electricity north west

Bringing energy to your door

Early draft business plan consultation 2023-2028

April 2021

Our plan for a greener, more prosperous and more connected North West

We know from speaking with thousands of our customers and stakeholders to develop this plan, that lots of different people are interested in what it says. Having engaged through a transparent process shaped by customer and stakeholder input for the past two years, there shouldn't be any surprises.

Ultimately, it's our job to find the right balance between ambition, service delivery and ensuring it's affordable for everyone.

We've written this plan for customers and stakeholders. So whether you've been involved in our engagement yet or not, we hope you find the right level of detail, explained clearly and simply, so you can continue to share your views with us.

Contents

1. Welcome to our early draft plan

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1.1. A few words from our CEO

It gives me great pleasure to introduce our early draft business plan for the period 2023-2028 for consultation.

This is the first public draft of our plan, prior to submitting an updated version to our regulator, Ofgem, on 1 July for review by their independent Consumer Challenge Group[1].

You'll find that our proposals are well-advanced thanks to all your input so far, offering an exciting and ambitious vision for our region.

The plan has been informed by more than 23,000 interactions with more than 18,000 customers and stakeholders to date – by far the largest and most far-reaching consultation exercise we have ever carried out.

I'm incredibly grateful for the energy, enthusiasm and insights from all those who took part, especially throughout a tumultuous 2020. The pandemic meant we had to adapt our original consultation programme, moving events online, and asking our participants to stay engaged in the process, even as their own lives were overtaken by many competing demands.

With that amount of engagement it's perhaps unsurprising that we have heard some quite different views in some areas. The challenge of delivering stretching environmental ambitions on net zero while keeping bills low and making sure we don't leave anyone behind is tough. You'll see how we have made these trade-offs based on customer and stakeholder input in section 4.5 and I look forward to hearing your thoughts on whether or not you think we have got the balance right.

Our research has shown that 80% of customers are willing to pay an additional £9.80 to achieve the ambitious proposals in this plan. However, that means 20% of our customers are not. We have worked hard to find a solution and through innovation and efficiencies, we believe we can deliver that high level of investment in the network for just a £2.14 per year addition to an average household bill. You can read more on how we're keeping customers' bills as low as possible in section 7.

The result from all this work is an early draft plan that I believe will help facilitate a greener, fairer, more prosperous and more connected future for our region. There's something for everyone and I hope you will find it an interesting and accessible read.

Having consulted on key appendices in March we are not re-publishing them at this stage as we continue to work to update them for our next version of the plan.

This is a consultation and we would like your views. Of particular note will be section 5 on what we propose to deliver. These proposals are based on more than two years of engagement but we still want to hear your

[1] https://www.ofgem.gov.uk/publications-and-updates/ofgem-sets-independent-panel-challenge-network-company-business-plans-next-price-controls

thoughts on them as we continue to refine the plan. We have listed some questions as a guide below, but please do comment on any part of the plan you wish.

This specific consultation will close on Monday 3 May so that we can incorporate feedback into our 1 July submission to Ofgem. We will accept feedback beyond that date, but can't guarantee that it will make it into our July submission.

Ofgem's Consumer Challenge Group will then give us further feedback on the plan before we submit a final version to Ofgem on 1 December, so we'll be continuing to engage with you right up until then.

Send your comments to stakeholderengagement@enwl.co.uk or go to www.enwl.co.uk/engagementhub.

Thank you for your interest.

Peter Emery

Chief Executive Officer
Electricity North West

1.2. Key sections and questions to consider as you read this plan

You can follow our suggested questions below in section 1.2.2, or feel free to dip into any part of the plan and comment on as much or as little as you like.

If you only have a few minutes or are only interested in one aspect, please focus on that – all feedback is welcome. And if you need any help, drop us an email at stakeholderengagement@enwl.co.uk.

1.2.1. Where do I start?

We don't expect everyone to have the time to read the entire plan in detail, but we suggest you start with our summary in section 2 to give you an overview of key areas.

As well as using the questions listed below, here are links to key sections you can dive right into:

Here you'll find the seven priority areas that you've told us to focus on:

- 5.1.1 Meeting customers' needs
- 5.1.2 Supporting electricity users in vulnerable circumstances
- 5.1.3 Delivering a reliable network
- 5.1.4 Building a resilient network
- 5.1.5 Keeping our communities safe
- 5.1.6 Leading the North West to net zero
- 5.1.7 Our direct environmental impact

Here are our plans for distribution system operation (DSO):

- 6.1.2 A new world of distribution system operation

And this is how the plans will affect you as a bill payer:

- 7.1 Impact on customer bills

1.2.2. Key questions

If you have 10 minutes…

1. Is the content understandable and accessible?

2. Did you find what you expected?

3. Is anything missing?

4. Does the plan offer value for money at a £2.14 a year increase on average domestic customer bills to deliver the proposals? See section 7 for more detail.

If you have 30 minutes (as above, plus)…

5. Do you feel any feedback you've given us has been fairly reflected in the proposals?

6. Does anything need additional explanation or context?

7. Does the content strike the right balance to meet the requirements of customers, stakeholders, Ofgem and shareholders?

8. Is the plan ambitious enough?

9. Have we demonstrated how we have used robust and high-quality engagement to inform the plan?

If you have an hour or more (as above, plus)…

10. Do you support our proposed Consumer Value Proposition on Smart Street in section 5.4? Should this be even more ambitious?

11. What do you think of the individual proposals in section 5? Bearing in mind both the cost to customers and the benefits of each proposal, in short for each, do you think we should be more ambitious, less ambitious, keep the proposal as it is or drop it from our plans?

12. We'd like further specific feedback on the following 12 proposals following feedback from our formal acceptability testing survey carried out with customers and stakeholders earlier this year. We've split them into three categories of customer, network and environment, so that you can focus on those that are of most interest to you:

Customer

5.1.2.1 Collaborating more closely with other utilities to support customers in vulnerable circumstances. We want to know if you think we should do more in this popular area, and if so, what?

5.1.2.2 Doubling investment in referral networks. Do you think we need to be more ambitious or less ambitious with this proposal?

5.1.2.7 Developing new customer advisory panels. Have you been involved in any of our existing panels? What do you think about having more of them? If we did, how should we split them? By region, topic, type of customer etc?

Network

5.2.1.1 *Improving network health*. Businesses and stakeholders have asked if we could do more in this area. We've added in some detail on how we could do this, but do you think it offers good value?

5.2.1.5 *Improving reliability for those in vulnerable circumstances*. We have added more detail to this popular proposal following feedback so we'd like to run it past you again and propose that 70,000 of our 236,000 customers in the most vulnerable circumstances should benefit, but should we be more ambitious?

5.2.2.2 *Improving our management of trees near overhead lines*. We've added in a much more ambitious target for replacing trees that we cut down. Do you support this ambition?

5.2.3.1 *Making high rise buildings safer*. This was really popular in our acceptability testing – should we be more ambitious with it?

5.2.3.2 *Delivering safety campaigns*. Do you agree with us running these types of campaigns with partners, and do you have thoughts on the extent of such campaigns and how we could measure their success?

Environment

5.3.1.1 *Helping customers embrace low carbon technologies.* We've updated the proposal following feedback to ask whether we should continue to cover the costs of connecting low carbon technologies (like solar panels, electric vehicle chargers, or heat pumps) to the network through bills, rather than charging individual customers?

5.3.1.5 *'Unlooping' customers' power supplies.* We've added more information and context to this proposal and increased the ambition following feedback. Let us know what you think about the updated proposal.

5.3.2.2 *Managing oil-filled cables.* Following feedback, we have changed our measurement target from length of cable replaced, to reducing the amount of oil that leaks from them. Does this additional information help you to decide what our level of ambition should be in this area and if it represents a good investment?

5.3.2.6 *Making our sites a haven for wildlife.* This was a really popular proposal and we're interested in your views on how we can make the most of it.

2. A summary of our plan

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2.1. A network that's fit for the future

It currently takes 57,000 kilometres of underground cables and overhead lines, and more than 2000 colleagues to power the 2.4 million homes and businesses we serve in the North West of England.

Over the next decade, the demand on this vast, complicated network of cables, people and machinery is set to intensify.

The UK is now on an accelerated path to decarbonisation. By 2050, we will be a net zero economy. But to get there, the Government is targeting a 68% carbon reduction by 2030 – just nine years from now.

This has major implications for local electricity networks, with more and more people due to switch to electric vehicles and increase their reliance on electricity for heating, leisure and work. And our customers expect us to be ready for these changes.

In response, we are proposing to invest £1.973bn in your network between 2023 and 2028. The money will ensure the network has the capacity to keep pace with the uptake of electric vehicles, economic growth and the increase in renewable electricity generation as well as reducing power cuts and supporting our customers where they need us most.

