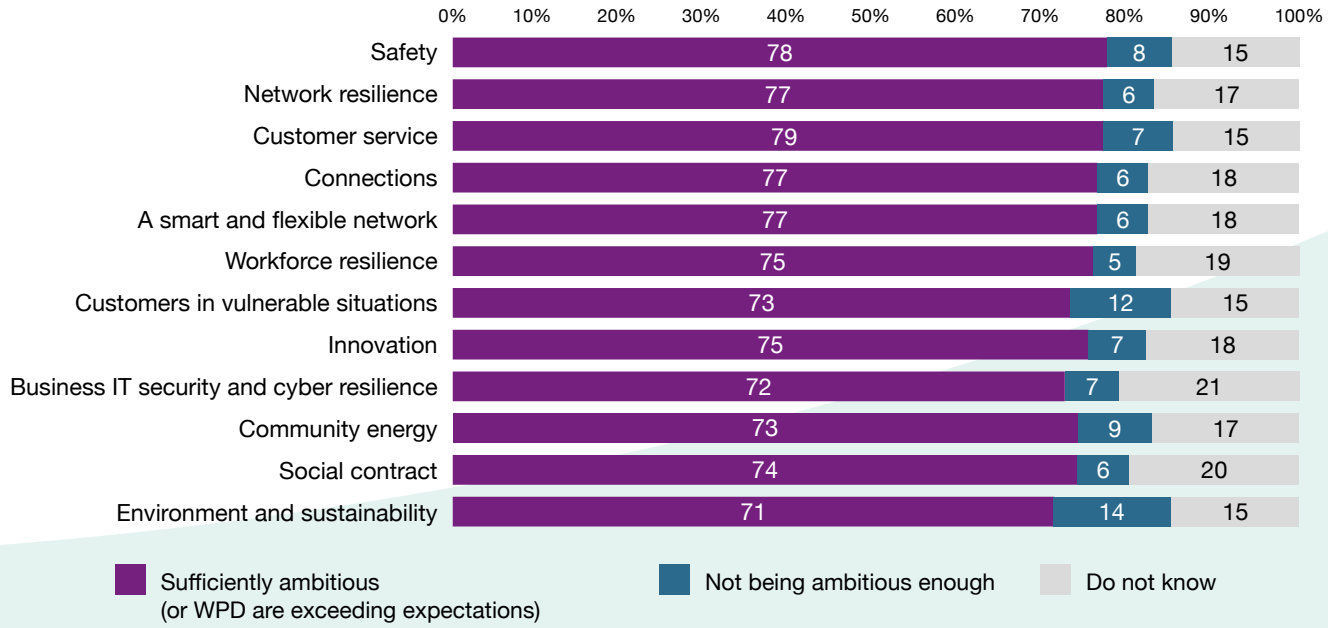
- Test uninformed and informed acceptability and affordability.
- Identify any gaps and understand what factors are driving acceptability up and down.
- Explore customer perceptions of the levels of ambition in the Business Plan.

5.62. 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 and in parallel, 2) deliberative research with uniformed customers to provide qualitative insight 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.

5.63. To ensure that we received a robust set of customer views, we conducted two rounds of acceptability testing in 2021 as part of Stages 5a and 5b of our engagement process. In total 4,356 current and future end user customers were surveyed (2,721 in Stage 5a and 1,635 in Stage 5b). This provided vital insights as our Business Plan and commitments reached their final stages of refinement and provides considerable assurance and confidence to wider stakeholders that our proposals are extremely well supported by customers.

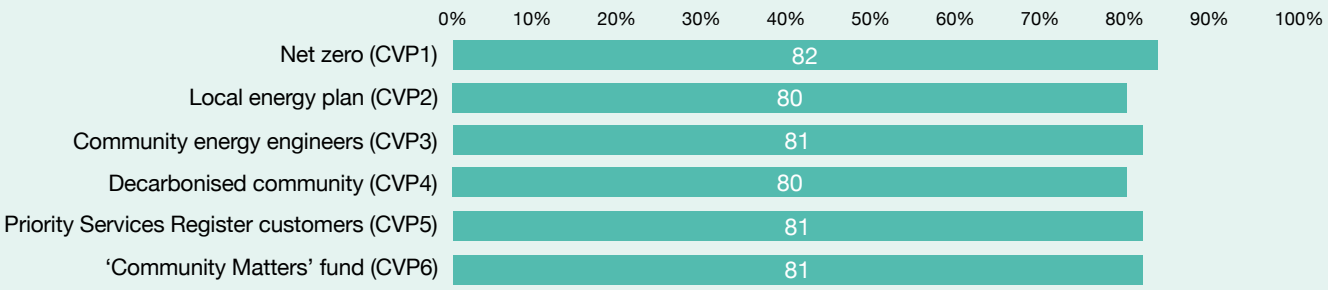
5.64. We also used this research to gather insights about customer support for the other core commitments we will deliver in relation to the 12 areas of service delivery set out in Chapter 2. It revealed very high acceptability as seen in figure 5.14.

Figure 5.14 End user views on level of ambition across our 12 core commitment category areas



5.65. Overall, acceptability for all Consumer Value Propositions (CVPs) was also very high at 81%, with high acceptance levels across all individual CVPs.

Figure 5.15 Acceptability of Consumer Value Propositions (Base: 1,635)



Social value research and willingness to pay

5.66. It is essential that our Business Plan delivers outcomes that deliver the maximum possible value to 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 led an industry collaboration that brought the other DNOs together to develop a system of measuring value that could 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 (SVR).

5.67. Where social proxy values do not currently exist, are out of date or did not reflect the specific outcomes WPD intended to deliver from our own bespoke commitments and activities, WPD commissioned additional willingness to pay (WTP) research to provide a view on social value. We did this for three reasons:

1. **To establish a customer's priority:** Where a social value is already known via the industry methodology (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 PSR (i.e. £1 for one customer, or £30,000 for 30,000 customers).

2. **To establish WTP:** WPD's additional WTP research can therefore test options for the volume of 'units' we could deliver. Doing this helps to establish a preference for the level of activities we deliver, which can then be applied to the already known social value to determine an overall benefit to customers of our specific action. We are not asking customers to pay more to fund these activities, but we are using their responses to the hypothetical question of how much they would be willing to pay to gauge the value they place on the range of potential actions we can deliver.

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

5.68. Working with market research company Accent, we held focus groups, followed by in-depth surveys with domestic customers and businesses of varying sizes. While all potential Business Plan outcomes may have value to customers, our focus was to reveal relative priorities and rank potential activities and commitments so we can achieve the best possible value. We used this insight to inform our commitment levels, balancing expenditure and practical delivery considerations with the priority given by customers to different areas of the Business Plan, as summarised in our synthesis reports after each completed stage of our 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.

5.69. Our methodology is set out in Supplementary Annex SA-05: Giving customers a stronger voice: Enhanced engagement. At the initial willingness to pay stage, we tested 24 attributes (potential actions). Examples included improving the identification of customers potentially vulnerable during a power cut, working with local communities to achieve net zero carbon emissions targets and reducing the average length of time of power cuts.

5.70. The results revealed the most highly valued focus areas and helped us to decide on our first proposals and expenditure that were included in our first draft Business Plan, published for consultation in January 2021. 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.

5.71. 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. 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 was recalibrated to reflect this.

5.72. As part of WPD's Business Plan refinement process, in February 2021 we commenced a second stage of SVR 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.

5.73. In August 2021, we started our third and final stage of SVR. The purpose was to explore a refined set of levels of potential service improvement we could deliver in RIIO-ED2, as well as entirely different alternative commitments to test whether WPD has selected the right approach in each area of our Business Plan. The research included a prioritisation choice exercise, covering a set of 12 improvement initiatives from basic level to enhanced level across a number of service areas that are linked to the commitment categories, including environment and sustainability, customer service and network resilience.

5.74. Overall, the WTP research found that domestic and business customers have very similar priorities, with both groups giving the greatest value to the prioritisation of our asset replacement programme to reduce power cuts in areas with high levels of vulnerable customers, as well as our business achieving net zero carbon emissions (including the use of greenhouse gas removal schemes) by 2028. The results from the research were as follows. It reveals that as a result of the considerable co-creation, negotiation and refinement of our final core commitments with more than 25,000 stakeholders, we have arrived at a set of proposals that have extremely high social value to wider customers. The value of the 12 key commitments tested alone is over £28 per WPD customer, with an additional 30 commitments that we will deliver in RIIO-ED2.

Figure 5.16 WTP results for Stage 5b

No.	Initiative	Delivery level tested:		Average WTP (domestic customers)
		Basic	Enhanced	
1	Improve network reliability in areas with high levels of vulnerable customers.	Reliability will continue at current, planned levels.	Improved and expedited reliability for vulnerable customers.	£4.19
2	Bring forward the target to achieve net zero carbon emissions for our own business carbon footprint.	Net zero by 2050.	Net zero by 2028.	£3.89
3	Reduce the number of worst-served customers to zero.	Number of worst-served customers reduced from 9,136 to 5,014.	Number of worst-served customers reduced from 9,136 to zero.	£3.27
4	Increase the proportion of customers signing up to Priority Services Register (PSR).	59% eligible customers registered.	75% of eligible customers registered.	£2.55
5	Provide advice to customers looking to switch to electric vehicles, heat pumps or solar power.	0 customers provided with information.	50,000 customers provided with the information needed to switch to an LCT.	£2.22
6	Fund education on net zero for schools in areas of high economic deprivation.	0 students educated.	205,000 children educated.	£2.18
7	Establish community energy engineers to drive the UK's achievement of net zero.	0 community energy engineers.	4 community energy engineers.	£1.99
8	Further improve customer satisfaction.	Improve from 8.9/10 to up to 9.2/10.	Improve from 8.9/10 to up to 9.5/10.	£1.82
9	Set a biodiversity net gain target for new major projects and for existing primary substation sites.	Minimum of zero net gain in biodiversity.	Minimum of 10% net gain in biodiversity.	£1.79
10	Increase staff training on vulnerable customer support.	All staff receive training once every two years.	All staff receive training each year.	£1.64
11	Set up a Cyber Apprenticeship scheme.	0 apprentices employed to maintain WPD's cyber security.	6 apprentices employed to maintain WPD's cyber security.	£1.56
12	Create National Energy Plan for Wales.	Continue with business as usual.	Collaborative National Energy Plan for Wales created.	£1.53
			Total	**£28.65**

The Customer Engagement Group (CEG)

5.75. Every stage of our business planning and decision making process for RIIO-ED2 has been scrutinised by the CEG, an independent body which reflects the needs and preferences of existing and future customers. It 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 and regional interests.

5.76. 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.

5.77. 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 with Thames Water and the Energy Saving Trust (Wales and Ireland).

Figure 5.17 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.

5.78. A core objective was to build a CEG (see figure 5.17) with knowledgeable members who each represent more than one key expertise area. This allowed a diversity of thought within the panel and enabled 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 5.18.

Figure 5.18 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

5.79. The CEG meets as a full group at least every two months. In addition, seven subgroups (see figure 5.19) have been formed to provide rigour and challenge to our staff responsible for generating the Business Plan in certain areas.

Figure 5.19 CEG subgroups

Subgroup	Business Area	
Business Plan Development	• Business Plan governance. • Business Plan development. • WPD's vision & BP success criteria.	• Incentives and uncertainty mechanisms. • Competition. • Business carbon footprint and the 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.

In total 166 individual meetings have been held and 72 challenges have been raised.

Scrutinising and informing WPD's engagement approach

5.80. From the outset, the CEG's feedback and scrutiny directly influenced and improved our programme. A comprehensive list is provided in Supplementary Annex SA-05: Giving customers a stronger voice: Enhanced engagement, but some examples shown in figure 5.20 include:

Figure 5.20 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. • A specific deliberative research exercise targeting future customers established a cohort of future customers able to provide feedback on WPD business planning priorities and commitments on an ongoing basis.
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).

5.81. The CEG considered and robustly challenged us in a number of areas, either raising formal challenges or clarification requests for further information (see figure 5.21). 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.

Figure 5.21 Examples of CEG challenges and clarifications across the whole business 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.	Presentation of 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.
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.
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.
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 business planning process (stage one: preliminary) was produced, leading WPD to take a broader approach to research than initially planned. An external benchmark exercise across a wide spectrum of sectors was commissioned, core engagement activities were expanded from four to fifteen and a stakeholder database was developed to capture all engagement activity across the business (RIIO-ED2 and BAU). Synthesis and triangulation exercises were also introduced and completed following each 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'.

Ofgem's RIIO-ED2 Challenge Group

5.82. 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 have been engaging with this group during 2021.

5.83. Following our first submission to the Challenge Group on 1st July 2021, we welcomed a letter from the Challenge Group which highlighted areas for improvement in our first submission Business Plan.. The views from the Challenge Group along with feedback from other stakeholders including the CEG and Citizens Advice, has helped us to identify a number of improvement opportunities to our first submission plan with our gap analysis. This has led to multiple changes to our overall plan and commitments, offering an even greater level of considered and outcome driven proposals. The effectiveness of this engagement is demonstrated in the list of substantial changes we have made since our first submission Business Plan as set out earlier in this chapter.

Dealing with change

5.84. As WPD's ongoing stakeholder engagement strategy outlines (see Supplementary Annex SA-05: 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.

5.85. 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, enabling us to build a stronger understanding of regional and local variation in investment need.

5.86. 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.

Chapter 6

Expenditure

For a short video overview of this chapter scan the QR code.

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 foundations for the future. Building on the successes of RIIO-ED1, our RIIO-ED2 plan enables us to provide the network capacity required to support the decarbonisation of energy, continue to deliver excellent customer service and ensure that the network remains reliable.

6.2. We are proposing to spend £6.7 billion across the five years of RIIO-ED2, which is an increase of £1.4 billion from current levels. The main increases in expenditure relate to network reinforcement to provide additional network capacity, operational IT to enhance network operations as power flow management becomes more complex and IT to enhance data systems as part of our digitalisation programmes to harness the benefits of a smart future and to provide enhanced cyber security. Our main reductions relate to faults costs, where we are seeking to implement more efficient practices while maintaining a fast response to power cuts.

6.3. WPD has a proven record of cost efficient delivery. Our final submission Business Plan builds on these existing efficiencies, but we have challenged ourselves further by factoring in productivity and unit cost improvements to reduce the overall cost of our plan.

6.4. This chapter sets out our high level expenditure plans for 2023 – 2028 across all four licence areas, to achieve our ambitious but realistic and efficient plans. We explain the rationale behind our proposed spending in RIIO-ED2 and compare the values to those being incurred in the current price control. Further detail on all areas of expenditure is included in Supplementary Annex SA-06 Expenditure.

Costs included in this plan

6.5. 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 which we have control and which are funded through the price control. The information is presented in alignment with the cost categories we report to Ofgem. The expenditure included in this document is:

- Stated in 2020/21 prices (current day prices, so cost forecasts exclude the impact of general inflation).
- Our baseline 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.
- Inclusive of pensions costs (excluding established pension deficit repair payments), based on current actuarial projections.
- Inclusive of Real Price Effects (RPEs) and Ongoing Efficiency (OE) at Totex level only (RPEs and OE are excluded from activity level forecasts).

6.6. 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.

6.7. 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 restoration (also referred to as Electricity System Restoration) capability and diversions associated with railway electrification. These areas are further discussed in Chapter 7: Managing uncertainty.

A summary of total expenditure (Totex)

6.8. The following tables present the required revenue by DNO to deliver WPD's RIIO-ED2 baseline plan. Note that in the tables presented in this chapter, totals shown may not quite match the sum of individual rows or columns due to rounding to the nearest million.

6.9. Figure 6.1 compares our forecast annual average and total Totex costs for RIIO-ED2 against our annual average costs for RIIO-ED1. We propose to spend £6.7 billion during the five years of RIIO-ED2 which is a 27% increase on the annual average expenditure in RIIO-ED1.

Figure 6.1 Our Totex expenditure

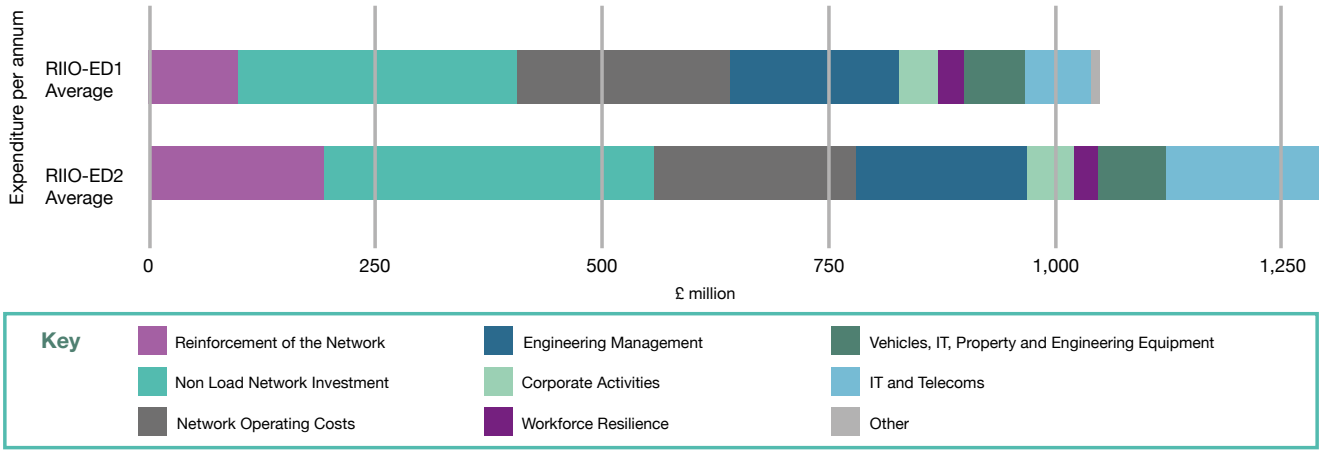
Totex					
£m, 20/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	320	318	158	254	1,050
RIIO-ED2 Annual Average (forecast)	373	392	223	347	1,336
RIIO-ED2 Total (5 years)	1,864	1,962	1,116	1,737	6,679

6.10. During RIIO-ED1 we delivered on our promises, while also addressing new requirements. We are expecting to end RIIO-ED1 with expenditure in line with RIIO-ED1 allowances. 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 developing that plan. These have included dealing with significant growth in distributed generation, establishing a Distribution System Operator (DSO) 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)



Cost allocations

6.13. Cost accounting uses both direct booking of time and materials to specific activities for staff who work directly on delivery of projects and cost allocations for salaried staff. As salaried staff do not complete time sheets, but can work on activities outside of Totex, part of their costs are reallocated outside the price control.

6.14. Work on the network is delivered using a geographical team structure. This means that a team has responsibility for all the main activities in its local area, such as connections, maintenance, network investment and non-price control work including activities 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.

6.15. There are certain staff, covering engineering and corporate functions, who do not complete timesheets. This comprises: engineering management, including 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 the price control. This allocation is subject to an internal methodology, which has been fully reviewed and updated for RIIO-ED2.

6.16. All Totex costs shown in this document follow the allocation of indirect activities to non-price control activities. However, where expenditure is presented by 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). Corporate activities including finance, IT and other activities including 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

6.17. 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 for WPD overall, as well as four licence areas. 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.

WPD's core expenditure forecast

Figure 6.3 WPD RIIO-ED2 expenditure forecast

WPD Totex 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	91	189	193	171	206	197	180	946
Non Load Network Investment	320	368	356	370	388	358	371	1,842
Network Operating Costs	241	227	235	233	224	222	220	1,134
High Value Projects	0	6	0	0	10	10	10	30
Engineering Management	232	251	252	251	249	251	250	1,253
Corporate Activities	50	60	59	59	60	61	61	300
Workforce Resilience	30	31	30	30	31	32	31	154
Vehicles, Property & Engineering Equipment	81	90	103	112	97	74	63	448
IT and Telecoms	79	171	173	165	185	165	168	856
Network Innovation Allowance	1	1	0	1	1	1	1	3
Atypicals	8	0	0	0	0	0	0	0
TOTAL EXPENDITURE	**1,133**	**1,394**	**1,400**	**1,393**	**1,451**	**1,370**	**1,355**	**6,968**
Indirect Allocations	-66	-86	-89	-90	-84	-84	-83	-429
Totex Adjustments	-17	-15	-15	-16	-15	-15	-14	-74
TOTEX (Excluding RPE & OE)	**1,050**	**1,293**	**1,296**	**1,288**	**1,352**	**1,271**	**1,258**	**6,465**
Ongoing Efficiency (OE)	0	-19	-6	-13	-20	-25	-31	-95
Real Price Effects (RPE)	0	62	38	49	65	73	84	309
TOTEX (Including RPE & OE)	**1,050**	**1,336**	**1,327**	**1,324**	**1,397**	**1,319**	**1,311**	**6,679**

West Midlands' core expenditure forecast

Figure 6.4 West Midlands RIIO-ED2 expenditure forecast

West Midlands - Totex 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	31	48	57	45	48	46	47	242
Non Load Network Investment	92	104	93	108	111	93	116	521
Network Operating Costs	75	65	67	67	64	63	63	324
High Value Projects	0	0	0	0	0	0	0	0
Engineering Management	73	78	82	78	77	77	76	390
Corporate Activities	15	18	18	18	18	18	18	90
Workforce Resilience	8	8	8	8	8	8	7	38
Vehicles, IT, Property & Engineering Equipment	22	23	27	28	22	21	19	115
IT and Telecoms	24	47	48	45	50	44	45	233
Network Innovation Allowance	0	0	0	0	0	0	0	1
Atypicals	3	0	0	0	0	0	0	0
TOTAL EXPENDITURE	**344**	**391**	**399**	**396**	**398**	**370**	**391**	**1,954**
Indirect Allocations	-20	-27	-32	-27	-25	-26	-24	-134
Totex Adjustments	-4	-3	-3	-3	-3	-3	-3	-15
TOTEX (Excluding RPE & OE)	**320**	**361**	**364**	**366**	**370**	**341**	**364**	**1,804**
Ongoing Efficiency (OE)	0	-5	-2	-4	-5	-7	-9	-27
Real Price Effects (RPE)	0	17	11	14	18	20	24	86
TOTEX (Including RPE & OE)	**320**	**373**	**373**	**376**	**382**	**354**	**380**	**1,864**

East Midlands' core expenditure forecast

Figure 6.5 East Midlands RIIO-ED2 expenditure forecast

East Midlands - Totex 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	39	65	66	64	70	69	54	323
Non Load Network Investment	88	98	99	98	100	100	95	492
Network Operating Costs	73	68	71	71	67	67	67	342
High Value Projects	0	0	0	0	0	0	0	0
Engineering Management	72	79	76	80	79	80	81	397
Corporate Activities	15	18	18	18	18	18	18	89
Workforce Resilience	9	10	9	10	10	11	11	51
Vehicles, IT, Property & Engineering Equipment	22	26	28	31	27	23	20	128
IT and Telecoms	23	52	52	49	56	50	51	258
Network Innovation Allowance	0	0	0	0	0	0	0	1
Atypicals	1	0	0	0	0	0	0	0
TOTAL EXPENDITURE	**343**	**416**	**419**	**420**	**427**	**418**	**397**	**2,080**
Indirect Allocations	-20	-32	-27	-33	-32	-32	-34	-159
Totex Adjustments	-5	-5	-5	-5	-5	-5	-4	-23
TOTEX (Excluding RPE & OE)	**318**	**380**	**386**	**382**	**391**	**381**	**359**	**1,899**
Ongoing Efficiency (OE)	0	-6	-2	-4	-6	-8	-9	-28
Real Price Effects (RPE)	0	18	11	15	19	22	24	91
TOTEX (Including RPE & OE)	**318**	**392**	**396**	**393**	**404**	**395**	**374**	**1,962**

South Wales' core expenditure forecast

Figure 6.6 South Wales RIIO-ED2 expenditure forecast

South Wales - Totex 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	8	33	30	28	35	36	35	164
Non Load Network Investment	52	58	60	59	64	53	52	288
Network Operating Costs	35	36	37	37	36	35	35	179
High Value Projects	0	6	0	0	10	10	10	30
Engineering Management	34	38	38	38	37	38	38	188
Corporate Activities	8	9	9	9	9	9	9	45
Workforce Resilience	6	5	5	5	5	5	5	27
Vehicles, IT, Property & Engineering Equipment	16	16	21	20	17	11	9	78
IT and Telecoms	12	30	30	29	33	29	30	151
Network Innovation Allowance	0	0	0	0	0	0	0	0
Atypicals	1	0	0	0	0	0	0	0
TOTAL EXPENDITURE	**172**	**230**	**230**	**225**	**247**	**227**	**224**	**1,151**
Indirect Allocations	-11	-11	-12	-12	-11	-11	-11	-57
Totex Adjustments	-3	-3	-3	-3	-3	-3	-3	-14
TOTEX (Excluding RPE & OE)	**158**	**216**	**215**	**210**	**233**	**213**	**210**	**1,080**
Ongoing Efficiency (OE)	0	-3	-1	-2	-3	-4	-5	-16
Real Price Effects (RPE)	0	10	6	8	11	12	14	52
TOTEX (Including RPE & OE)	**158**	**223**	**220**	**216**	**240**	**221**	**219**	**1,116**

South West's core expenditure forecast

Figure 6.7 South West RIIO-ED2 expenditure forecast

South West - Totex 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	13	43	39	34	54	46	44	217
Non Load Network Investment	88	108	104	105	112	112	108	541
Network Operating Costs	58	58	60	59	57	57	56	289
High Value Projects	0	0	0	0	0	0	0	0
Engineering Management	52	56	56	56	55	56	55	278
Corporate Activities	12	15	15	15	15	15	15	76
Workforce Resilience	7	8	8	8	8	8	8	39
Vehicles, IT, Property & Engineering Equipment	21	25	28	34	32	20	15	127
IT and Telecoms	20	43	43	41	46	41	42	214
Network Innovation Allowance	0	0	0	0	0	0	0	1
Atypicals	2	0	0	0	0	0	0	0
TOTAL EXPENDITURE	**274**	**356**	**353**	**352**	**379**	**356**	**343**	**1,782**
Indirect Allocations	-15	-16	-18	-17	-16	-15	-15	-79
Totex Adjustments	-5	-4	-4	-5	-4	-4	-4	-21
TOTEX (Excluding RPE & OE)	**254**	**336**	**331**	**330**	**359**	**337**	**325**	**1,682**
Ongoing Efficiency (OE)	0	-5	-2	-3	-5	-7	-8	-25
Real Price Effects (RPE)	0	16	10	13	17	19	22	80
TOTEX (Including RPE & OE)	**254**	**347**	**339**	**339**	**371**	**349**	**338**	**1,737**

Cost and workload forecast considerations

6.18. WPD has consistently led the way in the electricity distribution sector with a proven business model that delivers effective, efficient and reliable services for our communities. We will 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 digitalisation, and the increased importance of cyber security, have also heavily influenced our plan. Our strong business model provides the foundation for the efficient, agile and adaptive delivery of our plan.