We are making three bold, ambitious headline commitments based on what our customers and stakeholders have told us they want:

Headline commitment #1: Customer: We will deliver a 9/10 level of customer service and also provide additional support to electricity users in vulnerable circumstances and fuel poverty, removing barriers to ensure that no one is left behind.

Headline commitment #2: Environment: We will invest to support all the requirements of our region to deliver a net zero future for everyone and we will drive the transition towards local net zero targets, following a path to making our own operations net zero by 2038.

Headline commitment #3: Network: We will reduce the number of power cuts and the average time people are without power by 20%. The average number of power cuts per customer will reduce from one every four years to one every five years and average time off supply will drop from 25 to 20 minutes a year.

We will deliver these commitments with our nearly £2bn investment, a 49% increase in expenditure on ED1, while keeping bills low with just a proposed £2.14 increase to an average household electricity bill.

We recognise that these are difficult times. Even without a global pandemic and a recession, climate change is forcing so much change. Customers and stakeholders want to make sure that we support those in our society who are in the most vulnerable circumstances as well as hitting tough environmental targets and improving on what they see as our fundamental role: keeping power on and minimising power cuts.

In short, we will be ready for the future and we will provide a strong foundation to power the North West's ambitions.

2.2. Supporting community and local energy projects

The green agenda will see more community-owned, renewable energy projects take shape – and our customers and stakeholders want us to support them.

That's why, from 2023, we will provide a £1 million per year grant for community energy projects, such as neighbourhood-owned wind, solar and hydro projects.

We will also make it easier for households to adopt new, energy saving technologies, by providing a free advice service and by 'unlooping' shared services – where multiple properties share the same cables and are therefore currently restricted in what they can do.

And we will continue to reinvent ourselves as an organisation – moving from a 'top down' approach where our role is simply to look after a closed network, to a facilitator in a more democratic electricity landscape, working with lots of local organisations to get their renewable electricity flowing through the region's cables.

2.3. Making sure vulnerable customers are not left behind

Our stakeholders have warned us that Covid-19 will almost certainly increase the number of customers impacted by transitory vulnerability, both now and beyond 2023.

They also want us to do even more to help alleviate fuel poverty and to make sure that customers who are already economically and socially disadvantaged are not left even further behind as we change the way we live, work and travel in response to the climate agenda. We hear this call and are responding.

We will make £2 million per year available to work with trusted partner organisations, to support the 250,000 customers in our region who are in fuel poverty, by 2028.

We will launch a new £250,000 annual fund to remove barriers that prevent the take-up of low carbon technologies such as electric vehicles and solar panels, with the money targeted at struggling households.

We're proposing to roll out our pioneering Street Smart technology to 170,000 customers in disadvantaged neighbourhoods. This technology continually makes small adjustments to local network voltage to reduce electricity usage and bills, without affecting customer appliances and is our first specific customer value proposition.

We will grow our Priority Services Register even further from the 1 million people we already help, ensuring everyone eligible has the opportunity to join, and increasing membership so that a minimum of 60% of eligible customers are registered. We will work more closely with other utility providers, with whom we share the same customers, to make sure we offer more joined-up support.

And we will double the amount we spend on partner referral networks to £500,000 a year to establish partnerships with organisations with specialist skills to help our customers who need it most. We recognise the opportunity we have to help and will refer customers to these services to ensure they get the support they need.

2.4. Improving customer service

Customers have told us they want us to continue to evolve our service and to achieve 9/10 for customer satisfaction.

We will make it even easier for customers to get in touch, by enhancing our online services and making it easier to get through on the phone by increasing the size of our team.

Businesses will receive dedicated support through our expanded business register for help and advice in the event of power cuts.

2.5. Balancing bills with ambition

Affordable bills have always been a priority for our customers, but they have told us they are willing to pay a bit more for an ambitious plan that meets their needs.

81% of customers have told us that they would accept a £9.80 increase to our part of their bill to get the level of service they want. With the long-term impacts of Covid-19 unknown, and with 12.1% of people in the North West in fuel poverty, we believe we must rise to the challenge and deliver the bold and ambitious commitments in this draft plan for less than that.

Through innovation and efficiencies, we believe we can deliver a significant benefit to customers in terms of investment, while still keeping bills low with just a £2.14 addition to an annual average household bill.

We're keen to hear if you think that we have got the balance right.

3. Why you can be sure we'll deliver

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Our current price control runs from 2015-2023, and is known as RIIO-ED1 (Revenue = Incentives + Innovation + Outputs, Electricity Distribution 1). Our next price control, which is the subject of this plan will run from 2023-2028 and is known as RIIO-ED2. We will refer to these periods as ED1 and ED2 for short throughout this plan.

So far in ED1 we have consistently delivered for customers. We are proud to have delivered industry-leading performance across a range of outcomes for customers and stakeholders. This has been recognised by Ofgem in successive versions of their annual report which identifies Electricity North West as the only distribution network operator (DNO) to consistently deliver high performance across all objectives:

	Reliability & availability				Connections				Social obligations				Customer service				Environment				Safety			
	16-17	17-18	18-19	19-20	16-17	17-18	18-19	19-20	16-17	17-18	18-19	19-20	16-17	17-18	18-19	19-20	16-17	17-18	18-19	19-20	16-17	17-18	18-19	19-20
ENWL																								
NPG																								
WPD																								
UKPN																								
SPEN																								
SSE																								

Comparative DNO performance[2]

3.1. Keeping our commitments

When we developed our ED1 business plan for 2015-2023, we made more than 40 specific commitments to customers. These commitments covered the broad areas of safety, reliability, customer, connections, social, and environment.

We have reported on our progress against these commitments each year showing transparency[3] enabling customers and stakeholders to hold us to account and enabling them to challenge us on progress.

Our 2020 version of this ED1 business plan commitments report[4] shows that we continue to deliver ahead or on track against the majority of commitments and that where we have identified any tracking behind target, robust plans are in place to meet them.

[2] Data taken from Ofgem annual reports. Data not included for 19/20 as not included in19/20 annual report.
[3] https://www.enwl.co.uk/about-us/regulatory-information/business-plan-commitments-report/
[4] https://www.enwl.co.uk/globalassets/about-us/regulatory-information/documents/business-plan-committments-report/business-plan-commitments-report-2020.pdf

3.2. Delivering social obligations and customer service

3.2.1. Stakeholder engagement

We developed our ED1 plans through robust stakeholder engagement and have had our engagement programme assured against AccountAbility best practice standards each year since 2013. This shows that our development and delivery of activities throughout ED1 was done with quality stakeholder engagement at its heart.

We launched our first ever stakeholder satisfaction survey in December 2020 showing that overall satisfaction was at 81%. The study engaged more than 200 participants and achieved excellent representation across our stakeholder community.

The survey measured overall satisfaction, attitudes towards the relationship held, future engagement preferences and improvement areas. The results indicated a strong correlation between the frequency of engagement, stakeholders' familiarity with our business and overall satisfaction.

Satisfaction levels were 10% higher on average among advisory panel representatives where relationships are mature. This research told us that our engagement is *inclusive*, *meaningful* and *mutually beneficial*. During Covid-19 engagement has been migrated online and become more frequent, and stakeholders have indicated they would like to continue with this model in the future with only 3% indicating they wished to engage less often.

We have also established a stakeholder engagement team, CEO panel, consumer vulnerability and sustainability panels, and were one of the first networks to establish a new independent Customer Engagement Group.

Our scores in Ofgem's Stakeholder Engagement and Consumer Vulnerability incentive are mid-table relative to the other gas and electricity networks as of 2019/20. One network was rated weak, four average, seven as fair (including Electricity North West) and one as good.

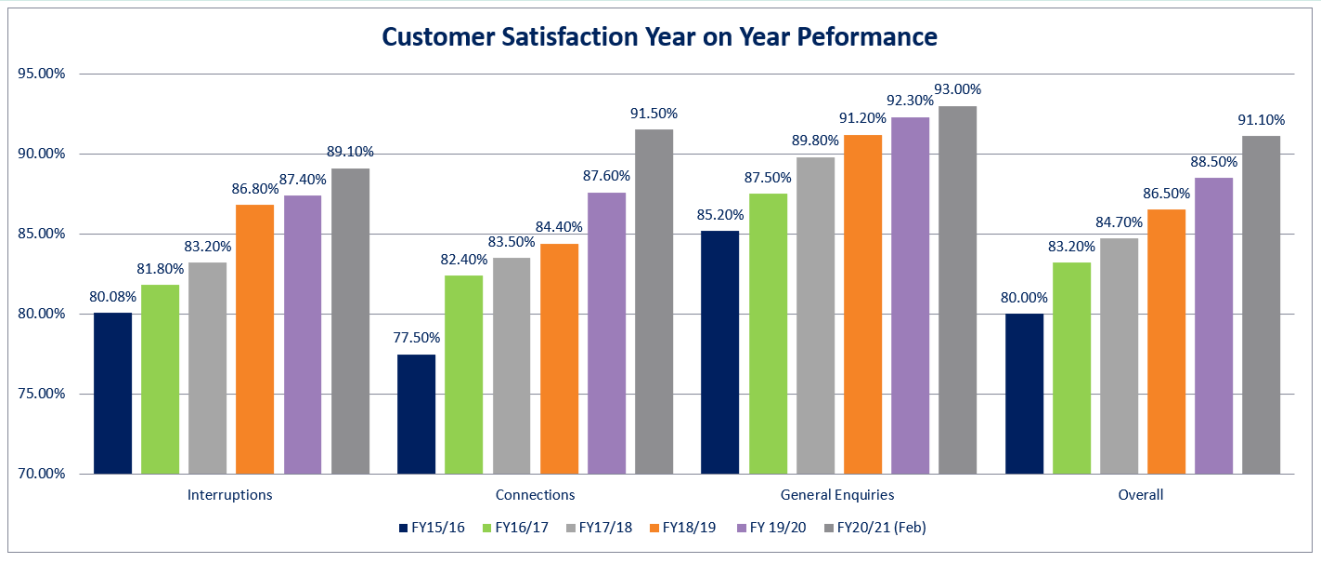
3.2.2. Customer service

Three years ago our Customer Contact Centre training achieved the ServiceMark and TrainingMark accreditation by the Institute of Customer Service (ICS). We were re-accredited in March 2021, achieving a distinction. The ICS also survey 200 of our customers annually and in 2020 we achieved a satisfaction score of 87.9 (out of 100), 10.9 points higher than the utilities sector average.

The ICS concluded, "*There is a clear commitment to delivering great service to customers. Evidenced not only by the increased scores in both surveys and the reaccreditation. But most importantly in how employees talk about their customers and their work – with passion, pride and genuine care*."

We have consistently improved customer service across all areas to levels as high, if not higher, than the best retailers and other service providers. Since 2015 we have achieved an average customer satisfaction (CSAT) rating of 84.58%, reaching 88.5% in 2019/20. CSAT is measured based on the scores given by samples of customers who have contacted us either during a power cut, to apply for a new connection, or for any other purpose.

The graph below shows our CSAT performance throughout ED1 showing continued improvement in all areas:



Customer satisfaction through ED1

In ED1, Ofgem defined a 'worst-served customer' as one who experiences 12 or more higher voltage unplanned interruptions over a three year period, with at least three higher voltage interruptions each year. We were the only network operator to make a commitment at the start of ED1 to have no 'worst-served customers' by this definition by the end of the period in 2023 and we are on track to deliver on that commitment.

Since the beginning of ED1 we have delivered consistent improvements in customer satisfaction, alongside focussed actions such as the sector-leading priority services data share with water company United Utilities to support customers who find themselves experiencing a period of vulnerability.

Our Priority Services Register of customer details has recently exceeded a reach of over a million people, increasing from around 600,000 at the start of ED1.

We have also put in place measures throughout ED1 to support those in our region in fuel poverty. The North West has one of the highest rates of fuel poverty in the UK at 12.1%. We have introduced efficient and specialist referral partnerships during ED1, including a two-year £500k partnership with Citizens Advice that started in 2020[5].

Our funding has enabled the recruitment of a team of seven specialist advisors including five energy champions who proactively contact customers to offer support. The team also responds to referrals from us where we become aware of particular customers who may require assistance.

3.3. Delivering reliability

We deliver the lowest level of power cut frequency in the UK, outside of the London network area. The length of power cuts in the North West is also within the top quarter in the sector meaning that, when they do happen, the impact is less severe than in most other parts of the country.

[5] https://www.enwl.co.uk/about-us/news/latest-news-and-views/2020/new-500000-partnership-offers-help-ahead-of-tough-winter/

From the start of ED1 to 2019/20, we have reduced the number of power cuts by 24% and the average length of time customers are without power by 26%.

3.4. Delivering on the environment

We recognise that customers and stakeholders are increasing in their awareness and knowledge of network activities and in some cases becoming producers of electricity as well as users. With the challenge of reaching net zero being committed to by the UK Government in 2020[6] we have been working throughout ED1 to lead the way in this important area, based on customer and stakeholder input and requirements.

Our Leading the North West to Net Zero document[7] makes our commitments clear. We have focused on decarbonising our own operations and helping colleagues, businesses and customers do the same.

One of our flagship achievements in ED1 has been to produce decarbonisation pathways reports for our three main regions, Greater Manchester, Lancashire and Cumbria. We have worked with other utilities in our region to develop the plans and have worked closely with Greater Manchester Combined Authority, Lancashire County Council and Cumbria County Council to ensure the plans are both realistic and incorporate whole-systems thinking.

We regularly report on our environmental measures[8] for transparency and to provide an opportunity for stakeholders to review and challenge our progress.

In ED1 we have been delivering a dedicated service to support community and local energy customers[9] and stakeholders. Our approach has been called best practice by Regen who are a not-for-profit energy experts with specialisms in community energy and electricity networks.

Our Powering Our Communities fund has seen us support a number of organisations throughout the region, providing 19 projects with seed funding and expertise since 2018. We intend to build on this success in ED2 and expand our support to further address the issues our customers and stakeholders have told us they are facing.

Our community energy manager is on the board of Community Energy England which help to give us insights into the issues affecting the sector nationally.

3.5. Delivering new connections

Our performance on the time to quote for new connections, and the time to connect them to our network has continued to improve in 2019/20 and beyond. This has been supported through the new self-service online quotations service, with all time to connect measures exceeding Ofgem's targets (despite the tightening of the targets for 2019/20).

We have improved performance in every category and only narrowly missed achieving the maximum incentive reward as judged by Ofgem for best performance. As well as the online system we have delivered strong service by focusing on our processes and making sure we have the right resources available to respond to customers' needs.

[6] https://www.gov.uk/government/news/uk-becomes-first-major-economy-to-pass-net-zero-emissions-law
[7] https://www.enwl.co.uk/go-net-zero/our-plans-to-go-net-zero/leading-the-north-west-to-net-zero/
[8] https://www.enwl.co.uk/about-us/regulatory-information/environment-report/
[9] https://www.enwl.co.uk/go-net-zero/community-and-local-energy/supporting-community-energy/

3.6. Innovation and continuous improvement

Innovation is key to our success. We seek to innovate every day across all our business activities to ensure that we can respond to the evolving needs and expectations of our customers with an increasingly uncertain energy future ahead of us. All of our innovation projects are aligned with our innovation strategy[10] – to maximise the use of our existing network and combine new technology and creative thinking to provide real solutions to real problems.

We have led the industry in developing innovative solutions to current and future challenges for energy networks and many of our industry-leading initiatives will deliver significant benefits for customers in RIIO-ED2.

Projects like CLASS[11] and Smart Street[12] have seen us go from winning funding to developing and delivering effective solutions to reduce both costs and carbon emissions. Other projects like our Sentinel[13] and Pre-sense innovations help identify faults before they happen.

Our £20m Network Management System[14] investment is enabling us to build a bespoke solution from the ground up to help us manage energy flows and give us an industry-leading complete network management tool fit for the 21st century.

3.7. Being efficient and investing in the future

We have worked hard in the first five years of ED1 to deliver cost efficiencies and share that benefit with our customers.

By identifying opportunities for efficiency, and delivering them, we've saved money that we have been able to reinvest to deliver other improvements. These improvements have been in reliability, resilience and customer service, as well as our next generation network management system.

This investment alongside other activities has helped us manage the network more efficiently remotely. This means that we have been able to reduce the impact of power cuts by identifying issues and restoring power more quickly when there is a problem on the network.

Upgrading our telecoms network, cleansing data and investing in active network management in ED1 makes us well placed to lead the transition to a different way of managing our network more actively, known as distribution system operation (DSO)[15].

Through innovation and efficiency, we have outperformed our total expenditure (totex) by £64.5m[16], or 5%, in ED1 to date. This means we have delivered everything we said we would £64.5m under budget, saving customers money.

We expect to continue this trend of efficiency throughout ED1 saving £127m by March 2023. Our performance to date reflects efficiencies of £146m, not including £73m that we reinvested including CLASS (£12m), Quality

[10] https://www.enwl.co.uk/go-net-zero/innovation/our-innovation-strategy/
[11] www.enwl.co.uk/class
[12] www.enwl.co.uk/smartstreet
[13] https://www.enwl.co.uk/go-net-zero/innovation/smaller-projects/network-innovation-allowance/enwl006---sentinel/
[14] https://www.youtube.com/watch?v=mVnhlWp_2-o
[15] https://www.enwl.co.uk/dso
[16] 2012/13 prices

of Supply (£29m), operational IT spend above allowances to support our new network management tool (£13m) and non-operational IT to improve business systems and processes (£17m).