6.19. Our expenditure plans have been developed to embed our Business Plan commitments, which are built to meet four distinct, but inter-dependent challenges for RIIO-ED2. These are:

1. Sustainability:
Lead the drive to net zero as early as possible.

2. Connectability:
Customers can connect their electric vehicles, heat pumps and renewable generation.

3. Vulnerability:
First class vulnerable customer support programme where everyone benefits in a smart future.

4. Affordability:
Maintaining excellent customer service, safety and network performance and transforming the energy grid for future generations, while keeping bills broadly flat.

WPD's Best View for future network capacity requirements

6.20. We have used a wide range of sources to inform our 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 - Net Zero Wales.
- Electricity System Operator – Future Energy Scenarios (ESO FES).
- Distribution Future Energy Scenarios (DFES).
- Local Area Energy Plans (LAEPs).
- ENA Common Scenario.

6.21. These sources provide a series of scenario projections which have been consolidated to inform our WPD Best View, leading to the development of 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.

6.22. Our Best View and associated costs are 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. 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. Our Best View represents the investment requirements that we propose should be funded ex-ante.

6.23. We recognise that there are numerous paths that could lead to different network reinforcement requirements and therefore we have proposed a comprehensive, but simple, set of uncertainty arrangements which span across different network reinforcement activities. These mechanisms are intended to protect customers where investment is no longer required and provide additional allowances where circumstances require more network investment to enable decarbonisation.

6.24. We acknowledge that DNOs and Ofgem have proposed a wide range of different uncertainty mechanism proposals which are being considered as part of the assessment of business plans. Our preference would be that uncertainty mechanisms are based on automatic mechanistic processes such as volume drivers wherever possible, 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 differ from the WPD Best View, should government policy and customer demand lead to greater or lesser demands on the electricity network. The range in the potential levels of investment required between different future energy scenarios is too wide to be simply covered by an upfront allowance and instead will need agile symmetric uncertainty mechanisms to be set out within the price control.

6.25. This Business Plan presents the high level costs which we consider should be funded through the ex-ante allowances. It is this base Best View that is presented in all expenditure tables throughout this chapter. Comparisons between WPD's Best View and other industry scenarios can be found in Supplementary Annex SA-06a: Load related expenditure.

6.26. Where there is a need for uncertainty mechanisms, WPD has identified a portfolio of approaches which will enable different levels of 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

6.27. Ofgem is working on ongoing refinement of the charging methodology policy for connections, as part of the Access and Forward-Looking Charges Significant Code Review (Access SCR).

6.28. Following the government's legally binding decision to deliver net zero by 2050, WPD shares the ambition to deliver this at the lowest cost to customers and as early as possible. This was identified as a priority by our stakeholders during the development of our RIIO-ED2 plan. We welcome clarification on Ofgem's latest position set out in their minded-to position on the Access SCR, but recognise that a final decision is yet to be made.

6.29. Given that the final decision on Access SCR is yet to be made, Ofgem has provided a series of assumptions for identification of the cost impact of implementing the minded to position. These have been separately costed and are not included in the Totex forecasts. These costings are shown in Supplementary Annex SA-06a: Load Related Expenditure. The final cost impacts will not be known until Ofgem makes the final decision on the Access SCR. This will lead to adjustments to allowances and will be the subject of future discussions with Ofgem.

6.30. 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 in 2022. Therefore, at this time, our RIIO-ED2 Totex cost forecasts have been prepared on the basis of no change.

DSO and digitalisation

6.31. To meet the demands of a rapidly changing environment, we are building upon our traditional role of Distribution Network Operator (DNO) to develop Distribution System Operator (DSO) roles and functions. The adoption of DSO functions will be essential to drive performance and efficiency from our network and ensure we can meet the future energy demands of all our customers.

6.32. 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 increase data acquisition from the network, enhance established DSO processes, develop new systems and share more data. These changes must be underpinned by greater data visibility and digitalisation of our processes and systems.

6.33. The costs and implications of carrying out DSO functions and increasing digitalisation 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 fulfil the role of Distribution System Operator. The main cost impacts fall into the following areas:

- A separate management structure for DSO within WPD's existing organisational structure. This separation will allow network strategy, system operation and market development teams to make independent recommendations for network investment and create a neutral marketplace for flexibility. This functional structure is already in place, with external audit and establishment of an independent DSO scrutiny panel being implemented before RIIO-ED2 begins. The costs of this are embedded in our plan.
- More comprehensive network strategy planning processes. WPD has already committed to produce a full suite of DFES analysis each year and has been working with local authorities to understand and support Local Area Energy Plans.
- Continuation of a flexibility first approach to 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 digitalisation 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.
- Establishment of an Energy Management Centre to transparently and independently operate the provision of network capacity through flexibility services.
- Investment in cyber resilience and security to prevent 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

6.34. We have an extensive network of assets 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 to ensure uninterrupted service to our customers. We regularly inspect and maintain our assets, gathering information about their condition. Where necessary, assets in poorest condition are replaced to reduce the risk of network failure.

6.35. 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 upon Network Asset Risk Metrics (NARMs) which allow assets to be classified into different levels of health and criticality. Those with the poorest health and highest criticality carry the greatest risk. Because every asset has its own risk value, NARMs enables us to generate an overall risk measure for all the assessed assets.

6.36. Without intervention, the overall risk to the network will increase as the network deteriorates over time. Our asset replacement actions remove higher risk assets. 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. Our strategy for managing condition based risk is not about targeting a specific reduction or increase in network risk; it is about doing what is necessary to remove poor condition assets. The resultant network risk will reflect this programme and our proposals will result in network risk at the end of RIIO-ED2 being at similar levels to the start of RIIO-ED2. The NARM risk values are summarised in figure 6.8.

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	% improvement
West Midlands	2,026,474,871	2,634,322,209	2,114,534,650	-519,787,560	20%
East Midlands	1,568,323,792	2,107,546,842	1,702,892,504	-404,654,338	19%
South Wales	1,070,970,887	1,417,980,616	1,055,269,033	-362,711,582	26%
South West	1,895,450,847	2,510,056,203	1,882,884,992	-627,171,211	25%
WPD	6,561,220,396	8,669,905,870	6,755,581,179	-1,914,324,691	22%

6.37. 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

6.38. WPD's established and effective organisational structure has proven to be key to the successful delivery of 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.

6.39. 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. Our organisational structure is flat, with devolved decision making and minimal bureaucracy, powering a culture that delivers innovative thinking and collaborative working. Continuing this structure and ethos is integral to our delivery model for RIIO-ED2.

Resourcing strategy

6.40. 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, thus retaining knowledge and expertise. 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.

6.41. There are, however, certain aspects of the increased workload where alternative approaches may be more appropriate for delivery of the work. For example, we propose to use contractor resources where there is a cost benefit for doing so, where there is some uncertainty about the volumes of activity or where different working arrangements are required. This will allow us to deal with short term increases, while determining a 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. More details on our plans to meet future workforce requirement can be found in our Workforce Resilience Strategy (see www.westernpower.co.uk/RIIO-ED2/workforce-resilience-strategy)

Innovation

6.42. 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. One of the ways we continue to innovate is to champion widespread digitalisation across our business, utilising new technology to connect customers and deliver the timely, new services.

6.43. 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

6.44. 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.

6.45. 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

6.46. We distribute electricity to highly diverse 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 such as Lincolnshire, Herefordshire, Cornwall and South Wales.

6.47. WPD therefore has experience of planning and working across a broad range of situations. We acknowledge that each location has its own challenges. For example, travel times can vary significantly, due to a shortage of direct routes in more rural areas and the effect of traffic congestion in major cities. While these differences exist, we try to minimise the impact as far as possible, such as operating a consistent pay structure across WPD. For instance, 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.

6.48. However, because of the geographically wide and diverse area that we serve, there are a number of regional factors we have considered when building our plan. These include:
- **Net zero plans:** 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; this is considered through the development of our Best View of reinforcement.
- **Contract prices:** We observe and incur regional variations in contract prices, and our tendering process allows us to select the best rates for different regions.
- **Street works schemes:** There are clear regional differences in the operation of permit schemes. No such schemes are in place in South Wales, but in most local authority areas in England (but not all), these schemes are in place. This can impose different working practices in different areas, for example, we see more stringent permit conditions applied in the Midlands than in the South West, which incurs additional cost.
- **Pension schemes:** We operate several legacy pension schemes for our employees across our business, and for these older schemes, these may have different contribution rates.

6.49. These factors lead to some unavoidable differences in costs and unit costs between our four DNOs. Where these occur, these are explained in Supplementary Annex SA-06: Expenditure. We would expect Ofgem to recognise these differences in cost assessment, which is inherently conducted at a DNO level (not group), and make cost exclusions or adjustments as required to ensure high quality comparative assessment.

Pensions

6.50. All costs stated in this Business Plan include pension costs. The costs forecasted for pensions 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. 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.

6.51. Further explanation of our pension costs are included in Chapter 9: Financing our plan.

Investment appraisal

6.52. Significant investments of more than £1 million in our RIIO-ED2 Business Plan have an accompanying Engineering Justification Paper and Cost Benefit Analysis, whenever applicable. 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.

6.53. Further detail is included in Supplementary Annex SA-11: Investment appraisal.

Reinforcement of the network

6.54. 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. It falls into four categories: connections, general reinforcement, fault level reinforcement and new transmission capacity charges. The annual expenditure in all categories is expected to increase during RIIO-ED2, despite a significant increase in the use of flexibility to offset traditional reinforcement (see figure 6.9).

6.55. Reinforcement in our Best View will increase from 8% of Totex (average in RIIO-ED1) to 14% in RIIO-ED2.

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	91
RIIO-ED2 Annual Average (forecast)	48	65	33	43	189
RIIO-ED2 Total (5 years)	242	323	164	217	946

6.56. The main driver for higher load related expenditure is the UK and Welsh governments' net zero by 2050 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.

6.57. 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.

6.58. Our expenditure forecasts also include agreed costs for green recovery investment, most of which falls in the last two years of RIIO-ED1, with a proportion falling into the early part of RIIO-ED2.

Our forecasting approach

6.59. 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.

6.60. Each technology type has 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. This data is published in our Distribution Future Energy Scenarios – Customer Behaviour report.

6.61. 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 distributed energy resource growth from the WPD Best View scenario on to these simulated networks to identify where and when additional capacity will be required.

Flexibility

6.62. We have made significant progress to make use of flexibility services to manage demand in real time to avoid the need for costly reinforcement, where possible. This includes local management of generation output, load and power flows.

6.63. We anticipate that the use of flexibility will further 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 or defer reinforcement.

6.64. We have identified 58 potential schemes (of 193 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. We will deliver savings of £94 million through flexibility by avoiding load related expenditure otherwise anticipated within the Best View. Additional flexibility will be sought from the market to increase these savings if they become economic in the price control.

Connections requiring reinforcement

6.65. 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. 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).

6.66. We expect that the proposed changes under the Access SCR will impact these costs, but as required by Ofgem, our proposals for ex-ante funding have been forecast on the basis of no change to charging arrangements.

Figure 6.10 Connections expenditure

Connections requiring reinforcement					
£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)	9	25	6	8	47
RIIO-ED2 Total (5 years)	44	123	28	41	235

General reinforcement

6.67. General reinforcement is the investment required to provide adequate capacity on the network for generic load growth (therefore this does not relate to any individual customer or new connection). It 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 Energy 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 Safety, Quality and Continuity Regulations (ESQCR), which defines voltage limits.

6.68. 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)

6.69. 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. For each network constraint, the optimum reinforcement scheme has been identified after evaluating a range of options and their associated costs which included the assessment of using flexibility as an alternative to conventional reinforcement.

6.70. The schemes that are required during RIIO-ED2 under the Best View have been identified and included as part of the ex-ante funding proposal (see figure 6.11). We recognise that there is some uncertainty about the scale and impact of decarbonisation activities and therefore we expect to utilise the uncertainty mechanism to make adjustments to ex-ante funding during RIIO-ED2.

6.71. There is one high value project exceeding £25 million, for the provision of a new circuit to provide an new interconnection into the Mid East Wales ring. As this is a high value project it is separately costed and excluded from the costs shown for primary network reinforcement.

Figure 6.11 Primary reinforcement expenditure

Primary reinforcement					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	14	10	4	6	33
RIIO-ED2 Annual Average (forecast)	13	11	12	16	52
RIIO-ED2 Total (5 years)	66	57	59	79	261

LV and HV forecasts (high volume - low cost)

6.72. WPD's NIFT modelling tool has been used to identify the reinforcement requirement at LV and HV. To produce expenditure forecasts (as shown in figure 6.12), 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.

6.73. 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 potential constraints and delays for customers. We are proposing investment to do so, but as it is difficult to identify the scale of this activity ahead of need, we propose to use an uncertainty mechanism that adjusts allowances (upwards and downwards) to reflect the volumes of activity during RIIO-ED2.

6.74. Our IT plans include investment in LV Monitoring and smart meter data. We forecast that this will defer over £59 million of secondary reinforcement investment, which is therefore excluded from this forecast.

Figure 6.12 Secondary reinforcement expenditure

Secondary reinforcement					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	11	10	3	3	28
RIIO-ED2 Annual Average (forecast)	24	20	14	17	75
RIIO-ED2 Total (5 years)	120	101	70	83	374

Fault level reinforcement

6.75. 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.

6.76. 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. Situations like this are typically resolved by replacing switchgear, overhead lines and cables with higher rated assets. In some cases, fault levels can also be reduced by changing transformers for higher impedance models. Smart interventions, including the use of fault current limiters, are also applied where this is an economical solution.

6.77. A significant factor in increased fault levels is the connection of distributed generation. The growth in distributed generation is expected to continue into RIIO-ED2, resulting in an increase in fault levels on parts of the network.

6.78. 26 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)	2	7	1	2	12
RIIO-ED2 Total (5 years)	10	36	3	11	59

New transmission capacity charges

6.79. 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. Load growth on the distribution networks may call for extra capacity from the transmission system. This is provided by National Grid Electricity Transmission 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.

6.80. We forecast that conventional reinforcement by National Grid Electricity Transmission is required for six GSPs in RIIO-ED2. Figure 6.14 shows the forecast expenditure.

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)	1	1	1	1	3
RIIO-ED2 Total (5 years)	3	6	5	4	17

High value projects

6.81. WPD only proposes one high value project for RIIO-ED2. Due to the projected load growth in Brecon and the surrounding rural area, it is envisaged that the Mid East Wales 66kV ring will become unable to support the demand required. The proposed reinforcement is to install a new 132kV circuit to feed a new BSP near Brecon. This will provide an alternative feed into the Mid East Wales ring capable of supplying the substations on the 66kV ring under normal running conditions. Figure 6.15 shows the forecast expenditure.

Figure 6.15 High value projects

High value projects					
£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	0	6	0	6
RIIO-ED2 Total (5 years)	0	0	30	0	30

Non load related investment

6.82. Non load related investment encompasses a broad range of activities linked to the replacement and refurbishment of assets, as well as improving safety, reducing environmental impact and improving network performance. This section focuses on the activities associated with highest expenditure and/or most change. Through RIIO-ED2, this area represents around 28% of Totex. Figure 6.16 shows the forecast expenditure.

Figure 6.16 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	92	88	52	88	320
RIIO-ED2 Annual Average (forecast)	104	98	58	108	368
RIIO-ED2 Total (5 years)	521	492	288	541	1,842

Asset replacement

6.83. 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 is influenced by the condition of the assets, network performance, historical activity levels and projected future requirements. Our analysis of the requirements for asset replacement results in an increase in total replacement expenditure in RIIO-ED2 (see figure 6.17), with the majority of the increase related to the EHV and 132kV networks. 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 6.17 Asset replacement expenditure

Asset replacement					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	53	50	30	50	184
RIIO-ED2 Annual Average (forecast)	62	58	33	62	216
RIIO-ED2 Total (5 years)	312	290	165	312	1,078

6.84. Within asset replacement, there are numerous asset categories covering underground cables, overhead lines, switchgear and transformers. There are different types and amounts of data available across each category so we use a range of modelling techniques to determine the volumes of replacement activity required, including:

- Network Asset Risk Metrics (NARMs).
- Statistical age-based survivor modelling.
- Run-rate analysis.
- Population impacted analysis.
- Bespoke programmes.

6.85. 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.

6.86. 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 address anticipated load growth. The anticipated load growth from the increased uptake of low carbon technologies 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.

Refurbishment

6.87. 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 6.18 shows our forecast expenditure.

Figure 6.18 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	24
RIIO-ED2 Annual Average (forecast)	9	6	6	7	28
RIIO-ED2 Total (5 years)	46	29	30	34	139

6.88. The main refurbishment activities proposed for RIIO-ED2 include:

- Replacing steel members and painting overhead steel towers.
- Replacing steelwork and insulators on overhead line pole supports.
- Replacing a specific type of 132kV cable sealing end termination that is prone to catastrophic failure.
- Replacement of individual problematic protection relays.
- Transfer of LV services when replacing poor condition paper and LV Consac mains cables.

Civils

6.89. There are two main types of civils costs: those that are incidental to the asset replacement programme; and those that are driven by the condition of operational buildings and sites. Figure 6.19 shows our forecast expenditure.

Figure 6.19 Civils expenditure

Civils					
£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	5	26
RIIO-ED2 Total (5 years)	40	43	19	27	129

6.90. 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.

6.91. 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 our 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

6.92. 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. We have a clear termed wayleave based strategy which has been in place since 2017, and on this basis we expect incoming claim volumes will remain relatively stable.

6.93. We have incorporated some expenditure where, under the New Roads and Streets Works Act, we contribute a proportion of costs when we divert cables in the highway at the request of a local authority or infrastructure organisation. There are a number of highway diversions that are required in RIIO-ED2 to enable the construction of the HS2 railway, which fall into this category.

6.94. There may be some diversions activity arising from rail electrification in RIIO-ED2. This is still uncertain, requiring further clarity from government on which existing lines will be electrified, and so no costs have been included in our base view Totex.

6.95. Figure 6.20 shows our forecast expenditure.

Figure 6.20 Diversions expenditure

Diversions expenditure					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	10	13	5	11	39
RIIO-ED2 Annual Average (forecast)	13	16	6	14	49
RIIO-ED2 Total (5 years)	64	82	31	68	244

Overhead line clearances

6.96. We have a legal obligation to ensure that overhead lines have sufficient clearance to objects, buildings and the ground. Detailed survey work has identified a high volume of ground clearance issues that need to be resolved. 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 6.21 shows our forecast expenditure.

Figure 6.21 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

6.97. 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. 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 6.22 shows our forecast expenditure.

Figure 6.22 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	6	2	2	12

Environmental activities

6.98. 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 leaks by 50% compared to RIIO-ED1. Figure 6.23 shows our forecast expenditure.

Figure 6.23 Environmental activities expenditure

Environmental activities					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	1	1	1	1	4
RIIO-ED2 Annual Average (forecast)	2	2	1	2	6
RIIO-ED2 Total (5 years)	9	8	4	8	29

Quality of supply

6.99. We have significantly improved network performance during RIIO-ED1 and despite power cuts being at lowest ever levels the reliability of the network remains a high priority for stakeholders. We are investing in remote controlled equipment and have deployed automated algorithms that respond to faults on the network and reconfigure running arrangements to minimise the impact on customers.

6.100. 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.

6.101. In the South West licence area there has been a legacy practice of using fuses to prevent faults on the spurs from impacting customers on the rest of the circuit, but these do not operate for certain types of lower current fault. We are therefore proposing to change the protection arrangements to either use automatic sectionalising links or single phase circuit breakers, which will operate for lower current faults and reduce the number of customers impacted.

6.102. Fig 6.24 shows our forecast expenditure.

Figure 6.24 Quality of supply expenditure

Quality of supply					
£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	2	5
RIIO-ED2 Total (5 years)	5	8	1	12	25

Worst served customers

6.103. While WPD's network performance is among the best across the industry, there are some customers that experience higher numbers of faults. These customers are referred to as worst served customers. 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 9,136 worst served customers. Experience shows that the number fluctuates from year-to-year, with performance improving for some customers, and new customers and circuits becoming worst served.

6.104. Worst served 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. There has been strong stakeholder support for carrying out work to reduce the likelihood or impact or faults on worst served customers and WPD is proposing to carry out 70 projects over the RIIO-ED2 period. The cost forecast have been derived by considering typical solutions adopted during RIIO-ED1. Figure 6.25 shows our forecast expenditure.

Figure 6.25 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)	2	0	2	1	4

Visual amenity

6.105. 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. 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.

6.106. 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 at least 50km of overhead lines during RIIO-ED2. Figure 6.26 shows our forecast expenditure.

Figure 6.26 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	0	1
RIIO-ED2 Annual Average (forecast)	0	0	0	0	1
RIIO-ED2 Total (5 years)	2	1	1	2	7

Legal and safety

6.107. 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 being forecast for RIIO-ED2 are relatively small. There are, however, three bespoke programmes that will be carried out:

- Following an incident in a school playing field, where a tree brought down an overhead line, we are proposing to underground, divert or insulate 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.
- 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.
- 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.

6.108. Figure 6.27 shows our forecast expenditure.

Figure 6.27 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

6.109. There are some programmes where we have been unable to forecast additional costs, because of uncertainties beyond our control. This includes expenditure on enhancing restoration capability (also referred to as Electricity System Restoration) and expenditure on diversions required to accommodate planned rail electrification. These are dependent on government policy. We expect any future expenditure in these areas to be covered by uncertainty mechanisms.

6.110. We are meeting the requirements associated with critical national infrastructure (CNI) and actions to address their physical security. The Centre for the Protection of National Infrastructure is the government authority for protective security advice to the UK national infrastructure. It has previously identified a number of key electricity infrastructure sites where more stringent security measures are required, including enhanced and electrified fences, alarm systems and CCTV. WPD has a small number of existing CNI sites, but there are currently no identified enhanced security requirements at WPD locations during RIIO-ED2.

Network operating costs

6.111. 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 proposed reductions in costs and efficiency initiatives, will make up only about 16% of Totex in RIIO-ED2. Figure 6.28 shows our forecast expenditure.

Figure 6.28 Network operating costs expenditure

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	241
RIIO-ED2 Annual Average (forecast)	65	68	36	58	227
RIIO-ED2 Total (5 years)	324	342	179	289	1,134

Faults and ONIs

6.112. 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. 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 for DNOs reflect the performance against Ofgem specified targets.

6.113. 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, and damaged substation gates or access doors.

6.114. 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 to restore supplies so that customers experience minimal inconvenience. Staff are mobilised quickly and internal target mechanisms are used to drive improvements in response times. This has resulted in WPD having significantly fewer faults that last longer than 12 hours, compared to other DNOs.

6.115. 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 more effectively is anticipated to lead to a reduction in the volume of tree related faults.

6.116. 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 over £100 million of efficiency savings for faults. Figure 6.29 shows our forecast expenditure.