3.8. Our people

We delivered all this deploying a clear management philosophy that we have embedded in our business. This is built on fundamentals such as strong accountability and ownership, leaders being change agents focussed on improvements, high ethical standards and capitalising on our strengths including innovation.

Our clear purpose, 'Together we have the energy to transform our communities' is underpinned through having world class employee engagement of 78%. Our aim is to be recognised as an employer of choice, by being representative of the communities we serve and creating a work environment where each person can thrive and reach their full potential.

Our new recruitment system and careers portals are designed to attract candidates from a diverse range of backgrounds. We have already achieved our initial target of 30% of our senior leadership roles being held by female colleagues.

We take on numerous apprentices each year with 105 recruited since ED1 began and our latest apprentice intake being 27% from ethnic minority groups and 22% female, increasing the representativeness of our workforce. We've achieved this through actively raising our profile in underrepresented communities we serve. Through working with mosques and schools we ensure the entire community we serve considers us an employer of choice.

4. Giving customers and stakeholders a stronger voice

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Our regulator, Ofgem, defines stakeholders as: “individuals, organisations or communities that are impacted by the activities of the network company. Stakeholder engagement should consider the needs of existing and future consumers.”

While we accept that customers are also stakeholders, they are materially different groups in that customers pay for our service. Other stakeholders, including consumers, may benefit from our service without paying for it. Separating bill payers and non-bill payers is important, particularly in relation to business planning where willingness to pay is a factor.

For clarity we will use the following definitions throughout this plan:

- **Stakeholders:** individuals, organisations or businesses that are affected by us, that influence our performance or who we have a legal, financial or operational responsibility to
- **Customers:** individuals, organisations or businesses who pay electricity bills
- **Consumers:** anyone in our area who uses electricity from our network, including young people and future customers

This early draft business plan has been shaped by conversations with more than 18,000 customers and stakeholders so far over a two-year period. It is the most extensive and detailed consultation programme we have ever undertaken.

Throughout the whole process, we have worked hard to give participants a genuine opportunity to build, inform and influence our proposals from the ground up, by allowing them to set the agenda and delve into the issues that really matter to them. We’ve given them access to information and helped them engage too – in some cases even providing devices and training to allow for online engagement during lockdowns due to Covid-19.

The process began in 2018 and will continue throughout 2021. As the consultation progresses, we are able to gradually consolidate ideas and proposals – ultimately arriving at a plan that is rooted in the aspirations and priorities of the communities we serve.

As of April 2021 we have engaged with the following numbers of customers and stakeholders, including 281 unique stakeholder organisations and 35 of our 39 local authorities.

	Individuals	Interactions
Total count	18,460	23,332
Customer count	16,530	20,073
Political count	526	825
Sectoral count	855	1,713
Charities count	168	281
Legal count	65	66
Media count	13	13
Regional count	303	361

4.1. Setting up for success

4.1.1. Shaping our approach to engagement

4.1.1.1. Our outside-in approach

To get the most out of our engagement we needed people to get on board. We heard from expert partners that a common failing of public consultation campaigns, especially when dealing with complex, multi-faceted issues, is to start with a pre-defined agenda, and start with the point of view of the organisation.

We were keen to avoid this. Before we even started talking about who we are and what we do, we wanted to ask customers and stakeholders "what matters most to you?"

Rather than starting by deciding what questions we want to ask and diving into discussions about us, we started our process asking customers and stakeholders to talk about themselves and their priorities.

In that way we were then able to connect with customers, and shape our questions to fit their perspective, increasing engagement and delivering richer insight.

To ensure we approached the consultation programme with this spirit of openness and inquisitiveness, we carried out some valuable groundwork in 2018 and 2019. All our activity is based on adherence to the AccountAbility stakeholder engagement framework that you will be able to read more about in an appendix to our July draft ED2 business plan submission.

4.1.1.2. Triangulation of ED1 engagement

As well as our outside-in approach we've also made sure we're made the most of all the information we have gathered from previous engagement during ED1.

In 2019, we commissioned an external review and triangulation report of all our engagement work during ED1 up to July 2019, to assess what had worked and what hadn't. A good example of one of the valuable outcomes of this work was a finding that showed our regional workshops had inconsistent representation of stakeholders. In Greater Manchester we had more environmentally-minded stakeholders, whereas Lancashire had more business representatives and Cumbria more utility representatives.

We have worked hard to ensure that our panels are representative as part of our business plan engagement process, and we have also created a quality assurance process for all engagement activity against which all engagement is assessed before the results are acted upon. The assurance ranks engagement giving a score that can be used in triangulation enabling us to compare the quality of engagement that we have heard, allowing us to apply appropriate weight to different engagements.

4.1.1.3. Early research and insights

In 2018, we spoke to 110 stakeholders to understand their high-level priorities for the ED2 period through our established stakeholder engagement groups and our three advisory panels (CEO panel and our independently chaired sustainability panel and consumer vulnerability panel). This was a development of our regular work with these panels to help us establish a materiality matrix – put simply, a plan showing the things that were most material to our stakeholders.

In summer 2019, we carried out early focus groups with 200 customers across our region, including hard-to-reach customers and customers in vulnerable circumstances.

These sessions were designed to understand what really matters to our customers and how we could make our subsequent engagement more relevant and meaningful to people's everyday lives.

4.2. Our six-stage process

Armed with our early insights into what matters to customers and how they wanted to be engaged, we were able to shape our ED2 consultation programme.

The consultation is being delivered in six phases. We began by canvassing broad opinions on a range of issues related to our customers and stakeholders in phase one, before narrowing the focus and increasing the level of detail with each successive phase.

By the fourth phase, participants could be given or had developed a high level of knowledge, and were participating in sophisticated and nuanced discussions about the fine detail of the proposals.

At the end of each phase, we used a triangulation process to analyse customers' feedback and to navigate sensible compromises when there were conflicting opinions or competing priorities. More detail on how we managed our triangulation process will be included as an appendix in our July draft ED2 business plan submission to Ofgem.

The six stages are as follows:

4.2.1. Phase 1: Customer connection (November 2019 – February 2020)

Aim: Find out who our customers and stakeholders were, and what was important to them to give us high level priorities.

Approach: We took an outside-in approach starting with customers and their lives, to find their high level priorities, rather than diving straight into questions about the electricity network. To further our understanding of our customers we developed a new customer segmentation model which looked at customers' attitudes, behaviours and engagement preferences.

Who we engaged: 2,740 customers (domestic and business), 43 future customers and 189 stakeholders.

Key methods of engagement: Customer segmentation (qualitative and quantitative research), priorities exercise (qualitative and quantitative), stakeholder advisory panels, industry working groups and political perceptions survey.

What we learned: Broad priority areas of reliability, resilience, safety, keeping bills low, affordability, customer service, supporting vulnerable customers, raising awareness, environmental priorities.

4.2.2. Phase 2: Electricity in my life (March 2020 – May 2020)

Aim: To understand customers' interaction with electricity, including their expectations and changing needs of energy to get a more detailed understanding of their preferences.

Approach: We tested our understanding of customer priorities and learnt more about their experiences and how best to engage with them. We adopted a topic-led approach to engage stakeholders with purpose. A prioritisation exercise helped us decide how to engage stakeholders on the most material issues to them.

Who we engaged: 825 customers (domestic), 30 future customers and 720 stakeholders.

Key methods of engagement: Established our online community, industry working groups and stakeholder advisory panels, one-to-one engagement.

What we learned: Finessing of key priority areas to reliability, resilience, safety, customer service, supporting vulnerable customers, helping the North West to net zero, reducing our own environmental impact.

4.2.3. Phase 3: Our plan for the future (June 2020 – September 2020)

Aim: To develop specific proposals and to explore real trade-offs to find out what service levels customers were willing to pay for.

Approach: We explored the key issues that made each priority area important and tested a series of ideas in each area to explore which proposals had greatest resonance with customers and stakeholders and the relative priorities between them.

Who we engaged: 2,003 customers (domestic and business), 62 future customers and 1,032 stakeholders.

Key methods of engagement: Two phases of willingness to pay research (a 'maximum difference' phase using trade-offs to identify customers' most and least supported priorities, and a full willingness to pay study), a deliberative customer panel, online community, 'Powering Up the North' stakeholder event, one-to-one stakeholder meetings, stakeholder surveys, industry working groups, stakeholder advisory panels and regional stakeholder workshops. Increased one-to-one dialogue with key stakeholder groups.

What we learned: We developed 41 business plan proposals which reflected our customer priorities and their willingness to pay for the proposed service levels in the following three areas:

Customers: Customers want to interact with us in a variety of ways and we must be passionate about delivering excellent customer service whether delivering new connections, responding to power cuts or engaging on anything else. We should be highly focused on the needs of all of our customers, but particularly those in vulnerable situations to ensure that nobody is left behind by the carbon transition.

Network: We should continue to deliver industry-leading levels of reliability and strive to improve it further, particularly for those who receive a significantly worse service than average or are highly dependent on electricity. We will ensure that our network is designed and operated to cope with extreme events such as storms which are more likely in the future. We should continue to focus on the safety of the public and our staff.

Environment: We should work hard to reduce the effect we have on the environment, both in terms of our carbon emissions and the other impacts we have. We have a central role in facilitating the national drive to a net zero economy and enabling our regional stakeholders to meet their aspirations of earlier decarbonisation.

4.2.4. Phase 4: Sweating the detail (October 2020 – January 2021)

Aim: Testing support for the overall 'package' i.e. the plan in its entirety and the support for each of the most substantive components at a thematic and detailed performance level.

Approach: We analysed what was driving overall support for the plan, which promises resonated with customers and stakeholders, whether our propositions were perceived as relevant and if performance targets were perceived as credible and ambitious. We devised an approach to understand how customers perceived us in terms of trust and value for money having seen the plan and the bill impact.

Who we engaged: 1,574 customers (domestic and business) and 1,023 stakeholders. Youth Focus North West members.

Key methods of engagement: Acceptability testing, plugged in public panel (deliberative customer panel), Online community, 'Powering Up the North' regional events, one to one stakeholder meetings, industry working groups and stakeholder advisory panels.

What we learned: The acceptability of the total business plan as a package gained a very high score, giving us confidence that we could move forward with the majority of the propositions tested. Furthermore, the package of measures in each of the seven areas was scored above 80% by domestic customers, business customers and stakeholders, increasing our confidence with the balance both across the proposition areas and within each proposition area. Affordable bills have always been a priority for our customers, but they have told us they are willing to pay a bit more for an ambitious plan that meets their needs.

4.2.5. Phase 5: Closing the Loop (January 2021 – June 2021)

Aim: Closing the loop was our chance to play back the results of our acceptability testing to customers and stakeholders. This also allowed us to delve into more detail on specific topics to make sure we get the balance right for our July submission to Ofgem.

Approach: This phase is about assurance. After our acceptability testing of our 41 propositions, we consulted on our key draft strategies, and are now publishing this draft plan for consultation before submitting a draft to Ofgem in July. This allows customers and stakeholders plenty of opportunity to engage with our transparent process before we submit our plans.

We took our acceptability testing results, and through triangulation with other engagement evidence decided which would make it into our final plan. Some areas scoring lower with bill-paying businesses are included due to evidence of strong support. Others scoring well above our 80% target have been reviewed to make sure we are being ambitious enough. Others in the middle didn't have as much rounded supporting evidence, so we are re-consulting on them too.

Who we engaged: Customers and stakeholders.

Key methods of engagement: Plugged in public panel (deliberative customer panel), advisory panels, political and business events, key strategies consultation, full draft business plan consultation.

What we learned: So far we have seen that there are differing views on certain proposals, such as unlooping, which may only benefit some customers. We want further views from people through ongoing consultation on this draft plan and its proposals to help us find the right balance. You will find key questions on our proposals in section 5.

4.2.6. Phase 6: Refine and submit (July 2021 – December 2021)

Aim: We will promote our draft plan widely to show how feedback to this version has further refined our proposals and continue the dialogue. Following our submission of the draft business plan on 1 July we hope to receive feedback from Ofgem's Consumer Challenge Group in September. This will then allow us to address any feedback they have and return to customers and stakeholders with further questions before our final submission to Ofgem on 1 December.

Approach: We will continue our conversations with customers and stakeholders throughout the summer to build on our plans, while recognising that our July draft will be as near final as possible. We have already set up channels for engagement in September for the final review and feedback process.

Who we will engage: Customers and stakeholders.

Key methods of engagement: Deliberative panel, advisory panels, political and business events, one-to-ones.

What we learned: TBC

4.3. Our engagement methods

Throughout our ED2 consultation programme, we used a wide range of engagement methods to suit all customers and stakeholders – from time-poor participants juggling busy lives, to those who were able to give up more time and engage at a deeper level. The range of data gives us rich information with which to make decisions and each piece of data goes through our quality assurance process before we decide what, if any, weight it has in our decision making.

We have included more detail on our methodology for the research listed below and will include full findings linked back to specific proposals when we publish our appendices in July.

4.3.1. Large scale quantitative research

All of our key quantitative research started with initial qualitative work with focus groups. These groups enabled us to frame the quantitative part of the research in the most effective way so that we knew we could get the most out of it. Ensuring that we understood customers views and the right level of background information to provide to enable informed engagement was key to the success of our larger quantitative research.

4.3.1.1. Segmentation

We carried out a review of our stakeholder identification process and also invested in robust research to segment our customers and consumers in the North West. This segmentation was based on attitudes and behaviours and carried out by Accent Market Research, specialists in the field.

The research ensured that not only could we check that any feedback collected was representative, but that we could then analyse results by segments to ensure a fair representation of our region's views.

The work developed a set of 'golden questions', that we were able to ask of any customers taking part in research throughout our engagement programme, enabling us to identify groups and themes that we could then address more specifically.

The work also enabled us to tailor our communications and materials to different groups to make them more accessible encouraging all groups to engage with us to share their views.

4.3.1.2. Willingness to pay

To explore the customer and stakeholder-defined priority areas further and in more detail we split our willingness-to-pay research into two phases. The first took the form of a maximum difference survey where 24 different attributes, developed based on feedback so far, were tested across a sample of 351 customers as part of our 'Electricity in my life' phase in summer 2020.

To identify which proposals we should test (out of a growing list of more than 80 possibilities aimed at meeting customers' and stakeholders' emerging needs) we applied the following criteria:

1. Would the proposal result in a material impact on bills?
2. Was the proposal a new idea that we hadn't yet tested elsewhere?
3. Did we need to test the scale of ambition?
4. Were there strong stakeholder views we needed to cross-check with customers?

The results of the maximum difference survey helped identify the initiatives of highest priority which were subject to our second more detailed willingness-to-pay survey. This concluded in September 2020 and identified the value that customers were willing to put on a range of options for 12 key attributes being tested in significantly more detail.

4.3.1.3. Acceptability testing

We triangulated the results of our willingness to pay research alongside other engagement, including our deliberative panel, online community, one-to-ones and stakeholder advisory panels, as well as third party research. This helped us identify and refine our proposals to 41 that we wanted to test as a whole package with customers at the agreed price from the willingness to pay research of +£9.80.

Rather than re-run a second version of willingness-to-pay research and in consultation with our expert partners Accent Research, we decided to run acceptability testing on the package and individual proposals. The testing, with both domestic and business customers as well as stakeholders, showed an 83% overall acceptance of our plans.

4.3.2. Qualitative engagement

4.3.2.1. Deliberative Plugged in Public Panel

This panel is a 40-strong group of customers, selected using our segmentation model to represent the diversity of our region.

The group was convened for phases 3, 4 and 5 of the consultation programme, and will reconvene again in September in phase 6. They have been taking part in detailed examinations of issues, willingness-to-pay research and acceptability testing of all areas of the business plan.

The panel has so far met online for eight Saturdays between July 2020 and March 2021. In total each panel member has now spent 32 hours engaging with us on a wide range of topics and the influence they have had on our plan has been significant.

Screenshot from one of our deliberative Plugged In Public Panel sessions

4.3.2.2. Stakeholder advisory panels

We have conducted stakeholder engagement since the business formed in 2007. We added significant rigour via a new strategy based on the AA1000 Stakeholder Engagement Standard (SES) and AA1000 AccountAbility Principles (AP) in 2012 and developed our first formal internal and external stakeholder panels.

Throughout ED1 our stakeholder engagement strategy has been continuously evolving and improving, based on our strategic goals at the heart of our business plan: reliability; affordability; sustainability; and excellent customer services ensuring that we catered for the needs of vulnerable customers.

We developed director-led stakeholder advisory panels aligned to these business plan objectives which provided scrutiny of our performance and valuable expert guidance to our leadership team and strategic decision making. These panels initially met three times a year supplemented by an annual open stakeholder workshop where we discussed material issues, our business plan performance and any changes and enhancements to our commitments.

Following stakeholder feedback in 2018 we revised our panel approach and combined our panels, to avoid duplication, retaining the sustainability panel and consumer vulnerability panels and inviting all panel members to join the appropriate panel going forward. In May 2019 we further strengthened our approach by appointing independent stakeholder representatives to chair the stakeholder advisory panels and with them reviewed membership to ensure inclusivity.

We recognise the value that this has added to the process and the independent chair positions will be retained in ED2. As part of this review we also split our annual open stakeholder workshop into three regional workshops reflecting feedback that each region and the material issues encountered were very different across the geography of the North West. We have held these regional events, hosted by our executive team, every year since.