Figure 6.29 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)	34	35	14	27	110
RIIO-ED2 Total (5 years)	168	176	71	136	551

Severe weather one in 20 year event

6.117. 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 greater than 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.

6.118. 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 more costly storms are known as one in 20 year events.

6.119. Forecasts in figure 6.30 for RIIO-ED2 represent 5/20ths of the costs of an one in 20 year events. The costs for RIIO-ED1 represent 2/20ths for the last two years of the RIIO-ED1 price control.

Figure 6.30 Severe weather one in 20 year event expenditure

Severe weather one in 20 year 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

6.120. WPD has a legal obligation to maintain the safety and reliability of the assets that constitute the electricity distribution networks. 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. 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. Figure 6.31 shows our inspections, repairs and maintenance expenditure.

Figure 6.31 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)	14	14	8	11	47
RIIO-ED2 Total (5 years)	68	71	42	54	236

6.121. 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.

6.122. During RIIO-ED2 we will be undertaking 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 rollout is complete the 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.

Tree clearance

6.123. WPD has a legal obligation to operate tree cutting programmes with sufficient frequency to ensure that trees do not become a danger and, where appropriate, carry out more extensive clearance to enhance network resilience to abnormal weather conditions. 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. Figure 6.32 shows our forecast expenditure.

Figure 6.32 Tree clearance expenditure

Tree clearance					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	15	12	9	14	51
RIIO-ED2 Annual Average (forecast)	12	12	10	15	49
RIIO-ED2 Total (5 years)	61	61	50	74	246

6.124. 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 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.

6.125. As a result, the clearance cycle is being shortened from five years to four years for HV and EHV circuits. Within our RIIO-ED2 forecast the potential higher costs of more frequent clearance are being offset by reductions to volumes as a result of targeted clearance using LiDAR data and reductions to reactive clearance.

6.126. For resilience clearance, we continue to focus on the EHV network and propose to complete resilience clearance at this voltage level during RIIO-ED2. However, 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. We have assumed that maintenance clearance will be required on half of the network that has been made resilient.

Other

6.127. Within network operating costs, there are also costs for substation electricity, dismantlement and remote location generation. Substation electricity costs have increased due to rising electricity prices and so we have included unavoidable additional charges into the plan. There is a reduction in costs associated with remote location generation for the Isles of Scilly in the South West licence area, because our reinforcement plans include the installation of a second 33kV subsea cable on the isles as the most optimum solution to meet the future projected load growth. Therefore, the generation requirement will no longer be required after 2027 once this cable is commissioned.

Engineering management

6.128. 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 having WPD's apparatus on private land. These costs form about 20% of Totex in RIIO-ED1 and about 18% of Totex in RIIO-ED2. Figure 6.33 shows our expenditure forecast.

Figure 6.33 Engineering management expenditure

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)	78	79	38	56	251
RIIO-ED2 Total (5 years)	390	397	188	278	1,253

6.129. 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.

6.130. The significant increase in reinforcement activities will require additional indirect activity in areas including detailed project design and project management (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 Best View of reinforcement. Where there are changes to resource requirements driven by volumes of reinforcement activity being significantly different to forecast, we would expect that the associated uncertainty mechanisms adopted for RIIO-ED2 will make provisions for these changes.

6.131. We are committed to deliver the new and increased volumes of direct activity, including delivery of net zero targets to facilitate 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. These efficiencies include a mass market connections self design tool and customer enquiry tracker to free up £189 million of staff time in RIIO-ED2, as well as investing in our business applications and processes to allow staff to work more effectively.

6.132. 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. Additional costs have also been included for the establishment of a DSO Energy Management Centre to transparently and independently operate the provision of network capacity through flexibility services. We are also proposing to introduce community energy engineers to support local community energy projects.

6.133. 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 in a smart future. All other proposed customer service commitments will be delivered within current cost levels.

6.134. 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.

6.135. We are also committed to rolling out and embedding successful innovation that is developed 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 and deployment. Every solution we deploy will have direct benefits which 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.

6.136. We currently forecast that there will be a small increase in wayleave payments in 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 Land and Business 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

6.137. Corporate activities include a number of central functions supporting all of our licence areas, including human resources, finance and regulation, procurement, corporate communications, legal services and executive functions. We will continue to be a low overhead business in RIIO-ED2. Corporate activities account for about 4% of Totex. Figure 6.34 shows our forecast expenditure.

Figure 6.34 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	8	12	50
RIIO-ED2 Annual Average (forecast)	18	18	9	15	60
RIIO-ED2 Total (5 years)	90	89	45	76	300

6.138. 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. There are some additional governance costs that we will need to undertake, including external audit and establishment of an independent DSO scrutiny panel, and so an additional £1 million of costs have been included in this Business Plan.

6.139. 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.

6.140. Additional insurance premium costs of £18 million have been included in the Business Plan. These primarily relate to Directors and Officers Liability insurance and cyber insurances due to changes in charging between us and our old and new parent companies. Our forecast insurance premium costs have been provided independently by our insurance broker, Gallagher and more detail is in Supplementary Annex SA-06: Expenditure.

6.141. We also forecast that the new Health and Social Care Levy, recently announced by the government in September 2021, will cost us an additional £25 million in RIIO-ED2. Due to the late timing of the announcement, we have included this as an additional cost in Corporate activities only, rather than across all activities where labour costs are incurred.

Workforce resilience

6.142. Work 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 require the recruitment and training of staff with appropriate new skills. 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.

6.143. The costs of training staff forms about 2% of Totex. Figure 6.35 shows our forecast expenditure.

Figure 6.35 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	51	27	39	154

6.144. 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 the development of these trainee programmes will continue to deliver the right outcomes for us during RIIO-ED2.

6.145. To train additional staff, we are able to adapt existing space to create extra workshops and classrooms in our training centres and satellite facilities. We have a proven record of being able to recruit and 'train the trainer' and have continued to run a significant apprentice programme since DPCR3 (2000-2005).

6.146. WPD will continue to invest in staff development in RIIO-ED2. Our workforce resilience programme will continue to ensure our staff have relevant skills in the evolving energy sector, including DSO, commercial and core engineering expertise. WPD is committed to achieving the Investors in People (IIP) award to Gold accreditation level. Our strategy will also enhance gender and BAME representation, and drive wider benefits from a more diverse workforce.

Information technology and telecoms

6.147. 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 delivering cyber enhancements for OT and IT systems will take on increasing importance in RIIO-ED2 as we invest in our DSO capabilities, move towards digitalisation and 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, the associated costs will form about 12% of Totex in RIIO-ED2 compared to 7% in RIIO-ED1. Figure 6.36 shows our forecast expenditure.

Figure 6.36 IT and telecoms expenditure

Information technology (IT) and telecoms					
£m, 2020/21 prices	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 Annual Average	24	23	12	20	79
RIIO-ED2 Annual Average (forecast)	47	52	30	43	171
RIIO-ED2 Total (5 years)	233	258	151	214	856

Routine operational IT

6.148. Operational IT and telecoms is the area where we expect to see the biggest increase in IT activity. This encompasses the dedicated communication infrastructure and network management system, which monitors the electricity network, controls load flows and enables response to faults. We are forecasting additional expenditure in the following areas:

- Control systems to support 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).

6.149. To better manage future load growth and reinforcement requirements, WPD is planning to install increased amounts of LV monitoring. This monitoring will provide greater visibility of the loads and voltage on the network, allowing proactive measures to be taken in real time, providing verification of modelled and smart meter information and giving a more accurate view of reinforcement requirements. 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. Deferral of £87 million of reinforcement has been included in the Business Plan.

Routine non operational IT

6.150. 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 communication 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.
- A new data centre upgrade (associated property costs are included in the property forecast).

Routine business support IT

6.151. 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 staff to ensure we remain able to meet increasing demands for more complex IT systems.

6.152. However, we have also been reviewing our systems, polices and processes and have included savings of over £13 million in the Business Plan, where we have optimised opportunities such as the virtualisation of server and storage hardware (replacing physical servers), the use of cloud based computing and the standardisation of our infrastructure and our support contracts.

Cyber OT

6.153. 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 and enhancements.
- Cyber security controls and proactive monitoring.

Cyber IT

6.154. 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:

- 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

6.155. We need depots for office staff and vehicles to transport operation staff and materials to where work is required on the network. We therefore incur expenditure on the capital purchase of non-network assets and associated running costs, 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.

6.156. These costs represent 7% of Totex in RIIO-ED1 and 6% in RIIO-ED2. Figure 6.37 shows our forecast expenditure.

Figure 6.37 Vehicles, property & engineering equipment expenditure

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	26	16	25	90
RIIO-ED2 Total (5 years)	115	128	78	127	448

Operational vehicle fleet

6.157. 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. We will also install electric vehicle chargers across our sites. 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 £64 million cost of this programme above standard purchase price and replacement rates for ICE vehicles is delivered as a bespoke Price Control Deliverable (PCD).

6.158. 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.

6.159. WPD will continue to operate an in-house vehicle maintenance 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. Savings have also been embedded into RIIO-ED2 as a result of an investment in RIIO-ED1 for the installation of a driver behaviour system in all WPD fleet vehicles. As well as providing safety benefits, the system also leads to savings in fuel costs and accident repair costs.

6.160. These initiatives mean that we have been able to include £34 million of operating cost savings in our Business Plan.

6.161. 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

6.162. 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 generation at all sites.

6.163. We are planning major refurbishment and reconfiguration at three sites in the South West: Exeter, Torquay and Plymouth. The work at Exeter incorporates a new data centre with optimised operating costs and security. We have also included an allowance for smaller scale reactive works 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.

6.164. Our RIIO-ED2 plan reflects our environmental ambitions. We will conduct a series of works to improve the energy efficiency of our worst performing properties. We will also install photovoltaic (PV) solar panels at our non-operational sites comprising depots, vehicle maintenance facilities, offices, stores and reporting centres.

Engineering equipment

6.165. 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.

6.166. Equipment is replaced as items become worn or broken. We have forecast that levels of expenditure on these types of equipment will remain consistent with those in RIIO-ED1.

Other costs within the price control

6.167. These costs include innovation (see figure 6.38 for our forecast expenditure). 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. 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.

6.168. The NIC funding programme for larger scale projects is being replaced by the Strategic Innovation Fund. 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 will participate fully and work with a range of partners to develop projects for submission.

6.169. 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.

6.170. 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 the Business Plan.

Figure 6.38 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	2	1	3	9
RIIO-ED2 Annual Average (forecast)	0	0	0	0	1
RIIO-ED2 Total (5 years)	1	1	1	1	3

Driving business efficiency to keep bills low

6.171. In our RIIO-ED1 Business Plan we committed to deliver excellent quality of service to customers at efficient costs. Ofgem recognised the high quality of our plan by assigning it a Fast-Track status.

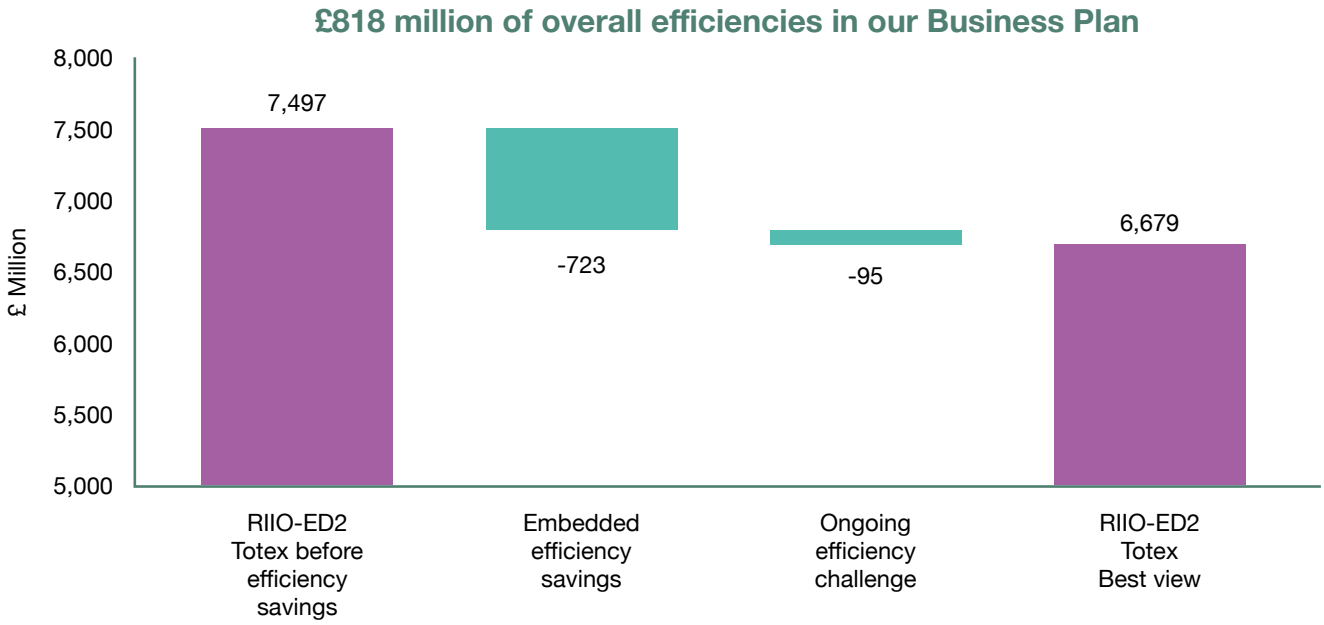
6.172. We have since delivered this ambitious plan, but we have also gone significantly further, delivering outputs and service improvements beyond our RIIO-ED1 Business Plan pledges. For example, we have developed a green recovery programme, provided support for high volumes of distributed generation connections and established DSO capability.

6.173. We have delivered all these commitments and additional outputs while offsetting the additional costs through efficiencies. We have a strong track record of delivering on our proposals, challenging our own efficiency and responding to the changing requirements of our stakeholders.

6.174. In RIIO-ED2 we are striving to enhance the standards of service performance provided for our customers and stakeholders; 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.

6.175. Affordability and delivering value for our customers are very important to us. Despite increasing environmental and performance standards, we have challenged ourselves to deliver our programme of work through ambitious efficiencies to keep customer bills broadly similar to RIIO-ED1. While our RIIO-ED2 plan costs are higher than RIIO-ED1 our proposed costs present better value for money for customers and the environment than in previous periods. Figure 6.39 shows our proposed costs are £818 million lower than they otherwise would be if we had not embedded these efficiencies.

Figure 6.39 Overall efficiencies



6.176. We always strive to be highly efficient, while continuing to meet and deliver our outputs and commitments and to provide industry leading performance and innovation. This is documented in our Destination Net Zero: Business Innovation and Efficiency Strategy (see www.westernpower.co.uk/RIIO-ED2/innovation-efficiency-strategy). The table in figure 6.40 summarises the efficiency benefits we have embedded throughout our Plan.

Figure 6.40 Embedded efficiency benefits

Totex efficiencies	RIIO-ED2 benefit £million	Description	These efficiencies are embedded through our plan.
Digitalisation initiatives in connections.	189	Connections self design, connections application tracker.	Digitalisation strategy and plan, connections strategy, core commitments.
Flexibility and smartgrid developments.	181	DSR and flexibility, use of smart meter data, LV monitoring to deliver targeted investment.	DSO strategy, sensors and monitoring strategy, chapter 5 and 6.
Updated managed wayleaves policies.	150	Clear termed wayleave based settlement strategy.	Chapter 6 non load expenditure.
Unit cost efficiencies.	110	Efficiencies embedded in our unit costs, especially in faults activities.	Chapter 6 faults expenditure.
Working smarter.	47	Investing in our business applications and improving our processes to allow staff to work more effectively.	Digitalisation strategy and plan, chapter 6 engineering management expenditure.
Owning and operating a cleaner, safer and more efficient vehicle fleet.	34	Delivering savings from an electric vehicle fleet, investing in our vehicle monitoring and operating more efficiently.	Environmental action plan, chapter 6 vehicles.
IT and system initiatives.	13	Reviewing our IT hardware, software and servers.	Chapter 6 IT expenditure.
Total embedded efficiencies.	**723**	**Equivalent to 11% of our forecast Totex.**	

6.177. We have challenged our unit costs to make sure they are efficient. We have worked with independent consultants, GHD, who have reviewed the unit costs that we have prepared for our Asset Replacement forecast (the largest activity area in our Business Plan). They concluded that the "resulting unit costs for each asset are typical, accurate and efficient"[1]. These asset replacement unit costs have also informed the primary reinforcement costs in this Business Plan.

Measuring efficiency in a changing world

6.178. We are expecting a step change in expenditure moving into RIIO-ED2. The increase is associated with government policy, such as supporting the transition to net zero, developing DSO functionality and flexible solutions, ramping up reinforcement to support LCT connections and enhancing our IT&T, cyber and security infrastructure to support these new demands. This additional expenditure needs to be reflected in cost allowances. These changes must be accounted for carefully in the cost assessment framework, as they lead to multiple areas where the past is not a good predictor of the future and future assumptions may be very different across DNOs, leading to diverging Totex trajectories. This can distort Totex benchmarking and the setting of efficient and appropriate cost allowances.

6.179. The unprecedented change in the nature and scope of activities undertaken by network companies means that the assessment approach must be flexible to accommodate the change. Of the two main approaches Ofgem has used for cost benchmarking, Totex modelling and the disaggregated approach, the disaggregated approach provides more transparency and flexibility (e.g. through a bespoke assessment or through the selection of cost drivers and the implementation of bespoke adjustment in disaggregated models) to ensure that the assessment remains robust.

Our service quality performance

6.180. The focus on outputs and quality of service for customers are rightly at the heart of Ofgem's approach to regulation. WPD has a track record of delivering industry leading quality of service, often leading the way and setting the benchmark for the sector through its culture of innovation and ambition. In RIIO-ED2, we are committed to further improve the high level of standards of service performance our customers and stakeholders expect.

6.181. Delivering a higher service quality requires higher expenditure. To ensure that companies are properly funded and incentivised to improve performance, Ofgem must provide due consideration to the interaction between costs and service levels. Setting stretching efficiency and performance targets independently from one another can result in an unachievable package and sub-optimal results.

Ongoing Efficiency (OE)

6.182. "Ongoing Efficiencies are defined as 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"[2] which are discussed within embedded efficiencies above.

6.183. In addition to the efficiencies embedded in our plan we have challenged ourselves to deliver a further £95 million in OE during RIIO-ED2 (see figure 6.41). This is equivalent to a 0.5% per annum OE assumption as set out in table below.

Figure 6.41 RIIO-ED2: Ongoing Efficiency assumptions

RIIO-ED2: Ongoing Efficiency assumptions							
£m, 2020/21 prices	2023/24	2024/25	2025/26	2026/27	2027/28	Total RIIO-ED2	Average per year in RIIO-ED2
OE assumption	0.5%	0.5%	0.5%	0.5%	0.5%	-	-
OE assumption, cumulative	0.5%	1.0%	1.5%	2.0%	2.5%	-	-
WPD impact, £m	6	13	20	25	31	95	19

[1] GHD (November 2021), Unit Cost Process Review: Assurance of process for RIIO-ED2 Business Plan Submission
[2] NERA (April 2021), Ongoing Efficiency Improvement at RIIO-ED2, prepared for the ENA, p. i

6.184. 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 (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.

6.185. Consideration of this wide body of evidence has informed a recommended OE assumption of 0.3% by NERA for the period of RIIO-ED2 and they have found that "the 0.1 to 0.5% range of mean estimates defines the widest range of assumptions that could reasonably be derived from the evidence"[3]. In consideration of this evidence and the conclusions by NERA, we have challenged ourselves to the highest point of this reasonable range and therefore included an assumption of 0.5% in this Business Plan.

6.186. "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"[4]. 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 £95 million in OE via releasing cost efficiencies in how we run our network, for example through harnessing new technologies available to us in the next price control and continuing to embrace innovation and digitalisation.

6.187. 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). Further information on our OE challenge and the full NERA report can be found in Supplementary Annex SA-06: Expenditure.

Real Price Effects (RPEs)

6.188. 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). 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.

6.189. 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 has signalled that it will adjust RPE allowances annually through indices that proxy for the price of our inputs.

6.190. We have worked with the economic consultants, NERA, as part of an all-DNO ENA study in spring 2021[5] and with an update in autumn 2021[6] 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. 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. Figure 6.42 sets out the combined impact on our cost base of RPEs, taking into account the cost structure of WPD.

Figure 6.42 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
WPD Impact, £m	38	49	65	73	84	309	62

6.191. Overall, we forecast that RPEs will have a £309 million 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.

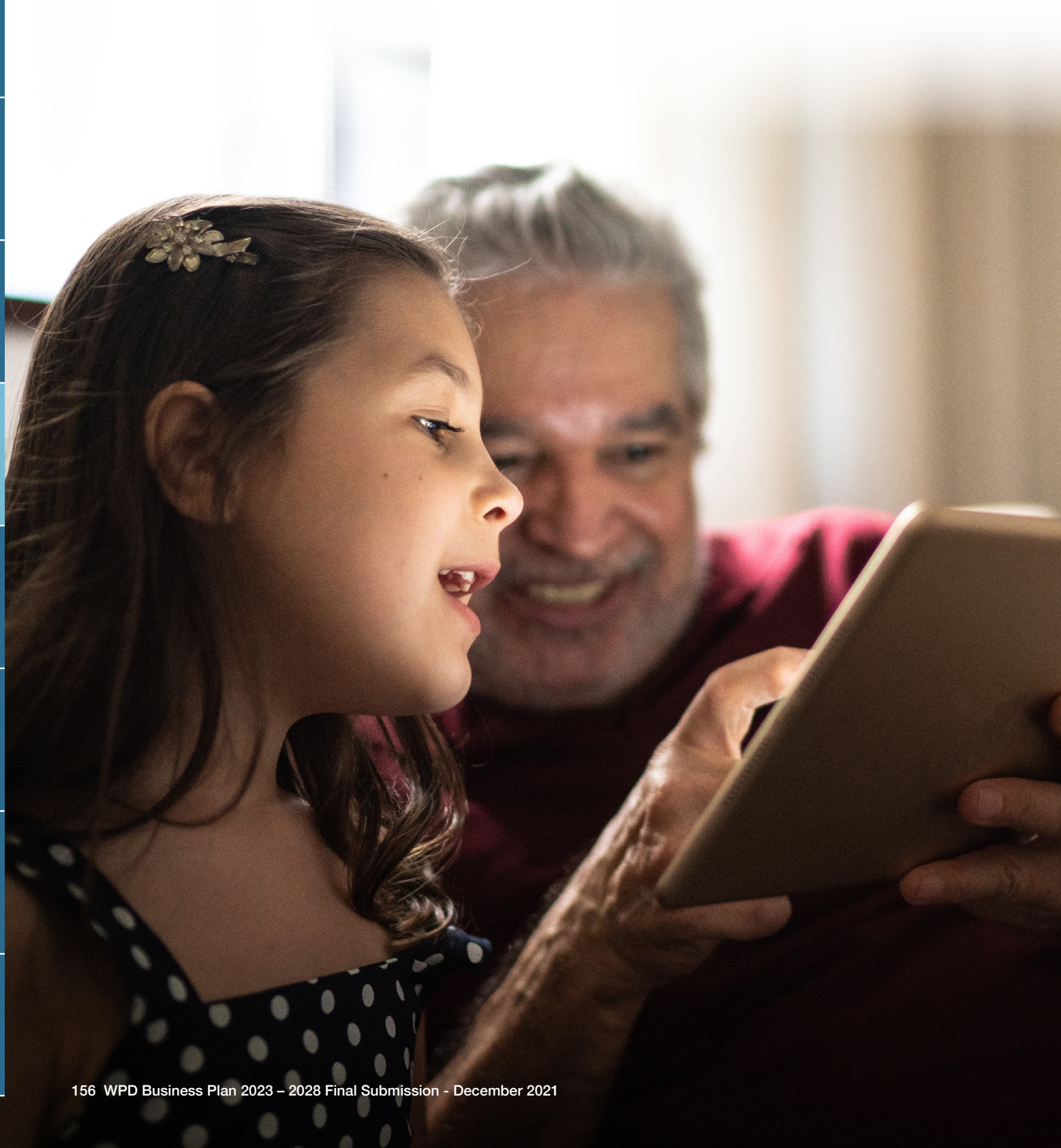
[3]NERA (April 2021), Ongoing Efficiency Improvement at RIIO-ED2, prepared for the ENA, p. 11
[4]NERA (April 2021), Ongoing Efficiency Improvement at RIIO-ED2, prepared for the ENA, p. 67
[5]NERA (June 2021), Price Effects for RIIO-ED2, prepared for the ENA
[6]NERA (November 2021), Price Effects for the RIIO-ED2 Price Control Review - Addendum, prepared for the ENA

Bill impact

6.192. WPD is proposing to spend an average of £1.3 billion per year in our baseline view of expenditure for RIIO-ED2. This is £286 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.