To enable even greater senior level buy in and direct input to our strategic business planning, in March 2019 we held our first Chief Executive Panel and invited senior regional business leaders and stakeholders to join members of our executive team twice a year.

Our advisory panels have provided a valuable framework to our stakeholder engagement for ED2 and have enthusiastically embraced the additional requirements for them to develop, review and enhance our priorities and strategies.

They have challenged us robustly to consider alternative approaches and set challenging targets in addition to their existing remit of challenging and advising on our ED1 activities. In 2020 our sustainability and consumer vulnerability panels often met monthly, creating additional sub-groups as required. Panel members supported us by attending more than 30 advisory panel meetings totalling over 80 hours of engagement.

4.3.2.3. Meetings with key stakeholders

Our early prioritisation exercise helped us decide how to engage stakeholders on the most material issues to them. We adopted a topic-led approach to engage stakeholders with purpose.

We have held 136 one-to-one meetings with key stakeholders across our priority groups and our regular audit of stakeholder engagement shows that we have covered a broad and representative range of stakeholder groups. We undertook a series of one to one meetings with individual stakeholders who had high levels of interest in our business plan, such as MPs and local authorities.

This engagement included a step change in our relationship with local authorities. We have closely engaged with Greater Manchester Combined Authority for many years including our CEO sitting on the authority's infrastructure board.

We used our business planning process to engage more strategically with both Lancashire and Cumbria County Councils, attending their scrutiny committees as well as meeting their CEOs and developing long lasting and mutually beneficial strategic relationships.

We have also changed our approach to engagement with business groups, including Local Enterprise Partnerships. We also developed relationships with the Greater Manchester All Party Parliamentary Group of MPs in our region and have presented to them and discussed with them their views on our plans.

Across the region, we have so far engaged directly with 36 of our 39 local authorities in our area.

Across our wider team, we continued our engagement with connections customers and stakeholder, community and local energy stakeholders and others across the business, providing information to allow our teams to engage with their own stakeholders on our plans too.

4.3.2.4. Local and regional summits

We have hosted seven high-level summits to date, bringing together political and business leaders, including Ofgem. We followed up our regionwide 'Powering Up the North' event with local events in Cumbria, Lancashire and Greater Manchester in 2020, focusing on the region's energy needs.

We continued this engagement with our local 'Powering Up Recovery' series in 2021 and are planning another regionwide event in September 2021 before our final submission of this plan to Ofgem. In total we engaged with more than 300 people through these events, gaining key insight on key stakeholders' views including the desired pace of change towards net zero.

Speakers included: MPs, Local Enterprise Partnership CEOs, council leaders, Ofgem, universities, the Federation of Small Businesses, Lords, Cadent Gas, airport and transport representatives, National Park Authorities and many more leading to a wide and varied debate and insight.

4.3.2.5. Online community

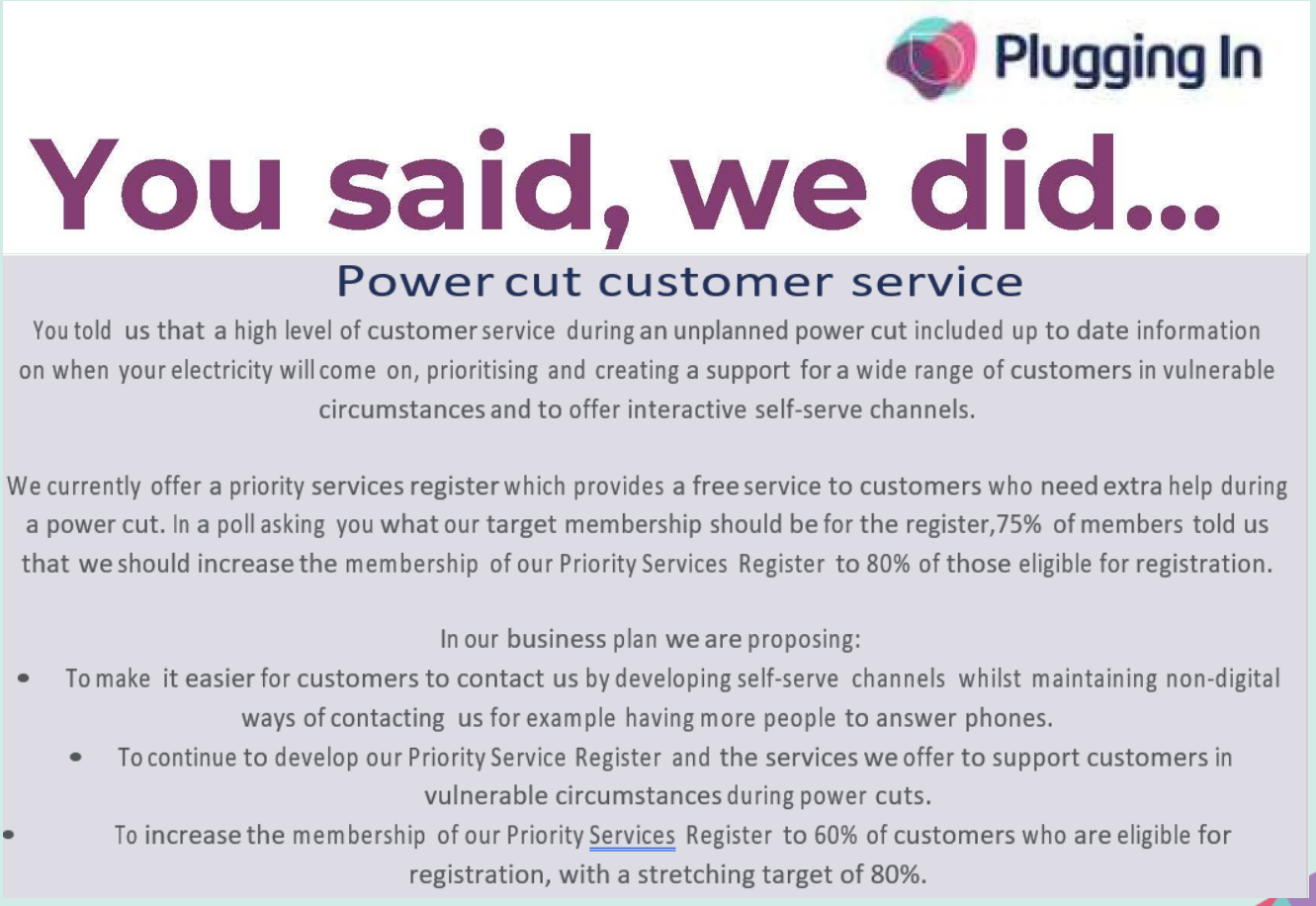
A mix of qualitative and quantitative engagement, our online community brought together more than 800 customers to discuss key parts of our plan. Over the course of the past year we had more than 7,000 comments and more than 41,000 reactions (likes and dislikes) from customers to those comments showing an active community genuinely helping us shape our proposals.

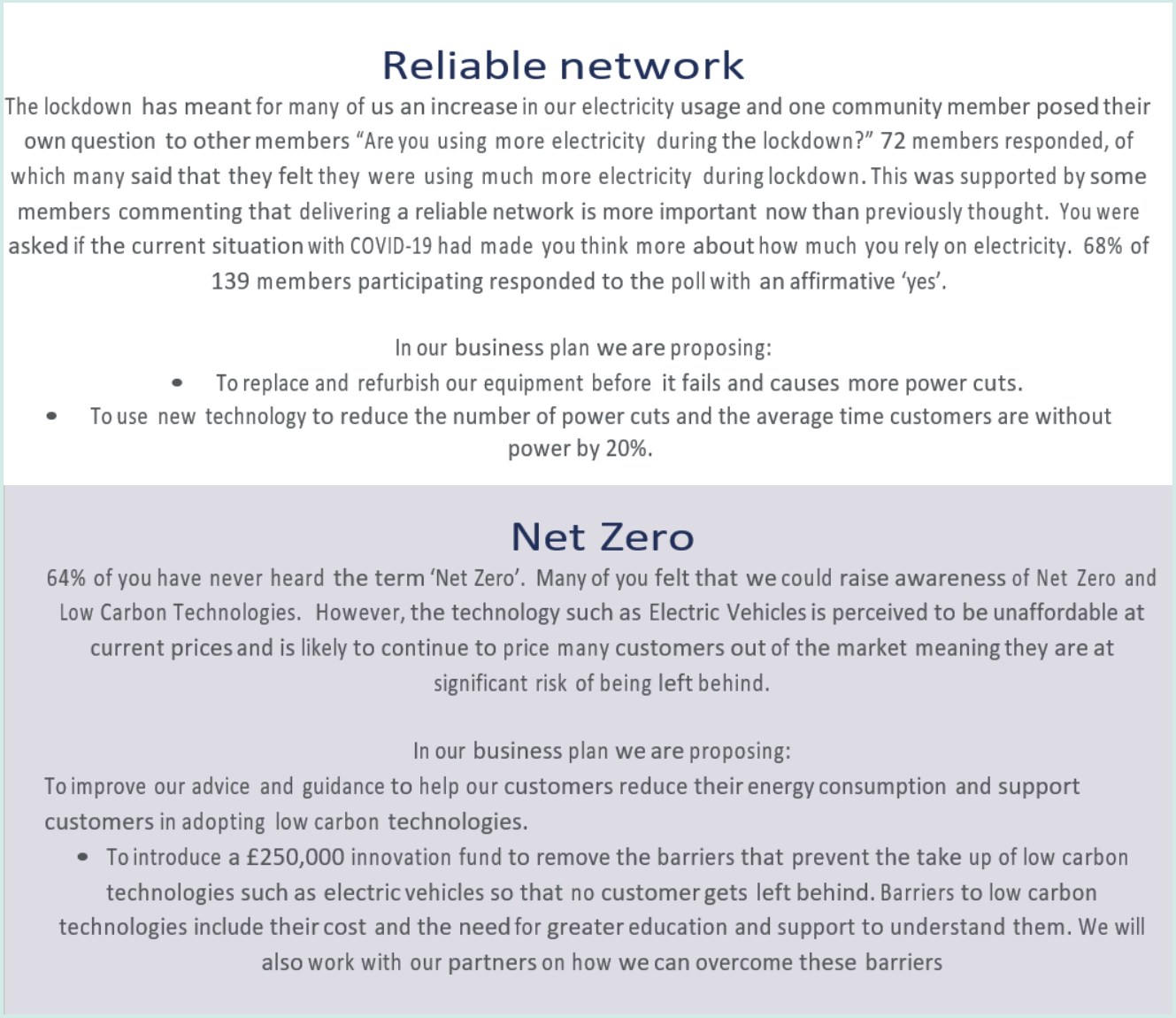
The format of the community was useful as it allowed us to both run polls as well as educate people through videos and information and encouraged debate among customers. One of our most popular discussions was on bills which received more than 180 comments.

We incentivised customers to join and also ran a points leader board to reward engagement. In some instances this resulted in customers trying to game the system and comment on every post with little value added, but these were quality-checked and discounted to encourage quality discussion. We also awarded spot prizes for the most thoughtful posts and comments to reward people for their time and effort.

You can see our community and register to join at https://pluggingin.explainonline.co.uk.

We recently created a summary of things the community had influenced as part of our 'Closing the loop' phase of engagement, we'll include more in our July submission, but here's are a few specific examples:





Feedback shared with our online community as part of our 'Closing the loop' phase

4.3.2.6. Engaging with hard-to-reach groups including future customers

For the purposes of our engagement, we defined hard to reach customers as people who our business impacts in some way, but who rarely, if ever, engage with us.

This lack of engagement could be the result of limited awareness or appetite, or a belief that their participation will not make a difference.

To reach customers with whom we have historically had little or no dialogue, we:

- Used segmentation to identify hard to reach customers to ensure they were included in our research.
- Provided devices and bespoke training to help some members of our deliberative customer panel so that they were able to engage effectively.
- Created online surveys for our business and political stakeholders to complete who are often time poor rather than relying on formal meetings. We did also however provide tailored one-to-one sessions where these were requested.

- In depth one-to-one interviews with businesses as part of our willingness-to-pay research.
- Drop-in sessions for MPs and their staff to get up to speed with our engagement and plans to make best use of their time to enable them to contribute.
- Created an online community to allow hard-to-reach and seldom-heard customers to have their say through a new channel.

One particular group that we focused on in our planning was future customers. This is because young people today will be paying for our service through their energy bills by the end of ED2 in 2028. A 15-year-old who we speak to in 2020 will potentially start paying energy bills when the price control starts in 2023 and the investments we make will affect them for longer that it would for older customers.

Rather than create our own youth panel, our research – including discussions with national youth charity UK Youth – led us to establish a new partnership with Youth Focus North West in 2019.

We wanted to find the best way to reflect youth voices – our future customers' voices – in our plans and were advised that tapping into existing structures and groups was the best approach, giving additional support to these groups and ensuring a more rounded discussion, rather than assembling a topic-specific bespoke group.

Youth Focus North West hosts a regional youth forum called Youthforia which is made up of representatives from 23 local authorities' youth councils and members of the UK's Youth Parliament.

Through our partnership we attended five Youthforia events where we engaged with more than 100 young people on multiple occasions our ED2 business plan priorities.

We also organised three sub-regional focus groups with young people to gain insight into the opportunities and challenges faced in different parts of our region.

Our acceptability testing also included a number of people who were not yet customers but were consumers, giving us another way of reaching this group of future customers.

4.4. Why you can trust our robust and high-quality engagement

4.4.1. A new independent Customer Engagement Group

We were one of the first distribution network operators to appoint a chair and set up our new Customer Engagement Group (CEG), to challenge us on our engagement and plans.

We have met with the CEG for two days every month since May 2019, giving us lots of time to establish effective working practices. (From April 2020 our meetings have all been virtual due to the pandemic.) The CEG has systematically challenged us on a huge variety of elements of our plan, with particular scrutiny on our engagement process offering genuine challenge.

The CEG has been fully immersed in our business, spending time with our Board, CEO, engineers, office staff and getting out around the network on site visits (pre-Covid-19 restrictions). We have discussed our engagement programme and updates with the CEG as a standing monthly agenda item.

In total we have spent 48 days, or 288 hours with the CEG discussing our approach and plans.

In addition we invited members to attend our engagement sessions as observers so they could see how we engaged and the feedback we received as well as sharing emerging thinking.

4.4.2. Assuring the plan

As part of our annual assurance process, we have had our engagement activity assured by AccountAbility, a stakeholder engagement consultancy that has developed a detailed internationally-recognised best-practice standard for stakeholder engagement. In 2021 we will undertake a full engagement health check with AccountAbility which will give us a maturity placing on their ladder from Beginner to Early Development, Committed, Mature and Distinguished. This will be updated in our next version of our plan.

In March 2020 we appointed one of the 'big four' accountancy firms, Price Waterhouse Coopers, to undertake a critical friend review of our project plan and to hold one-to-one meetings and workshops with our project team. They reviewed and assessed our project against the '12 elements of project management excellence' and provided recommendations.

Areas they identified as evidence of 'good practice' included our senior and executive (particularly CEO) involvement and commitment to the project, our hybrid approach in combining elements of both traditional Project management methodologies with agile methods, our approach to stakeholder engagement, our focus on being 'engagement-led' at each stage of business plan development, and our close work with our finance colleagues at all stages of the project.

They recommended that we further developed our proposed assurance processes using a risk-based model, considering external assurance for highest risk elements. They also highlighted that we should monitor Covid-19 pandemic as a risk and liaise with stakeholder partners to develop alternative methods of communication and engagement. Finally, they made a range of practical suggestions on how we organise ourselves to complete the major data exercise that a price control submission involves. We accepted all their recommendations and adapted our planned programme and working practices accordingly to successfully develop the draft plan we are now consulting on.

We are also working with:

- specialist technical consultants to assure the technical and engineering aspects of the plan;
- regulatory specialists to advise our Board audit sub-committee in carrying out their scrutiny role; and
- our own risk and assurance team who carried out a review of our process including how we engage customers and stakeholders, how we work with the CEG and how we incorporate feedback into our plans.

Our plan will be extensively reviewed and assured prior to our draft submission on 1 July. Each element is being separately reviewed and checked internally using well-established internal processes that are compliant with Ofgem's requirements for data submissions. In addition, we are using external experts to review particularly important or complex elements of the submission.

The report from our technical consultants will be included as an appendix to our plan in July. The CEG has been reviewing and challenging the plan through its development, a process that has used an extensive Challenge Log. In addition, our Board are undertaking their own reviews, primarily through the Board Audit Committee, who are also being assisted in their task by independent external experts.

We seek to be a leading utility network operator and constantly compare ourselves to other companies both in the UK and beyond. As part of this approach, we seek to ensure we meet internationally recognised best practice by holding certifications against key recognised international standards for our environmental (ISO14001), safety (ISO45001), energy management (ISO50001) and asset management (ISO55001) standards and practices. This gives us and our customers confidence that we are managing our network and business appropriately.

4.5. How feedback shaped the plan

Our process began with broad discussions about customers' needs, the changing nature of our business, the challenges and opportunities in phase 1, through to detailed examination of proposals in phase 4. Phase 5, Closing the Loop, is allowing us to feed back to customers and stakeholders after our acceptability research to double check that we have interpreted views correctly and give another opportunity for input and challenge. Phase 6 will focus on addressing any feedback from our draft plan with stakeholders.