6.193. The additional cost in our base plan excluding Real Price Effects and Ongoing Efficiency is £243 million per year higher than RIIO-ED1. This would add £3.37 each year to WPD's average domestic customer bill for RIIO-ED2. However, as set out in Chapter 9, this potential increase as a result of higher investment will be broadly offset by changes to the financing parameters and other aspects of the RIIO-ED2 price control process.

6.194. Overall, WPD's average domestic customer bill is expected to fall slightly under our base view from £91.62 (RIIO-ED1 average bill after macro economic changes) to £89.51. Chapter 9 presents the customer bill impact of our Totex proposals in more detail.



Chapter 7

Managing uncertainty

For a short video overview of this chapter scan the QR code.

Chapter 7 Contents

7. Managing uncertainty

Summary

7.1. We recognise our Business Plan must be flexible and adaptable to the fast paced change associated with the shift to a smart energy future. While some types of work to manage the network are certain, the absolute volumes of activity will evolve over time. Potential changes in legislation and government policy and unforeseen events such as Covid-19, as experienced in the current price control period, can all bring uncertainty.

7.2. Uncertainty mechanisms are financial mechanisms that flex the allowed revenue for DNOs, linked to changes in requirements not factored into baseline allowances, thereby protecting both customers and companies from risk. This chapter sets out how uncertainty mechanisms work and how we will utilise them to adapt to change, with further detail included in Supplementary Annex SA-07: Managing uncertainty.

Uncertainty

Uncertainty mechanisms overview

7.3. Our RIIO-ED2 Business Plan includes costs for which we have robust information to support the proposed volumes of work 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 as the 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 can be managed within the overall allowances with no adjustment.

7.4. More significant challenges could include:

- A substantial shift in external policy; for example, new or amended legislation or government policy.
- Changes to the amount that is being delivered compared to the level originally funded under the price control; for example, customer behaviour affecting the levels of electric vehicle or heat pump take up compared to the forecast.
- A risk outside of WPD's control, for example, a pandemic.

7.5. 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 the scale of its potential impact. Uncertainty mechanisms can be:

- Volume driven – where there is uncertainty about the future level of demand and the unit costs of work are similar.
- 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.
- Price control deliverables – where volumes are originally agreed, but allowances are returned for work that is not required or completed.

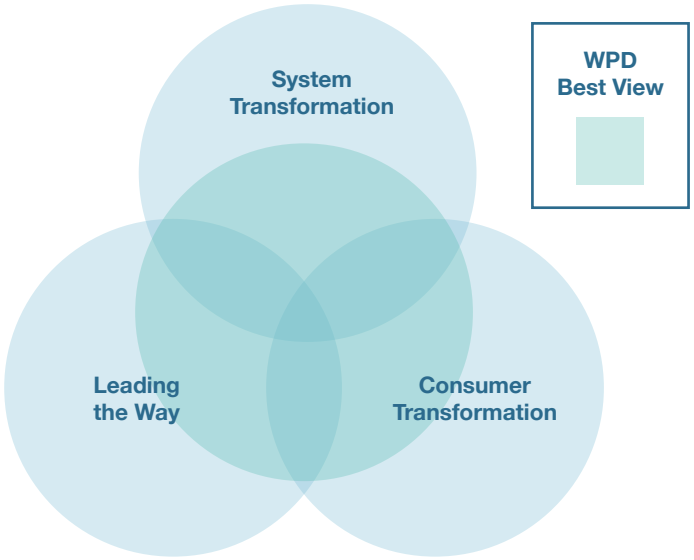
7.6. Ofgem has included a number of uncertainty mechanisms in its strategy decision that DNOs may use. This section highlights how we propose to use these in our plan.

Reinforcement and strategic investment

7.7. 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 facilitation of major volumes of electric vehicles and heat pumps, will clearly bring uncertainties. Although we have used future energy scenarios and information from engagement with wider stakeholders and local authorities to make our Best View forecasts, there will always be a level of uncertainty regarding the actual number of electric vehicles, heat pumps and new connections delivered by 2028. The remaining areas of uncertainty compared to RIIO-ED1, are significant government policy change in relation to net zero, and Ofgem's latest work on the Access Significant Code Review (SCR).

7.8. WPD has developed its Best View through stakeholder engagement, forecasting and scenario modelling. It is a blended scenario which applies one of the four Distribution Future Energy Scenarios (DFES) scenarios at a local authority level, and delivers an outcome that is within the range of the three net zero compliant scenarios (see figure 7.1). Whilst we have created the Best View, expenditure at this level may have to be increased by 123% to achieve "Leading the Way" scenario by 2028 or reduced by 23% if a "System Transformation" scenario is followed.

Figure 7.1 WPD's RIIO-ED2 Business Plan positioning



7.9. To enable the RIIO-ED2 price control to deliver sufficient, timely capacity to support decarbonisation, facilitate the role of flexibility, protect customers from inefficient investment, and maintain a simple and pragmatic regulatory overhead, WPD has proposed new uncertainty mechanisms that we expect to play a larger role in our load related expenditure than during RIIO-ED1. They are to be applied to the ex-ante funding across the following three investment categories:

- Primary load related reinforcement.
- Secondary load related reinforcement.
- Service unlooping.

7.10. WPD's baseline plan includes upfront investment to deliver the capacity required under WPD's Best View, 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, driving a different need for reinforcement; therefore load related allowances need to be agile, to either increase or decrease, to respond to these changes and support any decarbonisation pathway taken by our customers without incurring delays.

7.11. We have based our Totex forecasts on the WPD Best View because it has greater certainty for the investment required especially in areas that are supported by historical growth, national targets and local area enablers. Using the DFES, WPD has identified the volumes and locations of constraints triggered in each scenario and the consequential low regret investment needed to accommodate the forecast growth.

7.12. Gross network investment triggered under any of the three net zero compliant scenarios across 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.

7.13. WPD's Best View identifies the most credible and likely growth and thus reduces the gross expected investment to £1,020 million, with a split of £434 million and £586 million between primary and secondary expenditure respectively.[1]

7.14. We propose for any investment above or below WPD's Best View to be adjusted through uncertainty mechanisms (see figure 7.2).

Figure 7.2 View of scenarios and comparing gross costs for any single scenario and WPD's Best View

Primary	DFES Any Single Scenario	WPD's Best View
	£904 million	£434 million
Secondary	**DFES Any Single Scenario**	**WPD's Best View**
	£1,365 million	£586 million
Total	**DFES Any Single Scenario**	**WPD's Best View**
	£2,269 million	£1,020 million

7.15. In order to balance risk, reduce complexity and maximise agility, WPD is proposing a range of symmetrical uncertainty mechanisms be applied to the load related expenditure. This will ensure that potential, but uncertain activities can be funded whilst accommodating capacity growth and being net zero compliant.

[1] Chapter 7 presents gross (before customer contributions) investment values which include connections inside the price control and primary and secondary general reinforcement. The values in Chapter 6 are presented after customer contributions.

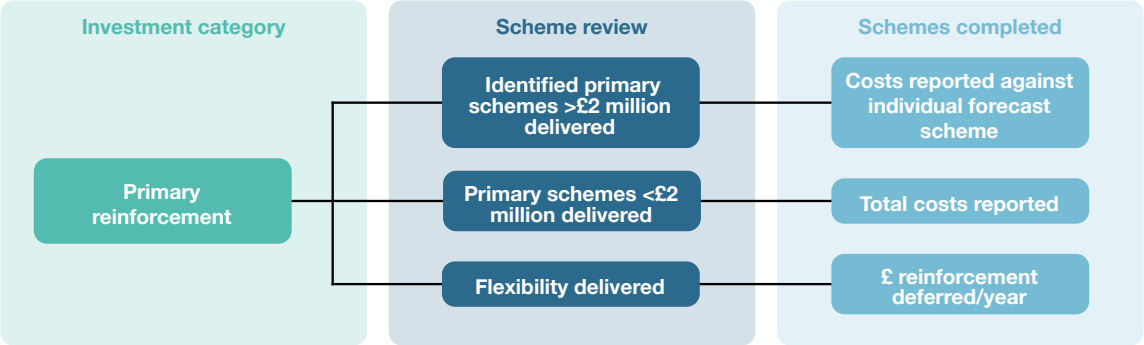
Primary load related expenditure uncertainty mechanisms

7.16. On the primary network, activity to provide additional capacity to users will require greater bespoke actions that differ across voltage levels, the part of the network affected and the type of network constraint. Projects may range between a few hundred thousand pounds through to more than £25 million. Scheme numbers are fewer in volumes than for secondary network activity, with many falling into the requirement for Engineering Justification Papers (EJP). Another consideration is that significant progress has been made in RIIO-ED1 to allow primary network investment to be deferred or avoided through flexibility.

7.17. In RIIO-ED1, investment has been funded ex-ante, with a load related reopener triggered outside of a materiality limit which considers load related expenditure in its entirety. The scale of potential uncertainty within RIIO-ED2 means this approach is no longer valid across the whole portfolio of projects. The difference between WPD's Best View and the high case scenario is more than double, requiring a very large bandwidth to deliver all net zero scenarios, which is not practically delivered by continuing with RIIO-ED1 load related mechanisms, as there is great scope for requirements to be different.

7.18. WPD has prepared 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 could be different to RIIO-ED1, we are proposing that the primary load related expenditure will be enabled by three symmetrical uncertainty mechanisms (see figure 7.3).

Figure 7.3 WPD's primary reinforcement uncertainty mechanism proposal



7.19. For primary network projects valued under £2 million, the total investment will be aggregated together and profiled across the price control. This will be funded by an ex-ante allowance which will be subject to an RIIO-ED1 style load related reopener with a +/- 20% deadband and appropriate materiality threshold. Any deviation within the deadband from the ex-ante allowance will be subject to the Totex Incentive Mechanism (TIM) sharing factor, sharing the risk and benefits between customers and DNO where expenditure falls outside the deadband, adjustments can be made to allowances in a similar way to RIIO-ED1.

7.20. For primary network projects where the expected cost exceeds £2 million, the forecast costs submitted in this Business Plan will be set as the ex-ante allowance. The uncertainty mechanism will then follow an adjustment approach where schemes not delivered will be refunded and new schemes will have additional funding allowed based on assessment of additional EJPs associated with the needs identified in Network Development Plans.

7.21. Where flexibility is forecast to be employed, only the flexibility costs will be included in the ex-ante allowance and not the full conventional reinforcement costs, providing immediate savings for customers. If flexibility is delivered as predicted, no further allowance adjustments are required. There may be situations where the predicted conventional reinforcement can be deferred by new flexibility. It is proposed to have a switching mechanism where flexibility and conventional allowances can be exchanged. To provide opportunities for cost outperformance under TIM, the unit rates for these switches would be set ex-ante based on cost assessment at the start of the price control.

7.22. The proposed uncertainty mechanism will account for investment above or below our ex-ante Best View. Where schemes in excess of £2 million are not delivered in the price control, these will be refunded. Schemes under £2 million will be subject to greater churn, but customers will be protected from underspend through application of the TIM sharing factor and a limit on the deadband. Where growth exceeds the allowances, new projects over £2 million will have EJPs created and submitted as part of the regular Network Development Plan (NDP) publication under licence condition 25B for the regulator to approve or instruct a direction for further work on the NDP until it can be approved.

7.23. If changes to the economics or viability of the forecast investment option results in a project originaly due to be delivered by conventional reinforcement being delivered by flexibility, or vice versa, then the flexibility allowance uncertainty mechanism will apply.

7.24. At the end of the price control, should no re-openers be triggered, all primary reinforcement activity costs will be aggregated together and reported against the ex-ante allowance. The ex-ante allowance will be modified downwards for any schemes over £2 million that have not been delivered and will be modified upwards for any additional schemes reported through the NDP publication that have been approved by the regulator. Flexibility usage and benefits will be used to inform flexibility allowances. All allowances will be summated and TIM will be applied on the total variances on costs against the RIIO-ED2 allowance. Load index reporting tables and identified requirements in Network Development Plans will ensure investment within the primary network is undertaken in line with system need.

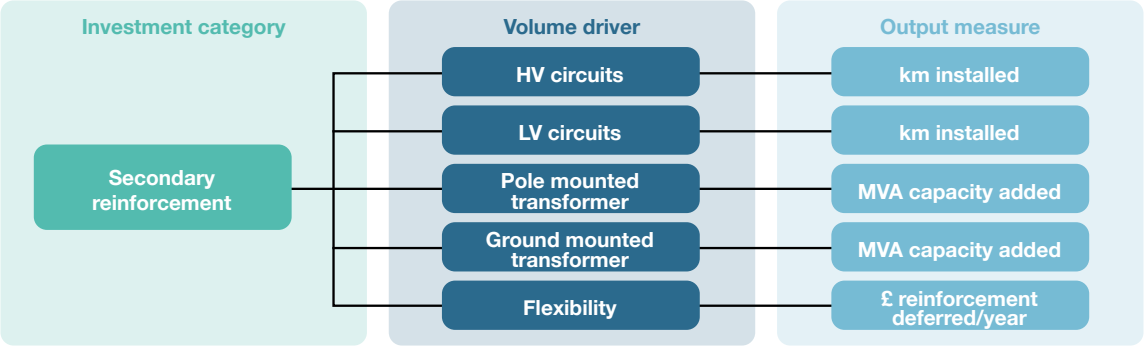
Secondary load related expenditure uncertainty mechanisms

7.25. On the secondary network, activity to provide additional capacity to customers will likely involve upgrading or installing new high voltage (HV) and low voltage (LV) circuits, as well as upgrading or adding new pole mounted or ground mounted transformers. Some of this reinforcement activity may also be deferred or avoided via flexibility services.

7.26. As this work has historically had the costs and volumes reported at an aggregated licence area level, moving it to a symmetrical volume or capacity driver and unit cost model requires little adaption to existing regulatory processes.

7.27. For linear assets we are proposing a volume driver unit is aligned to the length of assets installed (in kilometres), split between LV and HV circuits (see figure 7.4). For transformer capacity, we are proposing a measure of capacity added (in MVA), split between overhead and underground networks due to the variation in costs. Flexibility will be reported against the volumes of conventional reinforcement deferred. Unit costs will be agreed ex-ante.

Figure 7.4 WPD's secondary reinforcement uncertainty mechanism proposal



7.28. Where flexibility is forecast to be used, only these costs have been included in the ex-ante forecast and not the full conventional reinforcement costs. This delivers immediate savings for customers and if flexibility is delivered as predicted, no further costs are required.

7.29. The proposed uncertainty mechanism will account for investment above or below our ex-ante Best View. We will provide annual volumes of activity profiled by each investment category. Where the volumes delivered differ from these profiles, a mechanistic uncertainty mechanism based on the ex-ante unit costs and volumes delivered will be applied to adjust any allowances in both directions.

Flexibility allowance uncertainty mechanism

7.30. During RIIO-ED1, flexibility has been used to defer reinforcement. Benefits of this have been shared between customers and networks using the TIM. The existing treatment of flexibility deferral unlocking the full funding of the conventional reinforcement, has greatly incentivised the uptake of flexibility, but is not suitable given the maturity of the solution now.

7.31. For flexibility to be economic, the flexibility service costs should be less than the benefit of not borrowing money for the conventional reinforcement, for the time period of deferral. This results in the flexibility costs being order of magnitudes lower than the conventional reinforcement costs. This poses significant risk on the networks should a scheme forecast to be delivered by flexibility become uneconomical or unviable; a single flexibility scheme moving to being delivered conventionally would materially impact allowances.

7.32. A flexibility allowance uncertainty mechanism can protect customers from over funding where the application of flexibility is more favourable and equally protect networks where the application of flexibility is adverse. It is not a volume driver itself, as the volumes of activity are managed through the agreed ex-ante allowances and the proposed primary and secondary uncertainty mechanisms. Instead, it is an uncertainty mechanism to switch between a flexibility and reinforcement allowance, ensuring DNOs undertaking conventional reinforcement where flexibility not being available are not penalised and that where flexibility provides greater opportunities for deferring conventional reinforcement, customers are protected against excessive funding.

7.33. The proposed uncertainty mechanism will account for changes in the use of flexibility; where existing primary or secondary allowances become viable for flexibility in the price control. As the conventional reinforcement will not be delivered this will be refunded. The conventional reinforcement costs from the EJP or agreed ex-ante unit costs will be used as the justification for a baseline gross avoided costs and an annual allowance will be given based on the company weighted average cost of capital (WACC) savings against these baseline gross avoided costs. Where flexibility continues to defer the reinforcement, the annual allowance will be provided. Similarly, should flexibility become unviable, then allowances for flexibility can be withdrawn and allowances for conventional reinforcement revised upwards.

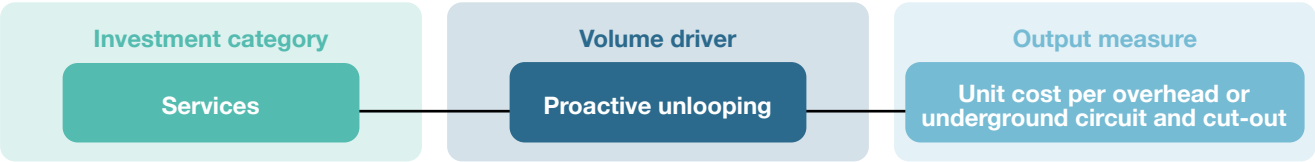
7.34. Flexibility costs and the gross avoided cost of reinforcement will be reported in detail within the annual RRP, as in RIIO-ED1. This will be on a per scheme basis for primary projects over £2 million, linked to EJPs. It will be on an aggregated basis for primary projects under £2 million and for each unit cost category of secondary reinforcement. Whilst data will be reported annually, the flexibility allowance uncertainty mechanism will only be reconciled at the end of the price control, reducing the regulatory burden of additional assessment within the price control.

Service unlooping

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. However, these arrangements are not suitable for the increased loads associated with charging electric vehicles and energy for heat pumps. This means that the serrvice arrangements need to be unlooped. The rate at which these services will need to be unlooped has been increasing due to the additional notifications received from the connection of LCTs. In line with DFES predicted activity, service unlooping should be considered low regret and least cost to proactively and strategically invest ahead of need where this can be achieved, in order to deliver greater efficiency rather than carrying out the work as a reactive programme.

7.36. For each unlooped service delivered proactively within a programme, we propose a simple symmetrical volume driver with ex-ante unit costs (see figure 7.5). Activity will be disaggregated down to volumes of cut-out replacements, underground services unlooped and overhead services unlooped. Volumes of services will be based on MPANs affected. The ex-ante provision will be based on our Best View, which is stakeholder informed and aligned to the DFES.

Figure 7.5 Services uncertainty mechanism proposal



7.37. The proposed automatic symmetrical uncertainty mechanism will be applied annually to the ex-ante allowance. Volumes of activity will be reported in the RRP. At the end of the price control, TIM will be applied to the actual costs of the activity and compared to the allowances based on volumes delivered and ex-ante unit costs.

7.38. 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

7.39. 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. 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.

7.40. 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; it is 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, and new statutory or regulatory requirements.

Other reopener mechanisms

7.41. 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, subject to a materiality threshold, triggered by a government change in policy (e.g. a decision on the future of decarbonised heating) or recommendations from the proposed Net Zero Advisory Group.

- **Streetworks:** Our plan only includes the costs associated with known streetworks schemes that are already in effect. We require the ability 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 and costs on DNOs.

- **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. Examples include the treatment of Persistent Organic Pollutants (POPS), Sulphur hexafluoride (SF_6) 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 that deal with excavated waste from utility 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.

- **Coordinated Adjustment Mechanism (CAM):** Ofgem proposed this whole system reopener, 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 licensee's price control to another. 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 RIIO-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 proposes 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. No rail electrification programme is currently included in our baseline 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 in our regions.

- **Electricity System Restoration (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 have not included any costs attributed to ESR as implementation details are not finalised, but we do expect to incur additional costs and support the policy for a reopener to accommodate these.

Other uncertainty mechanisms

7.42. WPD anticipates utilising the following 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 proposes the Cost of Equity will also be indexed in RIIO-ED2.

- **Pass through** – Ofgem determined a number of cost items for RIIO-ED1 that were pass through costs as they were outside the DNOs' control. These 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. It is anticipated that these costs, which remain outside our sphere of influence, will continue as pass through costs in RIIO-ED2.

7.43. 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, with strict separation protocols but enabling the delivery of our outputs in the most efficient way. Any changes to existing DSO governance arrangements, which could require further separation of functions, systems and/or data would likely incur higher costs that have not been factored into our plan. If Ofgem proposes any changes to the existing licence arrangements for DSO then we agree an uncertainty mechanism should be included.

- **Access Significant Code Review:** Ofgem published its minded-to position on the Access SCR on 30 June 2021. We have reviewed Ofgem's June publication and considered the proposed policy changes which are due to come into effect at the start of RIIO-ED2. Since publishing the Access SCR minded-to decision Ofgem has also published a consultation on the removal of the DUoS element of the SCR. Therefore, there remains significant uncertainty on the implications of the proposed policy changes. Ofgem has also indicated that the decision for the network access elements of the SCR, which were due to be published in December 2021, will now be published in the first quarter of 2022. In light of the evolving position Ofgem set out some assumptions for DNOs to consider for inclusion in their Totex proposals within the RIIO-ED2 plans.

  Ofgem's policy team has indicated they will reflect on the information provided by the DNOs in their plans to inform their next steps in the policy development. WPD consider the most likely impact of the proposed changes is an additional £306 million of investment in RIIO-ED2, on top of the WPD Best View presented in this plan. The majority of these additional costs are based on the extra volume of activity we would be completing associated with ANM transition to firmer connections, additional connections volumes and the impact of the shallower charges which would impact the DNO's costs.

  Our low case assessment of the impact is £174 million in RIIO-ED2, purely as a result of the change of funding from customer contributions DUoS. Our high case assessment of the proposals identifies an additional potential £606 million of investment in RIIO-ED2.

  We consider the additional activity being driven by Active Network Management transition and the additional costs associated with the funding change could be funded under our proposed Load Related Expenditure UMs. Further detail on these proposals are included in Supplementary Annex 6A – Load related expenditure. However, in light of the range of potential policy outcomes at this stage, we support Ofgem's proposal for an Access SCR uncertainty mechanism under which we would be able to recover the additional costs incurred which could not be picked up by our RIIO-ED2 proposed volume drivers.

- **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.

Bespoke price control deliverables

7.44. WPD is proposing the use of two bespoke PCDs in RIIO-ED2. The costs associated with these PCDs are included in our proposed RIIO-ED2 Totex baseline.

Conversion of commercial fleet to non-carbon

7.45. We are proposing to spend an additional £64 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 tCO2e (tonnes of carbon dioxide equivalent).

7.46. The delivery of this programme is dependent upon suitable vehicles becoming available. Since there is a risk that the volume could be lower we are proposing a PCD to refund allowances not used.

Modernising WPD's radio based telecoms system

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

7.48. The opportunity to make this change is subject to agreements with Ofcom and should there be any delays to granting permission the programme could be delayed. Since there is a risk of not completing the programme we propose a PCD to refund allowances not used.

Adapting to change

7.49. The UK is experiencing a period of significant change as it works towards a net zero carbon future. As an essential 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

7.50. 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).
- 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 Scenarios (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 in the charging behaviours of EV owners.

7.51. 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

7.52. There is no better example of our ability to adapt than our response to Covid-19. From March 2020, the pandemic had a significant impact on our customers, staff and working practices. We adapted quickly to minimise the impact on our operations, maintaining exceptional customer service while operating responsibly and safely. 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.

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. We also participated in the Supplier Payment deferral scheme, enabling non-investment credit rated electricity suppliers to defer payments during the height of the pandemic.

7.54. During the pandemic, within less than a month we had ramped up from 100 to 2,000 home workers with robust IT infrastructure to ensure no loss of 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. Video conferencing was made available on desktop, PCs and laptops to enable internal meetings and presentations to take place remotely.

7.55. Since the start of the pandemic, we have continued to engage extensively with our stakeholders, quickly adapting our approach, for instance, by using online workshops to deliver sessions. This did not lead to any dip in attendance rates - if anything, we saw increased stakeholder representation in some instances, from people who found it easier to participate remotely than attend in person. 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 robust, up to date understanding of stakeholder views. This has been vital as the impact of the pandemic has evolved quickly, and we now consider the enduring impact.

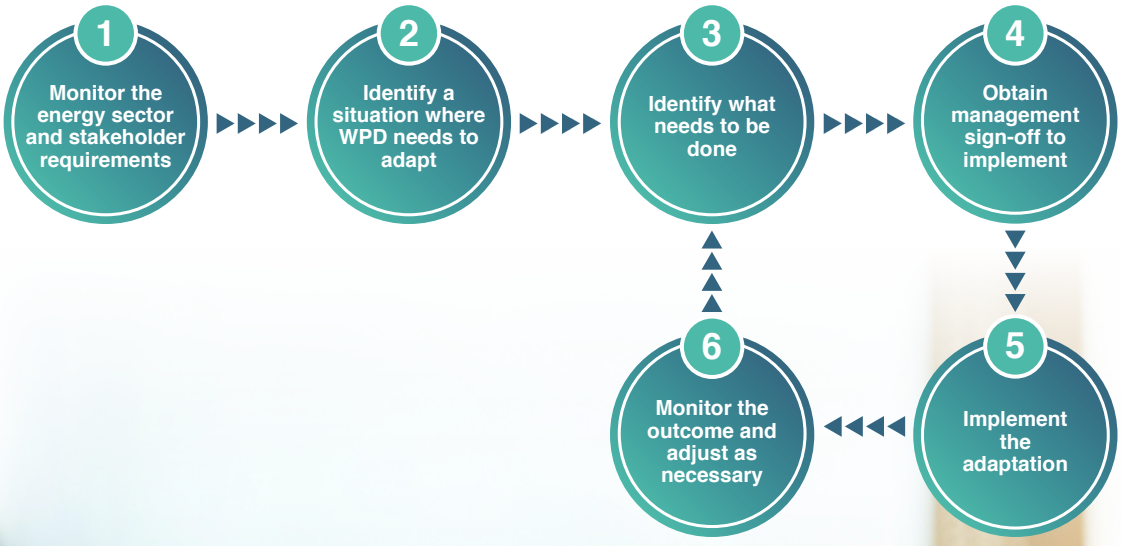
7.56. The learning from the Covid-19 pandemic will be used to prepare us for any similar event that may occur in RIIO-ED2, with protocols that can be put into place quickly and effectively if needed.

Adapting in RIIO-ED2

7.57. As we enter RIIO-ED2, we will be operating in an even more dynamic energy system, 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.

7.58. 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 and capacity that enables us to adapt quickly in response to emerging issues. As an 'enabler', we develop and implement solutions quickly and will continue to keep abreast of changing stakeholder requirements to make sure we uphold our reputation for adapting effectively and efficiently to change.

Figure 7.6 WPD's adaptive process



Chapter 8

Competition

For a short video overview of this chapter scan the QR code.

Chapter 8 Contents

8. Competition

Summary

8.1. We support 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. We will continue to explore, beyond traditional solutions, ways to minimise cost through innovation and digitalisation, exploring multiple options, facilitating non-network solutions and competition.

8.2. This chapter explains the different types of competition and our approach to it. Further details on competition is included in Supplementary Annex SA-08: Competition.

8.3. We utilise a mainly insourcing model to deliver network related activities with contractors utilised to undertake activities where it is cost efficient to do so without a deterioration of our high standards of customer service or where the levels of work exceed our resource capacity. We regularly review the insourcing versus outsourcing balance and test it to determine the most effective way to deliver a service. A good example of this is our vegetation management contract where we are not only using innovative technology, in the form of LiDAR on our helicopters to survey our overhead lines, but also running a trial to determine the optimum mix between contractor and in-house labour for vegetation management activities.

8.4. In addition, we have recently used an external party to benchmark our overall asset replacement and reinforcement unit costs and they concluded that our unit costs are efficient, and support our overall strategy. Please refer to Supplementary Annex SA-08: Competition for further details of the Unit Cost Assurance report provided by GHD.

8.5. 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.

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 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. 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 significant competition in RIIO-ED1 to the benefit of customers, our focus will be to 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 conventional network reinforcement covering £140 million of planned activity in the final three 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 3 sets out our plans for using and incorporating third party contracts and flexibility options within our plan to deliver the most efficient solution. We are proud to be industry leading in the way we have tested the market for alternative solutions to network capacity issues. In 2020, WPD was the first DNO to go out to tender for flexibility contracts on all the areas of reinforcement planned for the last three years of RIIO-ED1.

Early competition

8.11. Early competition is competition that occurs prior to the detailed design, surveying and consenting phases of a large project. We do not have any specific projects identified that have the potential to exceed the £50 million threshold identified for early competition in RIIO-ED2. 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.

8.12. Whilst no projects exceed the threshold value, we are keen to explore the application of early competition within the RIIO-ED2 price control. Recognising the ESO's proposed early competition assessment criteria, of New, Separable and Certain, we have identified a project suitable for running through an early competition process to understand how the ESO model might be adapted to provide benefits on the distribution network. This project is the Isles of Scilly Power Station (EJP191) where potential options have been reviewed and recommended to continue to provide secure capacity to an offshore island in the South West. While the EJP fully justifies the chosen option of providing a new underwater cable, there may be value in opening up this project to early competition and seeking alternative solutions to consider wider business models.

8.13. We will review the good practice identified in the ESO early competition model and develop adaptions to allow the process to be better suited for distribution implementation. Using the Isles of Scilly project as a demonstrator, we will feed back any learning to the industry, including any further criteria recommendations which may widen its application.

Late competition

8.14. Late competition is when a decision is made later on in a project programme, prior to physical construction, to open up the delivery of a large project to competition. 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. 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.

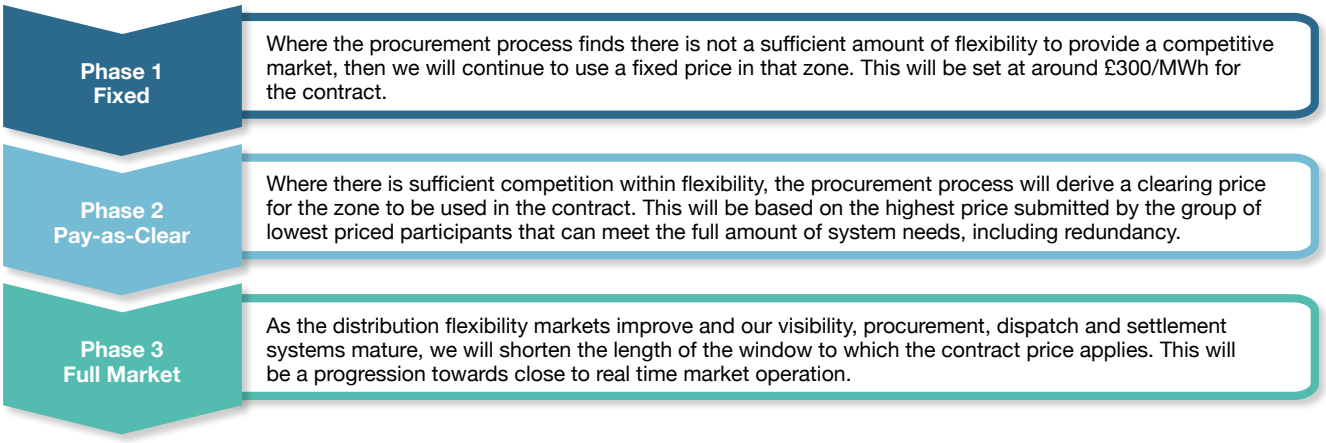
How we are facilitating competition with flexibility

8.15. WPD was the first DNO to commit to a six monthly procurement cycle for flexibility services through our 'Flexible Power' brand. Using flexibility services we will 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.

8.16. The Distribution System Operator is responsible for assessing which investment option is most efficient and economical, and does so using industry standard tools. It recommends the investment decision independent of the network owner function of the business. 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 Assessment (DNOA) process will be triggered to ensure value is still being delivered to customers, given the final commercial terms.

8.17. Given the geographical 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



8.18. 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 issue our instructions, 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 and 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 or partially match requirements.

8.19. 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.
- Our requirements through the Network Flexibility Map, Flexible Power Map, Procurement Documents and DNOA report.
- Procurement results, through Procurement Results reports & formal procurement Contract Award Notifications. This will be supplemented by Distribution Flexibility Services Procurement Report.
- Our operational requirements through the provision of monthly forecasts.

Purchasing contractual arrangements

Background

8.20. 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.

Purchasing objectives

8.21. We procure 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, our purchasing team has developed its objectives in line with the following key business objectives of the RIIO-ED2 plan, 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, we 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.
- **Only work 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.
- **Multi-source goods and services:** this 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 helps to secure the most economically advantageous contracts that deliver financial benefits to both WPD and our customers.
- **Ensure 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 Telecoms.

Purchasing process

8.22. The Purchasing Team procures services in full compliance with the Utilities Contract Regulations which requires the use of competitive process for the purchasing of goods and services above a set threshold (currently £378,660 for goods and services and £4,733,252 for works).

8.23. All spend above £25,000 is referred to our Purchasing Team to allow a competitive bidding process to be carried out. We utilise Framework Agreements, which are the result of a full competitive process, to procure contractor services for major high volume activities and this ensures that we obtain best value for the rates whilst ensuring we can efficiently call on these services. The major outsourced Framework Agreement activities include:

- Excavation and Cable Lay, with an average annual value of £90 million, has four contractors serving our area.
- Vegetation Management, with an annual average value of £41 million, has 12 contractors serving our area.
- Civils (e.g. large construction work for new builds and smaller repairs and maintenance activities), with an average annual value of £32 million, has 103 contractors serving our area.
- Overhead Line Construction and Refurbishment, with an average annual value of £16 million, with 11 contractors serving our area.

8.24. For bespoke or unusual projects we drive additional value by undertaking a one-off tendering exercise to again ensure that we are obtaining a competitive price to undertake the works.

8.25. Overall we outsource approximately 35% of our annual activities which equates to £370 million on an average annual spend of £1.05 billion in RIIO-ED1. By contracting for different work types across our four licence areas, WPD is able to compare and contrast our contracts and drive additional value through a competitive tendering process.

8.26. Additionally some contract service provision is in place for tasks typically sourced in-house, which are used as additional resources to manage peaks as required. These works include jointing, some overhead line related works and fitting. These outsourced contracts are predominately service related activities with WPD providing the materials and equipment, for instance, where contractors source the materials and equipment WPD publishes a list of approved suppliers for compatibility and quality purposes.

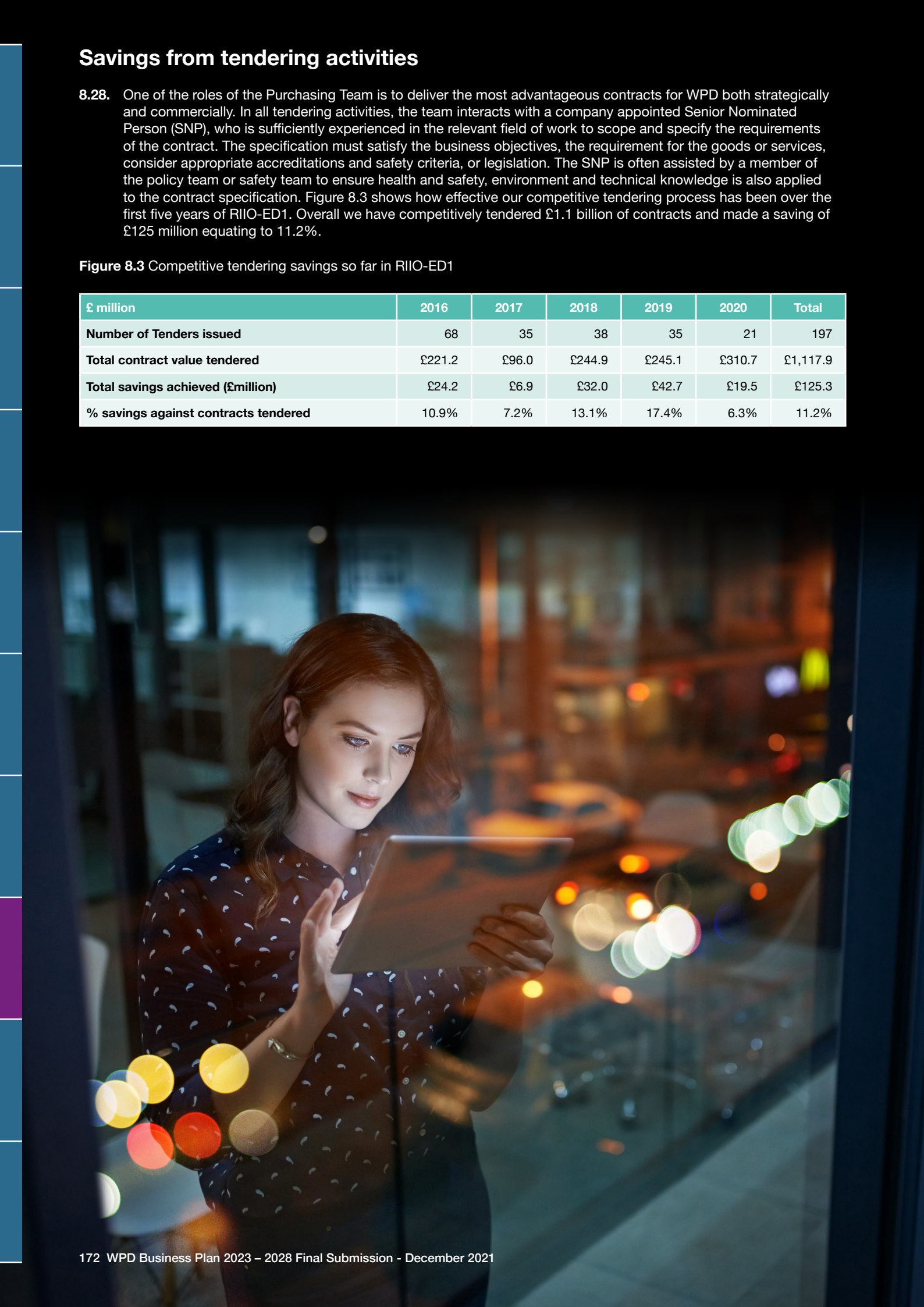
8.27. We explain in Chapter 6 (expenditure) how we recently used an external party to assess our efficiency by benchmarking our asset replacement unit costs. These unit costs were also used as an input to our reinforcement costs. The outcome of the recent review by GHD was that our RIIO-ED2 unit costs for these activities benchmark as efficient, therefore supporting our overall strategy. Please refer to Supplementary Annex SA-08 Competition for further details.

Savings from tendering activities

8.28. 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. Figure 8.3 shows how effective our competitive tendering process has been over the first five years of RIIO-ED1. Overall we have competitively tendered £1.1 billion of contracts and made a saving of £125 million equating to 11.2%.

Figure 8.3 Competitive tendering savings so far in RIIO-ED1

£ million	2016	2017	2018	2019	2020	Total
Number of Tenders issued	68	35	38	35	21	197
Total contract value tendered	£221.2	£96.0	£244.9	£245.1	£310.7	£1,117.9
Total savings achieved (£million)	£24.2	£6.9	£32.0	£42.7	£19.5	£125.3
% savings against contracts tendered	10.9%	7.2%	13.1%	17.4%	6.3%	11.2%



Chapter 9

Financing our plan

For a short video overview of this chapter scan the QR code.

Chapter 9 Contents

9. Financing our plan

Summary

9.1. Our Business Plan is the culmination of our work with stakeholders to build a plan that ensures excellent customer service, drives industry leading sustainability plans and prioritises digitalisation and innovation – all while supporting our most vulnerable customers, tackling fuel poverty and ensuring bills remain affordable for everyone.

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 are largely focused 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 (Revenue = Incentives + Innovation + Outputs) price control, driving up the standard of outputs for customers, and are a fundamental part of the associated financial package, and a key element for financeability.

9.3. As set out in this chapter, and our Supplementary Annex SA09: Financing our plan, we have assessed whether our licensees are financeable on both a notional and actual capital structure basis, using the Ofgem working assumptions. We have identified that the outcome of the financeability metrics is significantly below WPD's stated ratio target and that there is a substantial downside risk on credit ratings, including the risk of sub-investment grade rating, for all of the WPD DNOs.

9.4. To address the financeability issues under Ofgem's working assumptions, we have evaluated whether it is appropriate to adjust capitalisation rates, asset lives, dividends and gearing, or to refinance debt; the measures identified by Ofgem to resolve financeability issues. Our conclusion is that these measures do not provide adequate resolution to the financeability issues and a small uplift to the cost of equity and cost of debt is also appropriate. We therefore set out an alternative financing package which reflects these adjustments to ensure we are financeable. Full details of the outcome of our assessment of the Ofgem base case and our alternative financing package are set out in Appendices A01 and A02 to our Supplementary Annex SA09: Financing our plan.

9.5. Our plan has considered the latest findings of the Competition & Markets Authority (CMA) in the recent RIIO-2 appeals by gas distribution and transmission companies and includes the minimum realistic return required to deliver the transformational plan for stakeholders in RIIO-ED2. Our proposal reflects the additional risks for electricity distribution to effectively deliver net zero. We have stress tested our proposals to ensure that we can remain resilient under a range of credible scenarios (see Supplementary Appendix A03 to Supplementary Annex SA09: RIIO-ED2 Financeability Assessment: Stochastic Risk Modelling, prepared for WPD, a report by NERA). However, as NERA highlights in its report, while our alternative financing assumptions somewhat mitigate downside risk on rating compared to the Ofgem assumptions, they do not eliminate this risk fully, resulting in sub-investment grade ratings in a number of years under some scenarios. RIIO-ED2 must remain attractive to investors, who are key to enabling us to deliver the net zero agenda, but have a range of alternative opportunities across the world in which they can invest.

9.6. Our proposed RIIO-ED2 financing package will provide the funding to deliver our commitments along with the returns required to compensate investors for risks associated with delivering the agreed commitments over the next five years.

9.7. Our RIIO-ED2 Business Plan, developed with our stakeholders, balances the need to attract the investment required to deliver a smart, digitalised electricity network by 2028 and drive the shift towards a low carbon, net zero future for our customers, while keeping customer bills broadly flat compared to RIIO-ED1 levels. 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 further detail is included in Supplementary Annex SA-09: Financing our plan.

Financial projections

9.8. The preceding chapters have set out in detail our RIIO-ED2 expenditure plans to deliver the ambitious commitments and outcomes for our customers. The following tables set out our detailed projections of how WPD's baseline investment proposals translate into the revenues we will recover from our customers to fund this expenditure under our proposed financing package.

9.9. We have used WPD's baseline 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 Totex and hence associated revenue in line with actual outturn reinforcement expenditure, which is designed to provide a timely response to stakeholder developments including local authority plans and needs. Note that the values in the following tables do not include the potential impact of Ofgem's Access Significant Code Review (Access SCR) given the current level of uncertainty, range of potential outcomes and hence the size of its potential impact. Our provisional estimate is that the Access SCR could result in an increase of between £174 million and £606 million (2020/21 prices) in RIIO-ED2 Totex resulting in potential bill impacts of between £1 (low case) and £3 (high case) on the average RIIO-ED2 bill. Our best estimate is an increase of approximately £1.50 in the average RIIO-ED2 domestic bill for WPD's customers.

9.10. The following tables present the required revenue by DNO to deliver WPD's RIIO-ED2 baseline plan. Note that in the tables presented in this chapter, totals shown may not quite match the sum of individual rows or columns due to rounding to the nearest million.

Figure 9.1 RIIO-ED2 Revenue requirements - West Midlands

WPD Financial Projections for RIIO-ED2 - Revenue requirement (£million in 2020/21 prices)						
West Midlands	**2023/24**	**2024/25**	**2025/26**	**2026/27**	**2027/28**	**Total**
Fast pot costs	93	94	96	88	95	**466**
Depreciation on slow pot costs (RAV)	196	194	194	190	186	**959**
Pension deficit repair payments	0	0	0	0	0	**0**
Rates, licence fees and smart metering	35	35	35	35	35	**175**
Transmission exit charges	9	9	9	9	9	**46**
Financing costs	95	96	96	95	94	**475**
Equity issuance allowance	7	0	0	0	0	**7**
Taxation allowance	42	37	35	30	29	**173**
Total	**477**	**465**	**464**	**447**	**448**	**2,301**

Figure 9.2 RIIO-ED2 Revenue requirements - East Midlands

WPD Financial Projections for RIIO-ED2 - Revenue requirement (£million in 2020/21 prices)						
East Midlands	**2023/24**	**2024/25**	**2025/26**	**2026/27**	**2027/28**	**Total**
Fast pot costs	99	98	101	99	93	**490**
Depreciation on slow pot costs (RAV)	192	192	193	191	189	**958**
Pension deficit repair payments	0	0	0	0	0	**0**
Rates, licence fees and smart metering	34	34	34	34	34	**169**
Transmission exit charges	9	9	9	9	9	**44**
Financing costs	96	97	97	97	97	**484**
Equity issuance allowance	7	0	0	0	9	**15**
Taxation allowance	40	35	33	29	31	**169**
Total	**477**	**465**	**467**	**459**	**461**	**2,329**

Figure 9.3 RIIO-ED2 Revenue requirements - South Wales

WPD Financial Projections for RIIO-ED2 - Revenue requirement (£million in 2020/21 prices)						
South Wales	**2023/24**	**2024/25**	**2025/26**	**2026/27**	**2027/28**	**Total**
Fast pot costs	55	54	60	55	55	**279**
Depreciation on slow pot costs (RAV)	89	89	88	89	88	**443**
Pension deficit repair payments	0	0	0	0	0	**0**
Rates, licence fees and smart metering	16	16	16	16	16	**79**
Transmission exit charges	7	7	7	7	7	**35**
Financing costs	46	47	48	49	50	**241**
Equity issuance allowance	3	0	0	5	0	**8**
Taxation allowance	18	14	14	14	11	**72**
Total	**233**	**227**	**234**	**236**	**227**	**1,157**

Figure 9.4 RIIO-ED2 Revenue requirements - South West

WPD Financial Projections for RIIO-ED2 - Revenue requirement (£million in 2020/21 prices)						
South West	**2023/24**	**2024/25**	**2025/26**	**2026/27**	**2027/28**	**Total**
Fast pot costs	85	85	93	87	85	**434**
Depreciation on slow pot costs (RAV)	131	132	131	132	132	**658**
Pension deficit repair payments	0	0	0	0	0	**0**
Rates, licence fees and smart metering	23	23	23	23	23	**114**
Transmission exit charges	6	6	7	7	7	**33**
Financing costs	70	73	75	77	78	**373**
Equity issuance allowance	5	0	0	8	0	**13**
Taxation allowance	27	23	22	23	18	**112**
Total	**347**	**341**	**351**	**356**	**342**	**1,737**

Figure 9.5 RIIO-ED2 Revenue requirements - WPD Total

WPD Financial Projections for RIIO-ED2 - Revenue requirement (£million in 2020/21 prices)						
WPD Total	**2023/24**	**2024/25**	**2025/26**	**2026/27**	**2027/28**	**Total**
Fast pot costs	332	331	349	330	328	**1,670**
Depreciation on slow pots costs (RAV)	608	607	606	602	595	**3,017**
Pension deficit repair payments	0	0	0	0	0	**0**
Rates, license fees and smart metering	107	107	108	107	107	**537**
Transmission exit charges	31	31	32	32	32	**158**
Financing costs	307	312	317	319	319	**1,573**
Equity issuance allowance	21	0	0	13	9	**43**
Taxation allowance	128	109	104	97	89	**526**
Total	**1,534**	**1,498**	**1,516**	**1,498**	**1,478**	**7,524**

Business financing objectives

9.11. Investment in electricity distribution networks is essential to maintain the industry leading standards of performance our customers expect in terms of reliability and security of supplies and to deliver the UK's net zero commitments. Our Business Plan sets out a need for continued and significant investment in our network. Ofgem's statutory duty to ensure that an efficient company can finance its activities is key to ensuring companies are able to make this necessary future investment[1]. RIIO-ED2 must ensure electricity distribution companies remain attractive to investors who have a range of opportunities across the world in which they can invest.

9.12. 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.

9.13. 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 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[3].
- FFO/Net Debt.
- RCF/Net Debt.

9.14. Ofgem set out its approach to assessing financeability in 2019[4], 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.
- Carrying out sensitivity testing to assess the resilience of financial ratios under different scenarios.

9.15. We consider Ofgem's approach to financeability and following rating agency methodologies as the minimum financeability requirements. Later in this chapter we set out further financeability considerations.

[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-2: 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] Financeability Assessment for RIIO-2: Further Information; Ofgem slide pack, 26 March 2019.

9.16. 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 Moody's Investors Service or BBB (low) or higher by DBRS Rating Limited. The credit ratings presented in figures 9.8 to 9.11 and 9.16 to 9.19 are those generated by Ofgem's Business Plan Financial Model (BPFM).

9.17. However, the credit ratings derived from the model are only one consideration. 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 demonstrate 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

9.18. Ofgem stated in the RIIO-2 SSMD for Gas and Transmission companies that it would not target a particular rating, and that this was a decision for company boards[5].

9.19. We have adopted a target credit rating of BBB+/Baa1 for the notional company in RIIO-ED2, because:

- In RIIO-ED1, Ofgem calculates the 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 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."[6]
- A rating of BBB+/Baa1 allows a level of resilience to withstand unforeseen market shocks, without the loss of investment grade status.
- In addition, in its Summary of Final Determinations for the recent water companies' price control appeal, the CMA uses the iBoxx A/BBB benchmark over 15- and 20-year trailing averages as a cross check for its estimates for embedded debt and sets an allowance for new debt costs relative to an iBoxx A/BBB 10+ benchmark[7]. Further, the CMA performed its own financeability analysis with reference to a Baa1 target in its Provisional Findings[8].
- The adoption of a lower credit rating for the RIIO-ED2 financeability assessment while 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.
- It would be imprudent to target a weaker rating given the significant RIIO-ED2 investment programme and the need to attract this investment.

Ofgem's working assumptions

9.20. Ofgem set out its working assumptions for the RIIO-ED2 price control in the March 2021 SSMD[9] which included:

Figure 9.6 SSMD 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

[5] RIIO-2 Sector Specific Methodology Decision – Finance, 24 May 2019, p. 92 (para 4.27).
[6] 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
[7] 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
[8] 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
[9] RIIO-ED2 Sector Specific Methodology Decision: Annex 3 Finance, 11 March 2021. https://www.ofgem.gov.uk/system/files/docs/2021/03/riio_ed2_ssmd_annex_3_finance.pdf

9.21. Ofgem's document "Financeability Assessment for RIIO-2: Further Information"[10] 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.

9.22. We note that Ofgem considers that refinancing existing debt is an option available to licensees to resolve potential financeability issues. While 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 4, 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 where this is efficient. We regularly look at refinancing existing (more expensive) debt but this has not been an efficient option in RIIO-ED1; nor will it be in RIIO-ED2. Ofgem has a duty to ensure that efficient companies are able to finance their investment and, if the current working assumptions do not allow for this, then approaches other than refinancing expensive debt should be considered.

9.23. Ofgem's decision letter following the 2011 consultation on asset lives and the decision to use an average expected economic asset life of 45 years for new assets stated that the RIIO approach of using economic lives to determine the regulatory depreciation profile represents a sustainable long term policy. We want to ensure that our Business Plan is financeable without the need to make changes to asset lives, and set out further detail on this issue in the Asset Lives section of this chapter.

Financial ratios used in financeability analysis

9.24. Each rating agency uses a slightly different methodology to rate companies. However, the fundamental key financial ratios used will be common to all rating agencies. Moody's 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 Moody's when assessing DNOs. We will therefore target credit ratios at all four DNOs, in the long run, that are at the higher end of the Baa1-Baa2 range in order to provide resilience against macro downside movements. However, as demonstrated in the credit ratios under Ofgem's and WPD's scenarios below, this is not achieved in all circumstances. Therefore our proposal, which incorporates the latest market information, results in credit ratings at the lowest end of the required range for financeability. It is essential that an incentive package is available in RIIO-ED2, to offer opportunities for companies that are performing well to earn rewards and not only present further downside risk to returns.

Figure 9.7 Moody's 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 above as published in Moody's 'Regulated Electric and Gas Networks methodology scorecard published in March 2017'[11].
Note: Moody's states that a deterioration in the secondary ratios will not, in isolation, result in downward rating pressure.

9.25. Maintaining a good investment grade is important. Recent shocks in the supplier market have seen Ofgem call on licensees to provide some financial support to suppliers to prevent further supplier failure. A similar call was made during the height of the Covid pandemic. Licensees have only been able to provide some support in RIIO-ED1 due to the ratings we currently have.

9.26. As stated above, credit rating ratios should not be the sole influence on the RIIO-ED2 financing package. Credit rating agencies also 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.

[10] Financeability Assessment for RIIO-2: Further Information; Ofgem slide pack, 26 March 2019.
[11] Slide 16, Moodys Investors Service, UK Energy Networks, EMEA infrastructure Finance Team, 9 September 2020.

Financial ratios calculated using Ofgem's working assumptions

9.27. 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 View of RIIO-ED2 expenditure. As in RIIO-ED1, WPD will align its gearing level with Ofgem's notional 60% gearing every year. However, Ofgem's notional modelling approach only resets to 60% if gearing exceeds 65%. Included below are the results of modelling Ofgem's base case scenario with notional financeability.

Figure 9.8 Financial ratios, Ofgem base case (notional) - West Midlands

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)	60.39%	61.20%	62.05%	62.52%	63.31%	**61.89%**
Adjusted interest cover ratio (AICR)	1.37	1.37	1.38	1.39	1.41	**1.39**
FFO to interest (including accretions)	3.86	3.82	3.80	3.78	3.76	**3.80**
FFO/Net debt	13.11%	12.40%	11.80%	11.23%	10.54%	**11.81%**
Retained cash flow (RCF)/Net debt	10.61%	9.95%	9.39%	8.83%	8.17%	**9.39%**

Figure 9.9 Financial ratios, Ofgem base case (notional) - East Midlands

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)	60.73%	61.74%	62.84%	63.73%	64.32%	**62.67%**
Adjusted interest cover ratio (AICR)	1.37	1.36	1.36	1.37	1.39	**1.37**
FFO to interest (including accretions)	3.78	3.73	3.70	3.67	3.67	**3.71**
FFO/Net debt	12.68%	12.00%	11.33%	10.72%	10.25%	**11.39%**
Retained cash flow (RCF)/Net debt	10.19%	9.56%	8.95%	8.36%	7.91%	**8.99%**

Figure 9.10 Financial ratios, Ofgem base case (notional) - South Wales

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)	61.54%	63.15%	65.18%	61.54%	62.88%	**62.86%**
Adjusted interest cover ratio (AICR)	1.36	1.34	1.32	1.43	1.43	**1.38**
FFO to interest (including accretions)	3.66	3.52	3.40	3.60	3.53	**3.54**
FFO/Net debt	11.94%	10.99%	9.94%	10.33%	9.61%	**10.56%**
Retained cash flow (RCF)/Net debt	9.49%	8.61%	7.64%	7.91%	7.23%	**8.18%**

Figure 9.11 Financial ratios, Ofgem base case (notional) - South West

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)	61.62%	63.42%	65.51%	61.71%	63.09%	**63.07%**
Adjusted interest cover ratio (AICR)	1.38	1.36	1.34	1.44	1.44	**1.39**
FFO to interest (including accretions)	3.58	3.44	3.31	3.51	3.43	**3.45**
FFO/Net debt	11.58%	10.61%	9.56%	9.93%	9.24%	**10.19%**
Retained cash flow (RCF)/Net debt	9.13%	8.24%	7.27%	7.52%	6.87%	**7.81%**

9.28. The AICR above for each of the WPD DNOs, taken from Ofgem's model, is a value of 1.39 or below for each WPD licensee on average over RIIO-ED2. According to the Moody's ratios we set out at figure 9.7, this would place all four WPD DNOs in the mid-range of the Baa2-Baa1 category (1.6x–1.2x).

9.29. The FFO/Net debt ratio above for each of the WPD DNOs, taken from Ofgem's model, ranges from 10.19% to 11.81% for WPD licensees on average over RIIO-ED2. Again, according to the Moody's ratios, this would place all four WPD DNOs towards the bottom, or even below the bottom, of the range of the Baa2-Baa1 category (11% – 18%).

9.30. The outcome of the financeability metrics above is significantly below WPD's stated ratio target of the higher end of the range of the Baa values shown in the table of Moody's ratios. We note that the majority of the ratios demonstrate deterioration over the period; this position may indicate further financial problems for future price controls. It should also be noted that AICR is one of Moody's two primary ratios, and also that these ratios represent Ofgem's financeability base case, i.e. ratios could deteriorate further under the stress scenarios below.

Ofgem's suggested set of common stress test scenarios

9.31. In its Sector Specific Methodology Consultation document for Gas and Transmission companies, Ofgem stated that it expects all network companies to run the scenarios below as a minimum[12]. 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%
Return on Regulatory Equity (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.

9.32. Ofgem 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 RoRE is also a key measure for investors and it is vital that our Business Plan is both financeable and, fundamentally, attractive enough to investors to generate the necessary investment.

9.33. Moody's 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 judgement on allowed returns for the distribution companies may limit investor appetite, and that investors consider 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.

9.34. 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 these. Ofgem's current, and limited, proposals for the RIIO-ED2 incentive package do not present a range of opportunities linked to customer deliverables and are largely focused on downside adjustments to returns. It is clear that, as a result of this focus on downside adjustments, the likelihood of the stress test scenarios above is not symmetrical, but that there is currently a significantly greater likelihood of the RoRE downside scenario occurring than the RoRE upside scenario.

Additional stress tests WPD considers are needed

Baseline scenario

9.35. Chapter 6 of the Business Plan sets out the level of expenditure WPD is proposing in our baseline view of expenditure, excluding the impact of the Access SCR. Our Business Plan facilitates the government's net zero targets and is based on our intensive stakeholder engagement process. Our baseline view is therefore the level of expenditure which our stakeholders have told us they consider to be the most appropriate level of investment.

[12] Paragraph 4.80 and table 19, p.96, RIIO-2 Sector Specific Methodology Decision – Finance, 24 May 2019.

Sharing factors

9.36. We have not received any further clarification from Ofgem in relation to sharing factors since the publication of our third Business Plan in July 2021. Our Business Plan is based on a sharing factor of 50%, which is the rate we propose Ofgem should adopt for all our expenditure. We have been transparent about our expenditure requirement, all of which has high confidence and is necessary to deliver the net zero future for our customers.

Outcome of Ofgem stress test scenarios

9.37. The full results of these stress tests are set out in Appendix A01 to the Supplementary Annex SA09: Financing our plan. AICR deteriorates to a range of 1.00-1.02 for WPD licensees on average over RIIO-ED2 under the low RoRE scenario. This is significantly below the lower bound of 1.2x for Baa2 in Moody's ratios (figure 9.7).

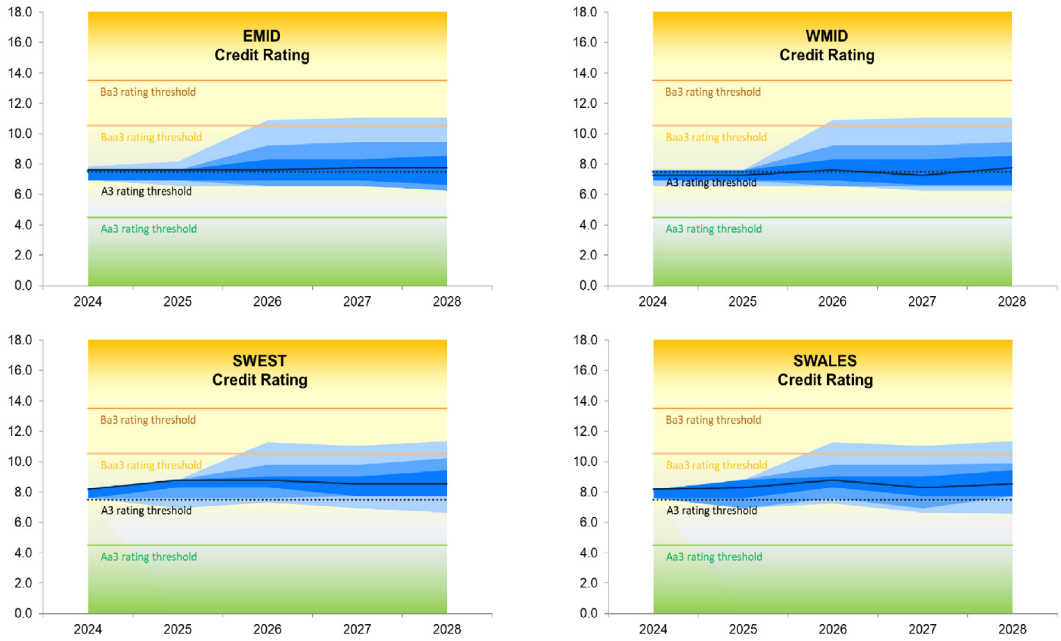
9.38. It is important to recognise the significant additional risks WPD would be taking on with the high levels of expenditure we have proposed. Significant additional expenditure will be subject to uncertainty mechanisms in RIIO-ED2 with the resulting increased risk that additional allowances to recover such expenditure are not received, or are inadequate, resulting in a Totex overspend against allowances. Further, there is a significant amount of expenditure, such as the Access SCR expenditure, which Ofgem has said will be subject to an uncertainty mechanism, as the charging arrangements are still subject to consultation.

9.39. We asked NERA to perform stochastic analysis to assess the impact of a range of different scenarios on WPD's licensees. NERA's full report is included in Appendix A03 to the Supplementary Annex SA09: Financing our plan. It demonstrates that there is a substantial downside risk on credit ratings, including the risk of sub-investment grade rating as early as 2025/26 in RIIO-ED2 for all of the WPD DNOs. The charts in figure 9.13 show the results of NERA's stochastic analysis for WPD. Note that NERA has made adjustments and corrections to Ofgem's model to derive the results below, as set out in its report:

Figure 9.13 Extract from NERA report: Scenario 1: Ofgem March 2021 SSMD financial parameters

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, natural capitalisation rate.



NERA's report concluded that:

"Ofgem's March 2021 SSMD financial parameters create substantial 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."

9.40. In light of the above, and without further downside adjustments, our proposed financing assumptions in the following section should enable the significant investment required to address the challenges RIIO-ED2 will bring, including the transition to net zero, while addressing the risks and uncertainty within the RIIO-ED2 price control.

WPD's proposed assumptions, having evaluated Ofgem's SSMD Finance Annex proposals

9.41. WPD is proposing its own set of financing assumptions for RIIO-ED2 and we include an overview of these in this chapter. Further information is included in the Supplementary Annex SA09: Financing our plan and Appendices of this Business Plan.

Cost of debt

9.42. We are not proposing an alternative to Ofgem's cost of debt methodology at this stage. However, we do not consider that Ofgem's working assumption for cost of debt adequately covers additional costs which have to be incurred when borrowing. There is also no recognition of further additional costs for smaller companies. In Appendix A05 of our Supplementary Annex SA09: Financing our plan we include a NERA report commissioned by the ENA which provides evidence that additional costs of borrowing are in the range of 38-48 bps, compared to Ofgem's 25 bps assumption, with an additional 6 bps required to reflect the small company premia licensees face[13]. WPD's financing assumptions therefore include an additional 13 bps on Ofgem's cost of debt working assumption for additional costs of borrowing, to cover the difference between the 25 bps in Ofgem's working assumption and 38 bps, the lowest point of the range proposed by NERA, excluding any allowance for small company premium.

9.43. 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 the 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 essential this additional risk is recognised by ensuring adequate headroom in any financeability assessment.

Cost of equity

9.44. Since our first submission Business Plan, WPD has commissioned Frontier Economics to provide an updated estimate for the range of our cost of equity over RIIO-ED2, taking into account the recent RIIO-2 determinations as well as other recent regulatory precedent, and up to date market data. Frontier's report is presented in Appendix A04 to the Supplementary Annex SA09: Financing our plan[14] and has been considered as part of our overall cost of capital estimate. In summary, we consider that the appropriate cost of equity for RIIO-ED2 is 4.96%.

Outperformance adjustment

9.45. As we have stated in all of our responses to Ofgem's methodology consultation for RIIO-ED2, we disagree with Ofgem's proposed reduction of 25 bps to the cost of equity for future outperformance.

9.46. In the recent RIIO-2 appeals by the gas distribution and transmission companies the CMA found in favour of all appellants that the Gas and Electricity Markets Authority (GEMA)[15] was wrong to impose the outperformance wedge, stating the following: "Our view is that GEMA has not demonstrated sufficiently why the extensive set of tools it used for RIIO-2 should be regarded as providing insufficient protection for customers"[16].

9.47. The CMA found errors in GEMA's analysis of the "extent to which operational outperformance in RIIO-2 should be probable", and stated that even if concerns about outperformance had been substantiated, 'the outperformance wedge would be a poorly designed mechanism to address these concerns"[16]. Further, the CMA also recognised that the outperformance wedge "might undermine broader regulatory certainty which could result in increased costs to consumers over time"[16]. As a result, the CMA ordered that the decision to introduce the outperformance wedge should be quashed.

9.48. Ofgem's current working assumptions for RIIO-ED2 still deduct an outperformance wedge of 25 bps from the cost of equity of 4.65% to arrive at a cost of equity of 4.4% as set out in figure 9.6. Note that Ofgem's BPFM also includes an outperformance revenue stream equivalent to the additional 0.25% return on equity, which Ofgem assumes companies will earn. WPD's financing proposals do not include any outperformance wedge in our cost of equity or corresponding outperformance revenue stream.

[13] Additional costs of borrowing and small company premium at RIIO-ED2, NERA, 15 June 2021.
[14] Cost of Equity Assessment for RIIO-ED2, An updated report prepared for WPD, Frontier Economics, 16 November 2021.
[15] Ofgem is governed by GEMA.
[16] p.7, CMA, RIIO-2 Energy Licence Modification Appeals, Summary of final determination, Issued: 28 October 2021.

Aiming up

9.49. 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 Economics paper appended to our Business Plan[17], 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 customer 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 supply as a result of under investment.

9.50. The CMA 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[18]. Frontier's report also states "we consider that for the electricity distribution networks…both the need to attract investment and the harm from failure to invest are likely to be greater than in water"[19].

9.51. It is important that Ofgem recognises the additional risk in the electricity distribution sector compared to the gas and transmission RIIO-2 price controls, given the level of investment required to deliver net zero, the focus on downside only incentives, the level of uncertainty mechanisms in RIIO-ED2 and the significant potential changes in the sector (e.g. Ofgem's proposals for Access SCR). Consequently, there is a need to aim up when setting the cost of equity, given the need to secure finance in the sector. End customers are key to ensuring the UK gets to net zero and therefore investment in the distribution network is fundamental to ensuring this can be achieved.

9.52. Considering all these factors outlined above, figure 9.14 shows WPD's proposed financial parameters for RIIO-ED2.

Figure 9.14 WPD's proposed financial parameters

Parameter	WPD proposed financial parameters, CPIH real
Gearing	60%
Cost of debt	2.217% average for 2023/24-2027/28 period
Cost of equity	4.96% average for 2023/24-2027/28 period
Cost of capital	3.314% average for 2023/24-2027/28 period

Cost of equity calculation

9.53. We have based our cost of equity assumption above based on a triangulation approach; 4.96% is the mid-point of the range derived in Frontier's report, but also equivalent to the Ofgem working assumption of 4.65% (before the deduction of the outperformance wedge) with an additional 31 bps for aiming up, noting that 31 bps for aiming up is lower than the 40 bps Frontier proposes in its report. Note this proposal is supported by the CMA's redetermination of the PR19 cost of equity of 4.73%, once the additional sector risks and the need for significant investment in the electricity distribution sector due to net zero are taken into account.

Figure 9.15 WPD's cost of equity components

WPD cost of equity components	Low	High
Notional gearing	60%	60%
Observed gearing	50%	44%
Risk-free-rate	-1.61%	-0.65%
Equity risk premium	7.91%	7.55%
Total market return	6.3%	6.9%
Debt beta	0.075	0.075
Equity beta	0.76	0.82
Post-tax cost of equity	**4.37%**	**5.54%**
Mid-point	**4.96%**	

[17] Further analysis of Ofgem's proposal to adjust baseline returns, A report prepared for the ENA, Frontier Economics, September 2020.
[18] 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.
[19] p.5, Cost of Equity Assessment for RIIO-ED2, An updated report prepared for WPD, Frontier Economics, 16 November 2021.

9.54. The detail behind the above parameters is set out in Frontier's report. Key assumptions include:

- 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 six month period.
- The range for total market return has been calculated using the historic ex post approach, considering a number of averaging methods, holding periods and two methods for deflating nominal historical returns. This also takes account of the CMA's recent judgement at the RIIO GD2/T2 appeals and its analysis from PR19 determinations.
- 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.

9.55. The key results of the financeability assessment on a notional basis, using WPD's own financing parameters, generated from Ofgem's financial model, are presented in figures 9.16 – 9.19.

Figure 9.16 Financial ratios under WPD assumptions (notional) - 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)	60.86%	62.18%	63.53%	64.62%	65.94%	**63.43%**
Adjusted interest cover ratio (AICR)	1.41	1.40	1.39	1.39	1.39	**1.39**
FFO to interest (including accretions)	4.00	3.93	3.91	3.76	3.79	**3.88**
FFO/Net debt	13.27%	12.45%	11.75%	11.04%	10.28%	**11.76%**
Retained cash flow (RCF)/Net debt	10.28%	9.54%	8.96%	7.93%	7.51%	**8.84%**

Figure 9.17 Financial ratios under WPD assumptions (notional) - 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)	61.17%	62.67%	64.23%	65.64%	61.25%	**62.99%**
Adjusted interest cover ratio (AICR)	1.41	1.39	1.37	1.37	1.50	**1.41**
FFO to interest (including accretions)	3.96	3.88	3.86	3.77	4.01	**3.90**
FFO/Net debt	12.85%	12.07%	11.33%	10.62%	11.25%	**11.62%**
Retained cash flow (RCF)/Net debt	10.02%	9.27%	8.76%	7.94%	8.11%	**8.82%**

Figure 9.18 Financial ratios under WPD assumptions (notional) - 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)	61.98%	64.11%	66.54%	62.08%	63.99%	**63.74%**
Adjusted interest cover ratio (AICR)	1.40	1.36	1.33	1.46	1.44	**1.40**
FFO to interest (including accretions)	3.84	3.65	3.63	3.80	3.68	**3.72**
FFO/Net debt	12.12%	11.06%	9.96%	10.53%	9.69%	**10.67%**
Retained cash flow (RCF)/Net debt	9.37%	8.22%	7.71%	7.72%	6.88%	**7.98%**

Figure 9.19 Financial ratios under WPD assumptions (notional) - 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)	62.04%	64.29%	66.75%	62.21%	64.14%	**63.89%**
Adjusted interest cover ratio (AICR)	1.42	1.38	1.35	1.47	1.45	**1.41**
FFO to interest (including accretions)	3.79	3.63	3.60	3.77	3.62	**3.68**
FFO/Net debt	11.77%	10.71%	9.63%	10.16%	9.35%	**10.33%**
Retained cash flow (RCF)/Net debt	9.11%	8.14%	7.59%	7.58%	6.66%	**7.82%**

9.56. Under WPD's own finance assumptions, i.e. using WPD's proposed cost of equity and cost of debt and removing Ofgem's 25 bps expected outperformance adjustment, NERA's modelling shows that the downside risk on rating compared to the Ofgem assumptions is mitigated to an extent, however they do not eliminate this risk fully (see NERA statement on page 12 in Supplementary Appendix SA-03 to Supplementary Annex SA-09). We also note that the BPFM incorrectly applies the excess fast money adjustment when calculating FFO/Net debt, as highlighted in the NERA report. The result of this issue is that the FFO/Net debt ratios presented above, under WPD's own financing assumptions, are understated.

WPD's proposed Totex capitalisation and depreciation rates

Totex capitalisation rates

9.57. 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.

9.58. The natural capitalisation rate for WPD's licensees for RIIO-ED2 ranges from 77.5% to 81.0%, varying by year and by licensee depending upon the mix of work. This Business Plan, models the Ofgem base case using WPD's natural capitalisation rate.

9.59. Our current assumption is that 75% of Totex will be added to the Regulatory Asset Value (RAV) (i.e. as slow pot costs). This is a slight decrease from WPD's 80% regulatory capitalisation rate in RIIO-ED1, where WPD's RIIO-ED1 capitalisation rate is the highest of all the electricity distribution networks. This slight downwards shift aligns WPD more closely with the rest of the electricity distribution sector and is reflective of the greater levels of expenditure on shorter lived assets associated with, for example, DSO and flexibility which facilitate analysis, information provision and more efficient operation of the whole system. This also aligns with our natural capitalisation rate at the end of RIIO-ED1, which is approximately 75%.

9.60. Using WPD's proposed capitalisation rate of 75% has improved 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 to ensure that our plan is financeable.

9.61. It should also be noted that decreasing capitalisation rates does not provide WPD with any additional income over the life of the asset; it is simply a change to the proportion of revenue recovered as fast pot versus slow pot.

Asset lives

9.62. 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, while all existing assets continue to be depreciated over the current lives of 20 - 45 years depending upon the year of investment.

9.63. As stated above, asset lives are one of the levers Ofgem lists which can be used to improve financeability. In January 2011, Ofgem consulted on regulatory asset lives for electricity distribution assets; the outcome of this consultation was a decision to use an average expected economic asset life of 45 years for new assets from the commencement of RIIO-ED1. As part of this review, Ofgem stated that, in the longer term, electricity distribution asset lives should more closely reflect the useful or economic asset life[20]. 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.

9.64. 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.

9.65. 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. 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.

[20] 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

Evolution of the Regulatory Asset Value (RAV)

9.66. 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.

Figure 9.20 Evolution of the RAV - West Midlands

Evolution of the RAV - West Midlands (£million in 2020/21 prices)	2023/24	2024/25	2025/26	2026/27	2027/28
Opening RAV	2,706	2,790	2,878	2,971	3,046
Additions	279	282	287	265	285
Depreciation	-196	-194	-194	-190	-186
Closing RAV	**2,790**	**2,878**	**2,971**	**3,046**	**3,145**

Figure 9.21 Evolution of the RAV - East Midlands

Evolution of the RAV - East Midlands (£million in 2020/21 prices)	2023/24	2024/25	2025/26	2026/27	2027/28
Opening RAV	2,713	2,817	2,920	3,030	3,136
Additions	297	295	303	296	280
Depreciation	-192	-192	-193	-191	-189
Closing RAV	**2,817**	**2,920**	**3,030**	**3,136**	**3,227**

Figure 9.22 Evolution of the RAV - South Wales

Evolution of the RAV - South Wales (£million in 2020/21 prices)	2023/24	2024/25	2025/26	2026/27	2027/28
Opening RAV	1,287	1,363	1,436	1,528	1,605
Additions	165	162	180	166	164
Depreciation	-89	-89	-88	-89	-88
Closing RAV	**1,363**	**1,436**	**1,528**	**1,605**	**1,681**

Figure 9.23 Evolution of the RAV - South West

Evolution of the RAV - South West (£million in 2020/21 prices)	2023/24	2024/25	2025/26	2026/27	2027/28
Opening RAV	1,976	2,099	2,222	2,369	2,499
Additions	254	254	278	262	254
Depreciation	-131	-132	-131	-132	-132
Closing RAV	**2,099**	**2,222**	**2,369**	**2,499**	**2,621**

Dividend and equity issuance policies

Dividends

9.67. We note that Ofgem has set a working assumption of a 3% dividend yield, which differs from the RIIO-ED1 assumption of a 5% dividend yield, and does not align with investor expectations of stable dividend growth.

9.68. From 14 June 2021, WPD has been part of National Grid plc, which generates value for investors through a combination of dividend yield and asset growth. In a recent National Grid equity shareholder survey, all respondents stated that the National Grid plc dividend policy to grow the ordinary dividend per share at least in line with the rate of inflation each year for the foreseeable future was an important part of their investment decision. This demonstrates the fact that the level of dividend pay-out is closely monitored by National Grid's shareholders and the wider investment community to assess its sustainability and relative attractiveness within National Grid's peer group and relative to the wider equity market.

9.69. Between January 2009 and August 2019, listed utilities in the UK averaged a 5.3% dividend yield with the FTSE above 4%. Changes to the regulatory model that increase cash generation at the expense of asset growth, such as the move from RPI to CPIH inflation, lead to investors expecting a higher dividend yield in the RIIO-2 period.

9.70. The prominence of the dividend policy in regulated utilities is explained by the long asset lives relative to other UK listed peers, as well as the regulatory price controls that set their revenues. A consistent dividend policy provides confidence to investors of the regulatory commitment to allow equity investors to recover their initial investment and earn a stable return over the long term. Any significant change in the level of yield would cause equity investors to question the place of National Grid as a yield stock within their portfolio and reallocate capital elsewhere in the FTSE or to regulated utilities in other jurisdictions and may lead to a 'flight from equity' such as that experienced after the PR19 regulatory agreement in the water sector.

9.71. Investors will also be aware of the wider political environment in the UK, for example since the vote to leave the European Union there were net outflows from UK equities of around 10%. This move from UK equities has been reflected within the regulated energy sector with a reduction in share prices of National Grid (9%), Centrica (66%), and SSE (17%) over the same period.

9.72. We therefore target a 5% dividend yield, consistent with the RIIO-ED1 assumption and consistent with National Grid Electricity and Gas Transmission. The forecast dividend payments included in our plan are set out below:

Figure 9.24 Forecast dividends over the RIIO-ED2 period

Dividends (£million in nominal prices)	2023/24	2024/25	2025/26	2026/27	2027/28
West Midlands	60	63	66	70	73
East Midlands	60	64	68	71	75
South Wales	29	31	34	36	39
South West	44	48	52	56	61
WPD Total	**193**	**206**	**220**	**234**	**248**

'Community Matters' fund

9.73. In Chapter 2, we set out details of our proposal for an annual 'Community Matters' Fund and supporting schools with the installation of solar PV equipment both of which are consumer value propositions. Given that these proposals will be funded entirely by shareholders, there are no costs of this included in our RIIO-ED2 expenditure; rather these projects will be funded out of shareholder returns.

Equity issuance

9.74. As set out in our sources and uses tables in figures 9.26 – 9.30, we have assumed equity contributions are made where necessary as part of our Business Plan under our actual company modelling. We also note that 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. In addition, the modelling of WPD's specific scenario in the BPFM results in further equity issuances for East Midlands in 2027/28, and for South Wales and South West in 2026/27, and the modelling of the Ofgem Base case scenario in the BPFM results in the need for further equity issuances for South Wales and South West in 2026/27, in both cases to bring gearing back down to 60% where it would otherwise exceed 65%.

Gearing

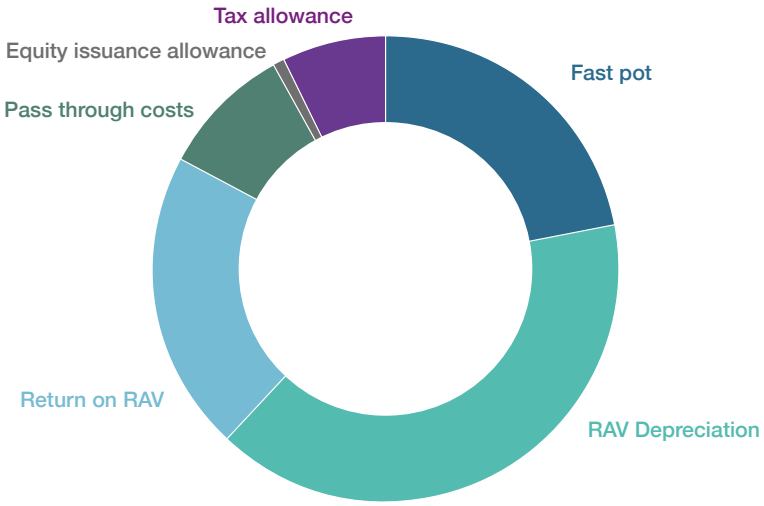
9.75. As during RIIO-ED1, WPD intends to ensure that our gearing is aligned to Ofgem's notional gearing level. We have considered the impact of different levels of gearing in our Business Plan. Lower levels of gearing require an injection of equity and, given the level of investment we will already need to raise in RIIO-ED2, we do not consider it realistic to propose a lower level of gearing than Ofgem's working assumption. When considering a higher gearing level, there are trade-offs between reductions in tax charges, and therefore tax allowances, from higher levels of gearing and consequent increased interest costs on the one hand, and increased equity risk and therefore increased equity financing costs on the other. In light of these considerations, we are supportive of Ofgem's working assumption proposal of 60%, which is a reduction from the current notional gearing of 65% in RIIO-ED1.

9.76. We also support Ofgem's inclusion of an equity issuance allowance, which will be required at the outset of RIIO-ED2 when gearing levels fall from the RIIO-ED1 level of 65% and when gearing rises above 65% during the price control.

WPD's revenue requirements for RIIO-ED2

9.77. Figure 9.25 presents the key components of WPD's average customer bill for RIIO-ED2.

Figure 9.25 Key components of WPD's customer bills



Sources and uses of cash during RIIO-ED2

9.78. 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. The tables below show the sources and uses of cash during RIIO-ED2 for our four DNOs.

Figure 9.26 Sources and uses of cash – West Midlands

Sources and uses of cash in RIIO-ED2 West Midlands (£million in nominal prices)	2023/24	2024/25	2025/26	2026/27	2027/28	Total
Sources of funds						
Revenues	533	530	540	530	542	2,676
New debt	94	98	104	95	115	506
Debt refinancing	0	400	250	0	0	650
Equity contribution (assumed)	27	46	45	37	52	206
Total sources of funds	**654**	**1,074**	**939**	**663**	**709**	**4,038**
Uses of funds						
Pass through costs	-49	-50	-52	-52	-53	-257
Operating costs	-89	-91	-93	-94	-96	-463
Capex	-328	-338	-352	-325	363	-1,706
Tax	-42	-42	-42	-37	-36	-199
Pension deficit	0	0	0	0	0	0
Interest	-86	-89	-85	-85	-87	-432
Dividends (5% real)	-60	-63	-66	-70	-73	-332
Maturing debt	0	-400	-250	0	0	-650
Total uses of funds	**-654**	**-1,074**	**-939**	**-663**	**-709**	**-4,038**

Figure 9.27 Sources and uses of cash – East Midlands

Sources and uses of cash in RIIO-ED2 East Midlands (£million in nominal prices)	2023/24	2024/25	2025/26	2026/27	2027/28	Total
Sources of funds						
Revenues	533	530	543	545	558	2,709
New debt	94	95	104	104	97	494
Debt refinancing	0	0	0	0	0	0
Equity contribution (assumed)	17	30	42	45	29	162
Total sources of funds	**643**	**655**	**690**	**693**	**684**	**3,365**
Uses of funds						
Pass through costs	-48	-49	-50	-51	-52	-248
Operating costs	-92	-94	-94	-97	-99	-476
Capex	-350	-355	-375	-372	-354	-1,805
Tax	-40	-39	-42	-38	-38	-198
Pension deficit	0	0	0	0	0	0
Interest	-53	-55	-60	-64	-67	-299
Dividends (5% real)	-60	-64	-68	-71	-75	-338
Maturing debt	0	0	0	0	0	0
Total uses of funds	**-643**	**-655**	**-690**	**-693**	**-684**	**-3,365**

Figure 9.28 Sources and uses of cash – South Wales

Sources and uses of cash in RIIO-ED2 South Wales (£million in nominal prices)	2023/24	2024/25	2025/26	2026/27	2027/28	Total
Sources of funds						
Revenues	261	259	272	280	275	1,346
New debt	67	66	81	74	76	364
Debt refinancing	0	0	0	0	0	0
Equity contribution (assumed)	20	31	43	28	36	157
Total sources of funds	**347**	**356**	**396**	**381**	**386**	**1,867**
Uses of funds						
Pass through costs	-26	-26	-27	-27	-28	-133
Operating costs	-52	-53	-55	-55	-56	-272
Capex	-193	-192	-224	-207	-209	-1,026
Tax	-16	-16	-17	-18	-14	-81
Pension deficit	-4	-6	-6	-2	-2	-20
Interest	-28	-31	-34	-35	-38	-166
Dividends (5% real)	-29	-31	-34	-36	-39	-169
Maturing debt	0	0	0	0	0	0
Total uses of funds	**-347**	**-356**	**-396**	**-381**	**-386**	**-1,867**

Figure 9.29 Sources and uses of cash – South West

Sources and uses of cash in RIIO-ED2 South West (£million in nominal prices)	2023/24	2024/25	2025/26	2026/27	2027/28	Total
Sources of funds						
Revenues	387	389	409	423	413	2,021
New debt	103	96	123	123	110	556
Debt refinancing	0	0	0	250	0	250
Equity contribution (assumed)	40	65	73	45	60	282
Total sources of funds	**531**	**549**	**605**	**841**	**584**	**3,109**
Uses of funds						
Pass through costs	-32	-33	-35	-35	-36	-171
Operating costs	-79	-80	-82	-83	-84	-409
Capex	-300	-307	-350	-331	-325	-1,612
Tax	-21	-23	-24	-25	-22	-116
Pension deficit	-7	-10	-10	-3	-3	-32
Interest	-48	-48	-52	-56	-53	-258
Dividends (5% real)	-44	-48	-52	-56	-61	-261
Maturing debt	0	0	0	-250	0	-250
Total uses of funds	**-531**	**-549**	**-605**	**-841**	**-584**	**-3,109**

Figure 9.30 Sources and uses of cash – WPD Total

Sources and uses of cash in RIIO-ED2 WPD Total (£million in nominal prices)	2023/24	2024/25	2025/26	2026/27	2027/28	Total
Sources of funds						
Revenues	1,714	1,708	1,764	1,778	1,789	8,752
New debt	358	355	413	396	398	1,920
Debt refinancing	0	400	250	250	0	900
Equity contribution (assumed)	104	172	203	154	175	807
Total sources of funds	**2,175**	**2,635**	**2,629**	**2,578**	**2,363**	**12,380**
Uses of funds						
Pass through costs	-155	-158	-163	-165	-169	-809
Operating costs	-312	-318	-325	-330	-336	-1,621
Capex	-1,170	-1,192	-1,301	-1,235	-1,251	-6,149
Tax	-119	-121	-125	-118	-110	-594
Pension deficit	-11	-15	-15	-5	-5	-52
Interest	-215	-224	-231	-241	-244	-1,155
Dividends (5% real)	-193	-206	-220	-234	-248	-1,101
Maturing debt	0	-400	-250	-250	0	-900
Total uses of funds	**-2,175**	**-2,635**	**-2,629**	**-2,578**	**-2,363**	**-12,380**

9.79. Note that figure 9.30 shows pension deficit repair contributions of £52 million. We are not asking for any further allowances in RIIO-ED2 to cover these.

Availability of capital

9.80. We will need to raise a significant amount of capital during RIIO-ED2 to fund our RIIO-ED2 Totex expenditure of approximately £6.7 billion (2020/21 prices; £7.8 billion opex and capex in nominal prices shown above), which will prove challenging. Significant capital markets exist in the UK, the United States and in Europe and other markets that ensure that, relative to the size of the markets, the capital to be raised should be modest and financeable, provided that the RIIO-ED2 allowed cost of capital, and the opportunity to earn incentive revenues, is set at an appropriate rate to attract this investment.

9.81. In its report 'Further analysis of Ofgem's proposal to adjust baseline returns'[21], Frontier 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 under investment which, in the energy sector, would have socio-economic implications including lower investment in LCTs, delays to net zero, curtailment costs, higher failure rates through older assets resulting in lost load and electricity not supplied.

9.82. 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. Given that the cost of equity is inherently unknown, aiming up is not, in fact, deliberately setting the return too high, rather it is reducing the risk of setting it too low.

Further details on the impact on customer bills

9.83. 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).
- Changes to Totex capitalisation and asset lives.

[21] Further analysis of Ofgem's proposal to adjust baseline returns", A report prepared for the ENA, Frontier Economics, September 2020.

9.84. Our current calculations estimate that the impact of the increased expenditure set out in WPD's baseline expenditure would result in an approximate £3.37 annual increase on the average WPD domestic bill in RIIO-ED2, if all other elements of the price control were unchanged. The impact ranges between £1.03 and £7.00 for each licence area, based on stakeholder required expenditure as set out in Chapter 6. However, based on our latest analysis, this increase is broadly 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 WPD RIIO-ED2 domestic customer bill broadly in line with the end of RIIO-ED1 after adjusting for macro-economic changes outside of our control as shown in figure 9.41.

Figure 9.31 Impact of Totex on RIIO-ED2 Average Domestic Bill – West Midlands – 2020/21 prices

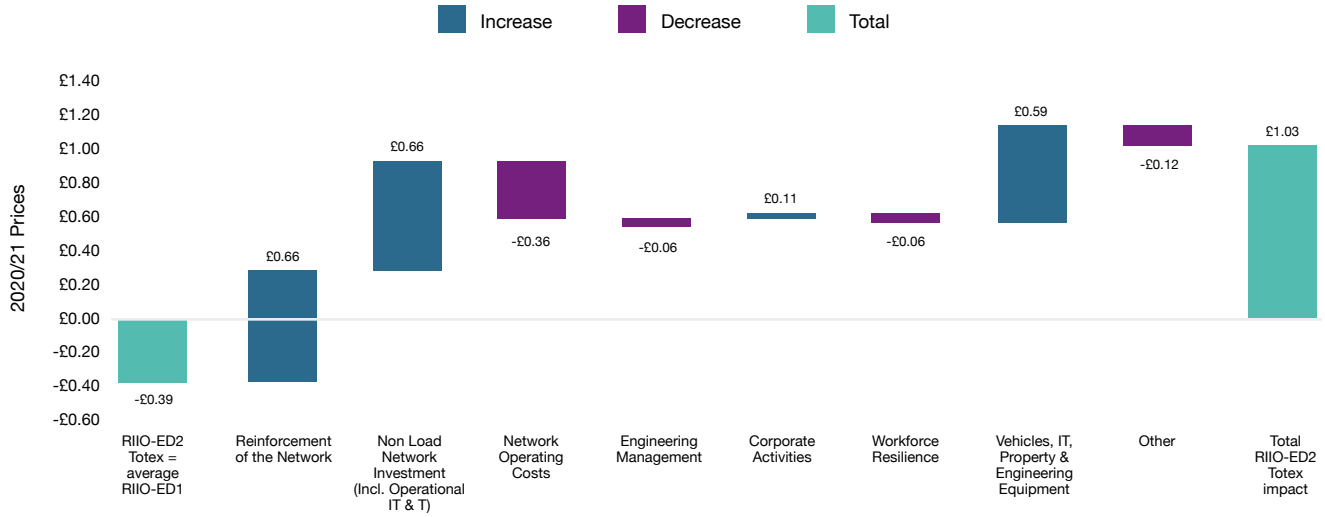


Figure 9.32 Impact of Totex on RIIO-ED2 Average Domestic Bill – East Midlands – 2020/21 prices

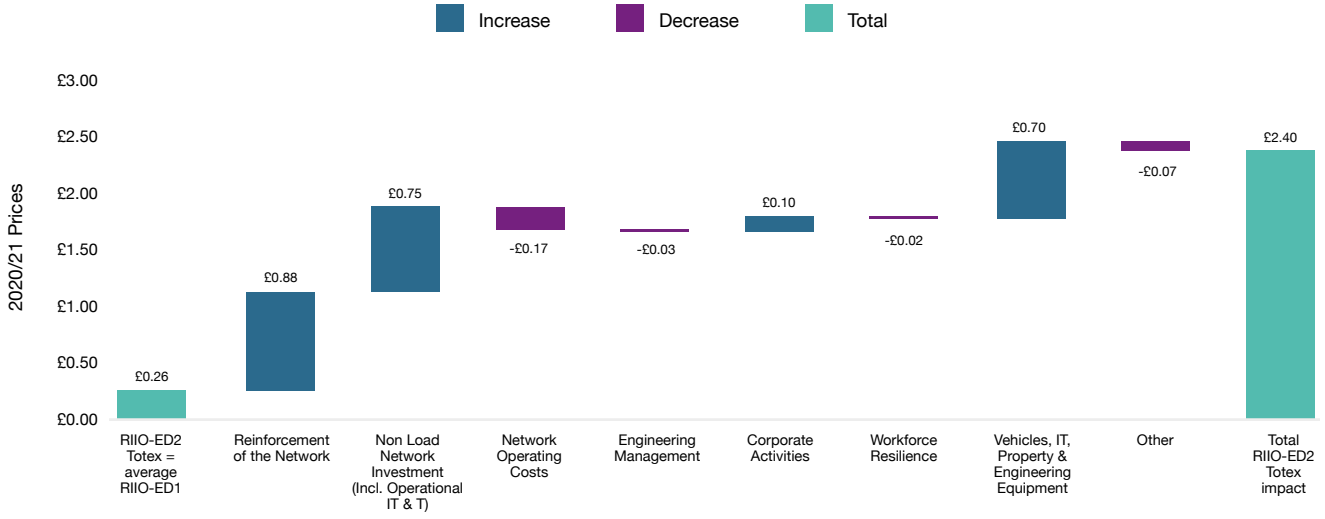


Figure 9.33 Impact of Totex on RIIO-ED2 Average Domestic Bill – South Wales – 2020/21 prices

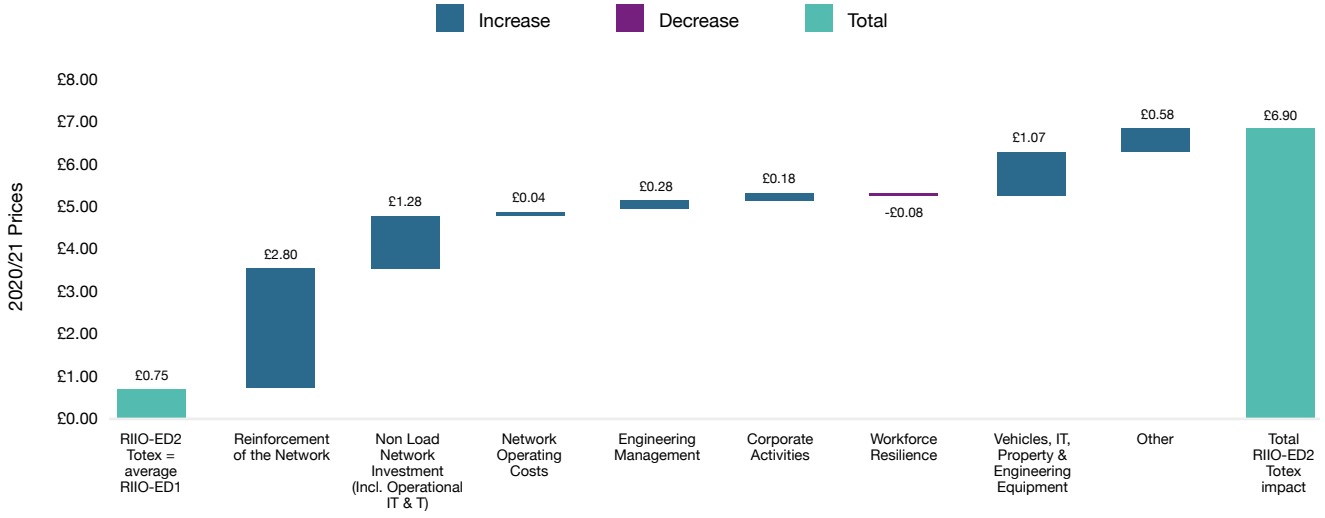


Figure 9.34 Impact of Totex on RIIO-ED2 Average Domestic Bill – South West – 2020/21 prices

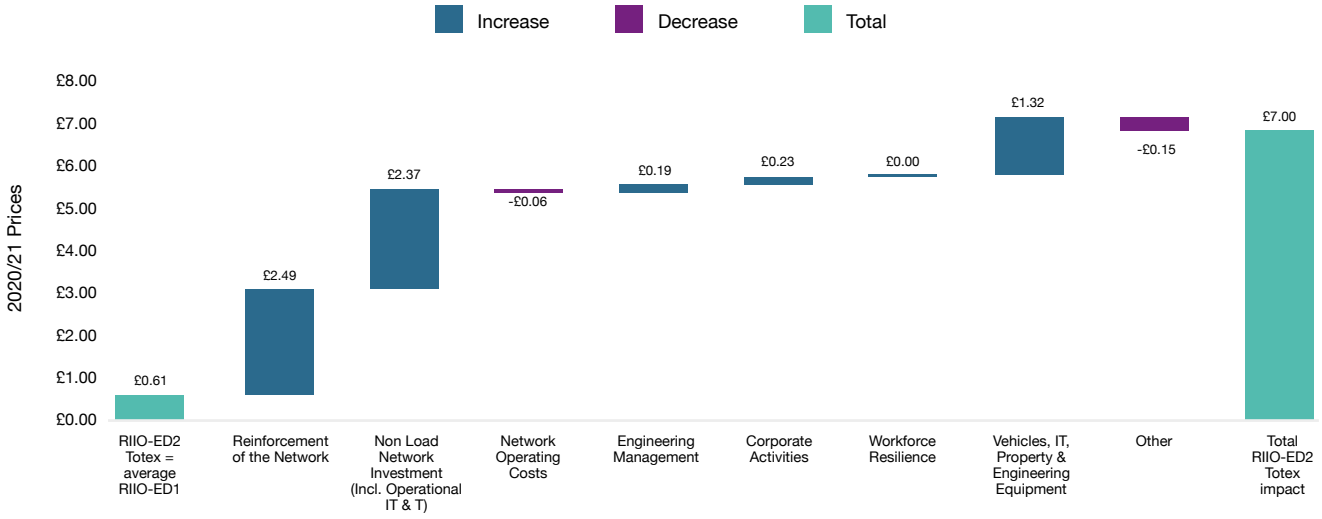
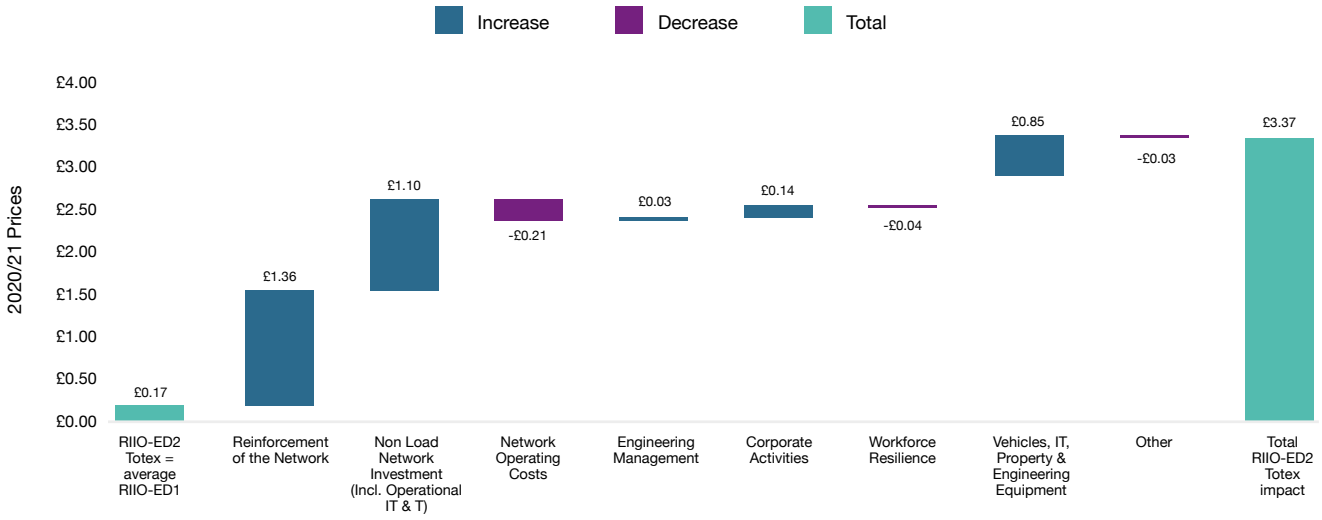
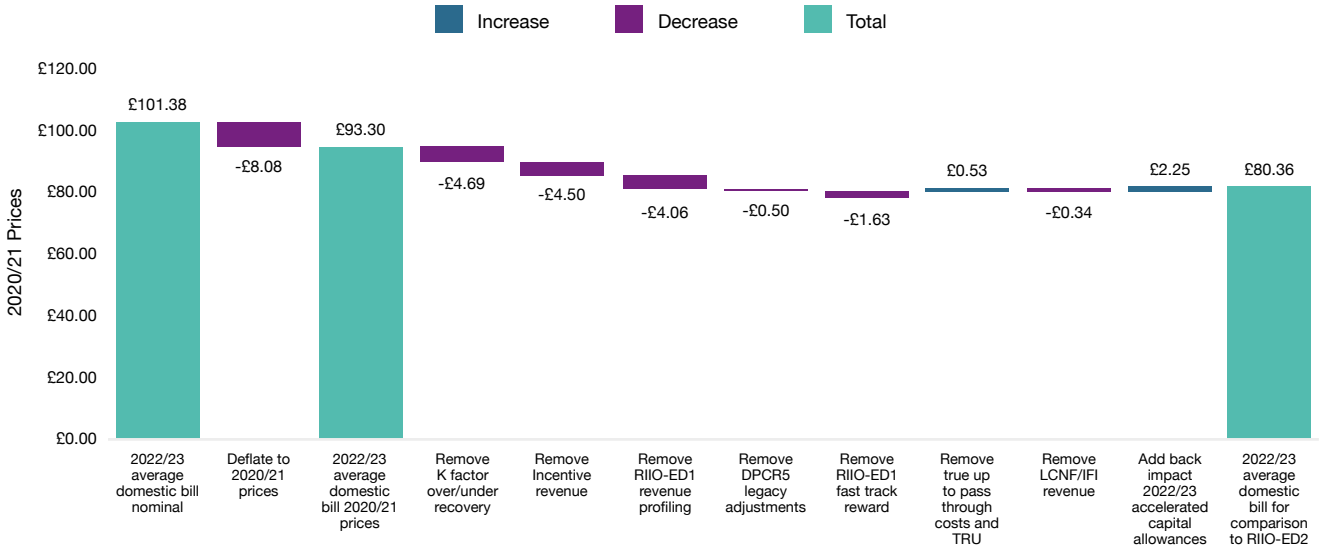


Figure 9.35 Impact of Totex on RIIO-ED2 Average Domestic Bill – WPD – 2020/21 prices



9.85. The following charts demonstrate how we have adjusted the published 2022/23 average domestic network charges for WPD, to put them 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 9.36 2022/23 Average Domestic Bill (normalised) – WPD Total



9.86. The position presented in figure 9.36 is for an average WPD domestic customer. The normalised bill for the average domestic customer at the end of RIIO-ED1 for each of our four DNOs ranges between £71.56 for East Midlands, £75.47 for West Midlands, £84.92 for South Wales and £99.76 for South West (please see Supplementary Annex SA-09 for DNO specific details).

9.87. Figure 9.41 subsequently demonstrates the impact of our proposed RIIO-ED2 policies on the average WPD domestic customer bill for RIIO-ED2. Figures 9.37 to 9.40 show the position for each of our four licensees.

9.88. Decisions already taken by government and Ofgem on inflation and taxation policy, including the move from RPI to CPIH and recently announced changes to corporation tax are shown as increases to the £80.36 WPD average bill at the end of RIIO-ED1, leading to the adjusted end of RIIO-ED1 bill being £91.62 for comparative purposes.

9.89. The changes to the average bill after macro-economic impacts shown in figure 9.45 (i.e. those in the green and purple bars) represent 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.

9.90. Our proposals under WPD's baseline expenditure would result in WPD's average domestic customer's bill falling from £91.62 at the end of RIIO-ED1 to an average of £89.51 in RIIO-ED2, a £2.11 (2%) reduction in real terms.

9.91. The position for each of the four DNOs varies depending on their specific bill starting position at the end of RIIO-ED1, and the DNO specific investment proposals. The individual DNO charts provided in Supplementary Annex SA09: Financing our plan demonstrate how bills will fall in two of our DNOs in real terms under the baseline scenario - West Midlands and East Midlands DNO; with two increasing - South Wales DNO will increase by 2.5% and South West by 1.1%.

Figure 9.37 Average Domestic Bill – West Midlands

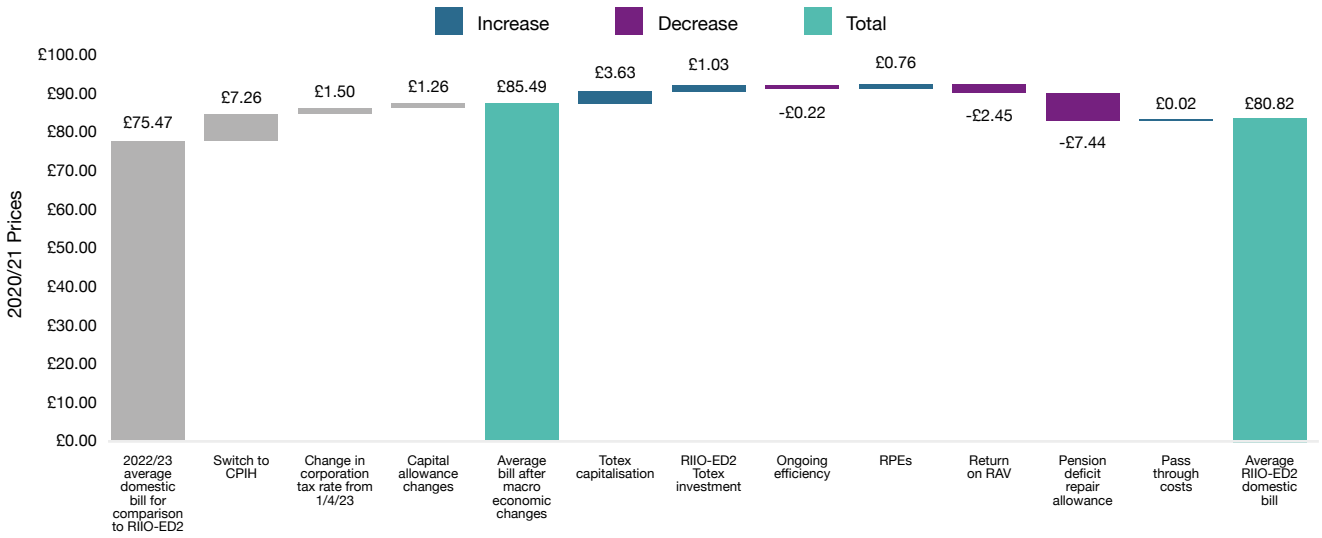


Figure 9.38 Average Domestic Bill – East Midlands

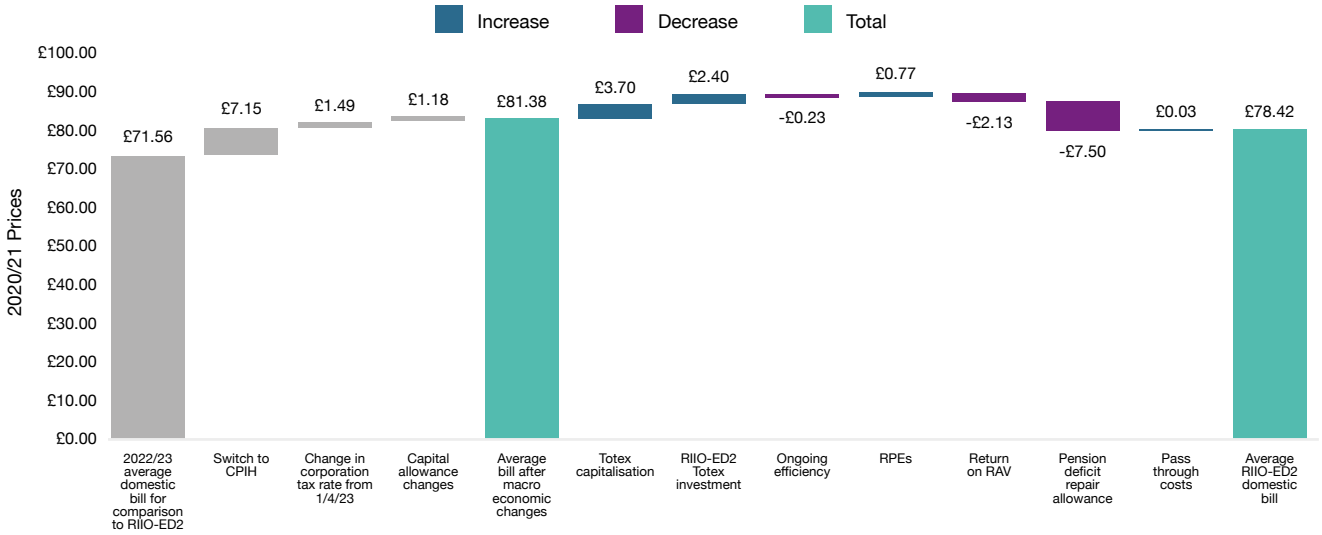


Figure 9.39 Average Domestic Bill – South Wales

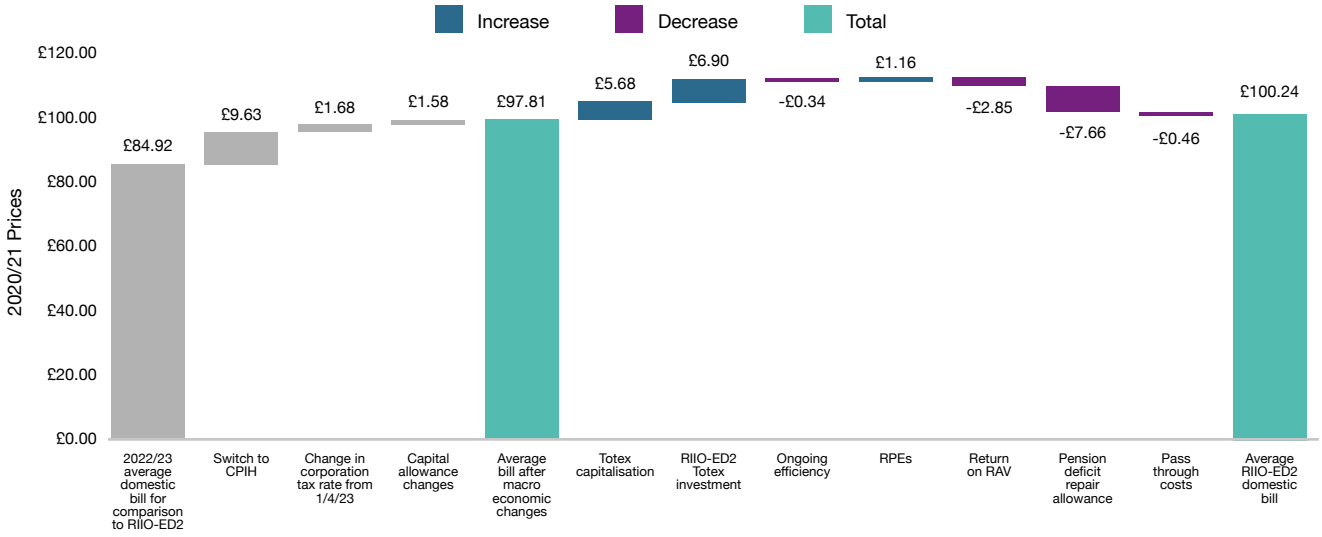


Figure 9.40 Average Domestic Bill – South West

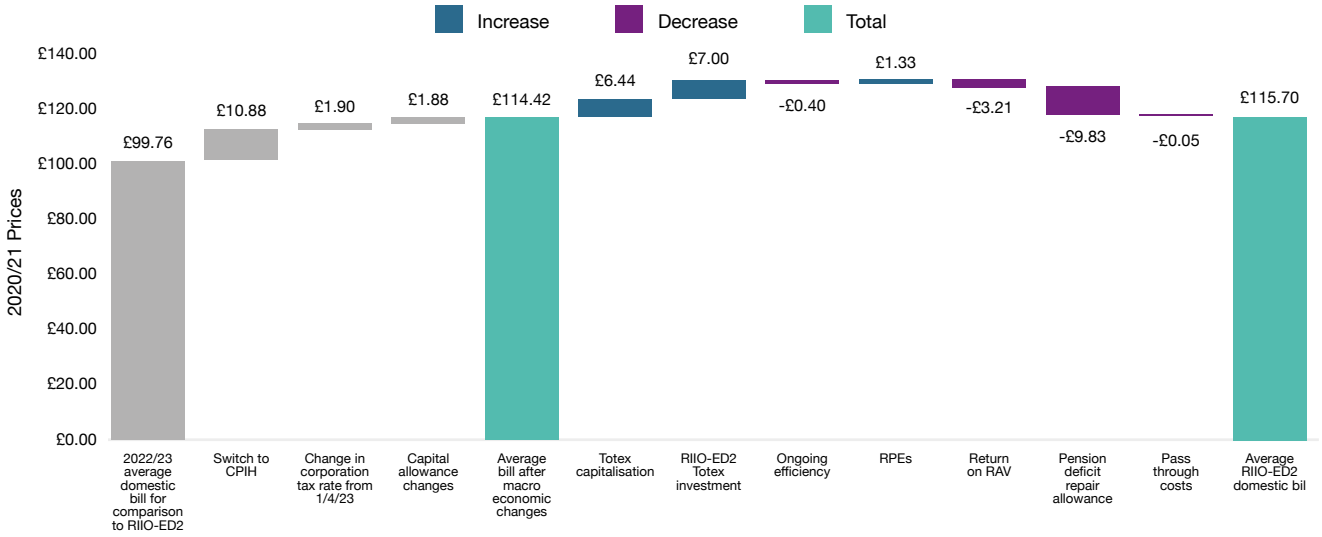
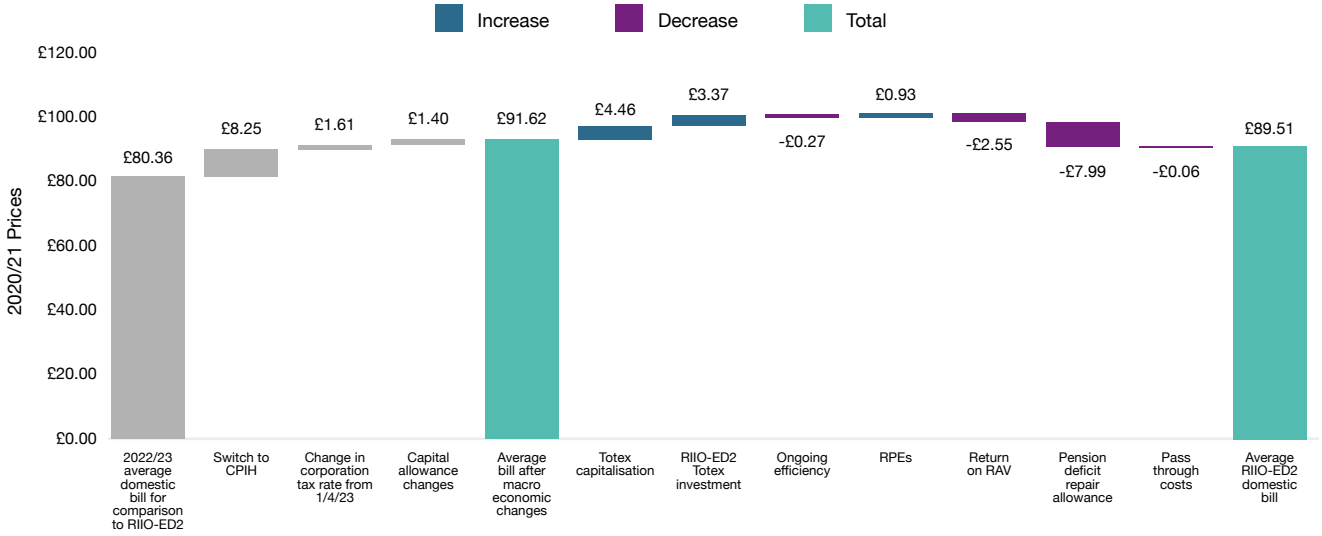


Figure 9.41 Average Domestic Bill – WPD Total



Other policy areas: related party costs, taxation, capital allowance pools, business rates and pensions

Related party costs

9.92. Our four DNOs are part of the same corporate group. For efficiency reasons, they 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.

9.93. 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.

9.94. 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

9.95. In the Spring 2021 Budget, the government announced that the corporation tax rate would increase to 25% from 1 April 2023. Ofgem's BPFM therefore uses this rate in modelling the tax charge and corresponding tax allowance in the Business Plan for the RIIO-ED2 period.

9.96. Tax for price control purposes is on a cash basis so deferred tax is ignored.

Capital allowance pools

9.97. 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[22]. We agree with this 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. 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.

9.98. 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.

9.99. One significant development in the Spring 2021 Budget was the announcement 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 in figures 9.37 – 9.40.

9.100. Figure 9.42 shows our projections for the taxation allowance under our baseline expenditure scenario.

Figure 9.42 Taxation allowance

Taxation allowance (£million in 2020/21 prices)	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 annual average	16	15	8	10	49
RIIO-ED2 annual average	35	34	14	22	105
RIIO-ED2 total (5 years)	**173**	**169**	**72**	**112**	**526**

[22] Table A9.1, p.101. Ofgem, RIIO-ED1: Final determinations for the slow-track electricity distribution companies, 28 November 2014.

Business rates

9.101. 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. Figure 9.43 shows our projections for business rates costs:

Figure 9.43 Business rates funded through DUoS

Business Rates funded through DUoS (£million in 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	30	28	13	19	90
RIIO-ED2 total (5 years)	**148**	**141**	**67**	**95**	**452**

Pensions

9.102. 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

9.103. 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.

9.104. 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.

9.105. 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.

9.106. Pensions matters are overseen by the Pensions Regulator who ensure that companies meet their obligations to the pension schemes under both the pension scheme trust deeds and the Pensions Act.

WPD pension schemes

9.107. We operate two main defined benefit (DB) 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.

9.108. 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.

9.109. 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.

9.110. 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[23].

9.111. Figure 9.44 shows a breakdown of pensions costs included in our RIIO-ED2 Business Plan:

Figure 9.44 Ongoing pension costs expenditure within Totex (DB and DC schemes)

Ongoing pension costs expenditure, including incremental deficit repair costs (£million in 2020/21 prices)	West Midlands	East Midlands	South Wales	South West	WPD Total
RIIO-ED1 annual average	15	14	9	14	51
RIIO-ED2 annual average	19	17	13	21	70
RIIO-ED2 total (5 years)	**96**	**86**	**65**	**104**	**352**

[23] SSMD Finance Annex, p.70.

Figure 9.45 Established pension deficit repair costs funded through DUoS.

Established pension deficit repair costs funded through DUoS (£million in 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	0	0	0	0	0
RIIO-ED2 total (5 years)	**0**	**0**	**0**	**0**	**0**

Stakeholder feedback

9.112. 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 A06 to our Supplementary Annex SA09: Financing our plan.

Board assurance regarding the proposed financial package for RIIO-ED2

9.113. Within this chapter and associated Supplementary Annex SA09: Financing our plan, we have provided a detailed assessment of the financial package prescribed by Ofgem in its published Business Plan Guidance document and the SSMD Finance Annex. We have provided evidence to demonstrate whether our licensees are financeable on both a notional and actual capital structure basis, using the Ofgem working assumptions. As a result, we have identified that the outcome of the financeability metrics is significantly below WPD's stated ratio target and that there is a substantial downside risk on credit ratings, including the risk of sub-investment grade rating, for all of the WPD DNOs.

9.114. We have evaluated whether it is appropriate to adjust capitalisation rates, asset lives, dividends and gearing, or to refinance debt to address the financeability issues under Ofgem's working assumptions. Our conclusion is that these measures do not provide adequate resolution to the financeability issues and a small uplift to the cost of equity and cost of debt is also appropriate. We therefore set out an alternative financing package which reflects these adjustments and we have also performed a detailed assessment of WPD's proposed alternative financial package. Full details of the outcome of our assessment of the Ofgem base case and our alternative financing package are set out in Appendices A01 and A02 to our Supplementary Annex SA09: Financing our plan.

9.115. Given the critical importance of delivering net zero, and the level of investment our stakeholders have supported over the RIIO-ED2 period to facilitate this, 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.

9.116. While 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 downside risks to Ofgem's working assumptions. It is also clear that there are wider considerations in any financeability assessment.

9.117. 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 support from our own balance sheet then Ofgem needs to ensure that we are 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" financing scenarios.

9.118. 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 are largely focused on downside adjustments to returns.

9.119. 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.

9.120. 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.

Glossary

A full list of the terms can be found in Supplementary Annex (SA-10) Glossary.

ACCESS SCR
Access and Forward-looking Charges Significant Code Review

AFR
Accident Frequency Rate

ANM
Active Network Management

AONB
Areas of Outstanding Natural Beauty

API
Application Programming Interface

BEIS
Business, Energy & Industrial Strategy

BCF
Business Carbon Footprint

BMCS
Broad Measure of Customer Satisfaction

BPFM
Business Plan Financial Model

BREEAM
Building Research Establishment Environmental Assessment Method

CAPEX
Capital Expenditure

CBA
Cost Benefit Analysis

CCSG
Customer Connection Steering Group

CEG
Customer Engagement Group

CiC
Competition in Connections

CIs
Customer Interruptions

CMA
Competition and Markets Authority

CMLs
Customer Minutes Lost

CMZ
Constraint Management Zones

CNI
Critical National Infrastructure

CTs
Current Transformers

CVP
Consumer Value Proposition

DER
Distributed Energy Resources

DFES
Distribution Future Energy Scenarios

DG
Distributed Generation

DNO
Distribution Network Operator

DNOA
Distribution Network Options Assessment

DPCR
Distribution Price Control Review Period

DSO
Distribution System Operator

DSR
Demand Side Response

DUoS
Distribution Use of System

EAP
Environmental Action Plan

EATL
EA Technology Limited

EHV
Extra High Voltage

EJPs
Engineering Justification Papers

ENA
Energy Networks 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

GIS
Geographic Information System

GSOP
Guaranteed Standards of Performance

GSP
Grid Supply Point

HSE
Health and Safety Executive

HV
High Voltage

ICE
Incentive on Customer Engagement

ICP
Independent Connections Provider

IDNO
Independent Distribution Network Operator

INM
Integrated Network Model

IT and T
Information Technology and Telecoms

LAEP
Local Area Energy Plans

LCNF
Low Carbon Network Fund

LCTs
Low Carbon Technologies

LEPs
Local Enterprise Partnerships

LiDAR
Light Detection and Ranging

LO
Licence Obligation

LTE
Long Term Evolution

LV
Low Voltage

NARMs
Network Asset Risk Metrics

NASD
Network Asset Secondary Deliverables

NERA
National Economic Research Associates

NIA
Network Innovation Allowance

NIC
Network Innovation Competition

NIFT
Network Investment Forecasting Tool

NIS
Network Information System

NRSWA
New Roads and Street Works Act

ODI
Output Deliverable Incentive

OE
Ongoing Efficiency

Ofgem
Office of Gas and Electricity Markets

ONIs
Occurrences Not Incentivised

OPEX
Operating Expenditure

OT
Operational Technology

PCBs
Polychlorinated Biphenyls

PCD
Price Control Deliverables

PFT
Perfluorocarbon Tracer

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

SECV
Stakeholder Engagement and Consumer Vulnerability

SF_6
Sulphur Hexafluoride

SIF
Strategic Investment Fund

SSMC
Sector Specific Methodology Consultation

SSMD
Sector Specific Methodology Decision

SSSIs
Site of Special Scientific Interest

STEM
Science, Technology, Engineering and Mathematics

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

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