As the consultation progresses, participants knowledge has increased and the level of engagement has intensified. By phases 3 and 4, participants were able to provide very sophisticated and nuanced analysis and feedback.

The result is a plan that has been heavily influenced by our customers and stakeholders at every step of the way.

4.5.1. Balancing trade-offs

Our extensive engagement has brought with it difficult decisions to be made, with trade-offs between stakeholders' views on competing priorities.

The expectation that we will deliver outcomes over and above those achieved during ED1, while ensuring energy bills are affordable for all, has become a key trade-off in our plan. We have tackled this head on by testing our proposals with customers and wider stakeholders iteratively, each with varying degrees of ambition and investment implications.

On average households told us that they were willing to pay an additional £28 towards their most valued service improvements. In seeking an optimal service package, we have been very conscious that the cost of improvements will partly fall on customers in vulnerable circumstances or fuel poverty.

While we heard a call for stretching improvement, a significant minority of households reported sometimes struggling to pay their bills. Future customers also revealed a social concern about the continued impact of Covid-19 making it increasingly difficult for customers in poverty to meet their financial obligations. In response we set ourselves a higher hurdle of 80% acceptability to be passed to justify investment, rather than simply the majority of bill payers being in favour.

The higher hurdle we set created a price cap of an additional £9.80 per household. In further testing 83% of customers and wider stakeholders found our proposals priced at this level acceptable. The reasons provided included improved service levels, inclusion of innovative ideas and sufficient futureproofing. To complete our trade-off, we resolved to deliver the plan our customers and wider stakeholders wanted for less money, further enhancing the value for money it will deliver to them.

4.5.2. Triangulation of insight

To help us produce an overall plan that seeks to meet the needs and expectations of customers and wider stakeholders of the North West in a fair and equitable manner, we introduced a formal triangulation process.

We used this process to iteratively evaluate customer and stakeholder feedback, operational data and third-party insights, and weighted them carefully and triaged an appropriate way forwards.

To fairly weight the evidence base collected we determined its materiality using three key tools:

1. **A new and robust quality assessment framework:** We used this framework to consider aspects such as how robust, representative and accurate our findings were and their external validity.
2. **A set of principles for trading-off divergent views:** We used these principles to give us consistent guidelines for determining which evidence, if any, to place more importance on when views differed.
3. **A quantitative data weighting:** We used an agreed weighting to appropriately reflect customers' and wider stakeholders' views in the measurement of overall acceptability.

Each phase of our engagement has been marked with a triangulation report providing insights and the evidence base that provide a golden thread between what we have heard and the commitments in our plan.

We will include more detail about what our customers and stakeholders told us and how their views changed our plans in a specific appendix to our July plan. A selection of these key insights is provided below:

Stakeholders' priorities	Triangulation insights
Delivering a reliable network	• Our focus should be on keeping our customers' lives running by providing reliable and uninterrupted supplies and minimising disruption to their daily activities • Customers and wider stakeholders believe that it is important to improve reliability a bit, for a lot of customers, *and* a lot for a small number of priority customer groups
Keeping our part of bills low	• We must balance our ambition with affordability of bills to deliver a plan that delivers more for less – with outputs improving across the board • Covid-19 is increasing consumers' concerns over the affordability of energy bills but delivering a reliable network remains their top priority
Meeting our customers' needs	• Future customers warn us not to rely on digital for 24/7/365 power cut support to customers – increased telephony support is what is needed • A reduction in the duration of emergency street works is the most highly- valued service improvement in ED2 by domestic and business customers
Supporting customers in vulnerable circumstances (CIVC)	• Stakeholders warn that Covid-19 will almost certainly increase the volume of customers impacted by transitory vulnerability, both now and beyond 2023 • We can exceed expectations by looking beyond the obvious and expanding our societal role in alleviating fuel poverty and poverty more generally in ED2 • There is very strong support for deploying Smart Street to as many customers as possible, targeting areas of high fuel poverty
Maintaining a safe and resilient network	• Customers say prevention is better than cure and ask us to reduce the overall risk of the network in the long term by replacing old equipment • We must mitigate the increased safety risk from both cyber and other attacks • Future customers want to see greater investment in green jobs such as apprenticeships so that we can build back better post-Covid-19

Delivering an environmentally sustainable network	• Customers and wider stakeholders expect us to lead by example – accelerating action to achieve net zero carbon emissions from our operations by 2038
Leading the North West to net zero	• Customers support stakeholders' 2038 regional ambitions with low-regrets investment to increase network capacity and enable faster pathways to net zero • Bill payers say we should have a trusted advisor role on energy efficiency, facilitated through an online hub and socialisation of connections charge • Customers are willing to pay for dedicated support and specific funding to support citizen-led community energy projects • There was also appetite for the socialisation of connection charges, although acknowledgement that this was part of a wider debate as to 'who pays' for the net zero transition

So far, 85 key insights have shaped our plan from our robust triangulation reports. These reports have informed both the structure of this plan and fed into the options assessment that will inform subsequent versions of the plan. You will be able to see our insights as well as more about what our stakeholders told us and how views differed and evolved in an appendix alongside our July version of the plan.

4.5.3. Nuances in customer and stakeholder views

Our triangulation revealed nuances in views; customers typically attaching greater importance to the affordability of energy bills than stakeholders, who forgo bill reductions in favour of accelerating the transition to net zero. It has also proved very challenging to find consensus on our social role in alleviating fuel poverty. This is because our stakeholders feel that we share responsibility for supporting customers in vulnerable circumstances and leading the transition to net zero with other third parties.

Our principles for trading-off divergent views means that we have attached greatest importance to well-designed surveys based on random sampling that generate robust findings. This is because of the level of precision and certainty these studies offer and their ability to be truly representative of our region. We have also placed high importance on evidence directly relevant to the North West and applied a weighting to ensure urban and rural views are fairly represented.

This process has informed commitments in our plan that represent the best possible compromise between divergent stakeholders' views.

4.5.4. Examples of key changes to the plan from engagement input

The six phases of our ED2 consultation programme (see section 4.2) were designed to give our customers the opportunity to engage with us at a level of detail that suited them.

All of our proposals have been shaped by our customers and stakeholders. Here are some specific examples. We will include further detail in an appendix to our July submission.

Headline commitment #1: We will deliver a 9/10 level of customer service and also provide additional support to electricity users in vulnerable circumstances and fuel poverty, removing barriers to ensure that no one is left behind.

Our Plugged In panel discussed our Priority Services Register membership and many members commented that we should ensure no one slips through the net or is left behind. While discussing fuel poverty and what Electricity North West should do to support customers experiencing fuel poverty. Some of our Plugged In Panel commented:

"Fuel poverty may be increasing yearly and every one of those people deserve to be supported"
Plugged In Panel Member

Our Plugged In Panel were asked to rank groups in order of importance for extra attention and support to make sure they are not left behind in the energy transition. Vulnerable, fuel poor and worst served customers were identified as most important.

In-depth interviews with 25 members of our Consumer Vulnerability Advisory Panel who, in their capacity as consumer representatives, were asked what the key concerns or issues that their customers face during a power cut are and a common observation was that consumers' natural worries are amplified, so consequently anxiety levels rise and the need for timely, useful and accurate information about interruptions is required to mitigate this.

"Community response and vulnerable customer support will be key going forward, post Covid-19. Electricity North West should harness this support"
Carlisle County Council – Consumer Vulnerability Advisory Panel Member

Headline commitment #2: We will invest support all the requirements of our region to deliver a net zero future for everyone and we will drive the transition towards local net zero targets, following a path to making our own operations net zero by 2038.

We have recognised the priorities of our national stakeholders in the transition to net zero throughout our proposed investment strategies. We have particularly taken into consideration Ofgem's Decarbonisation Plan and the Climate Change Committee's Sixth Carbon Budget in how we can shape our business plan and how we can support these stakeholders deliver their ambitions, as well as the views of the national Climate Change Assembly UK.

We have also engaged with our local and regional political and business stakeholders through a series of events where there is a great deal of commonality in ambition to deliver local net zero targets. At these regional political and business stakeholder events the majority of our stakeholders felt that we should take a proactive approach to bring forward future investment to increase network capacity and enable faster pathways to net zero. 100% of attendees in Cumbria and Greater Manchester and 91% in Lancashire said that Electricity North West should be proactive in its investment towards net zero.

We have also undertaken targeted engagement with the three county councils in our region who all have different net zero ambitions, but all recognised the key role that Electricity North West can play in their local environment action plans.

"My aim as Mayor is to make Greater Manchester the UK's leading digital city region and the UK's leading green city region. Electricity North West has been working with Steve Rotherham (Liverpool city region mayor) and I on something called Net Zero North West and they are the first electricity provider in the country to have aligned with a city region plan i.e., our plan to be net zero by 2038. Going faster on green gives us better homes, transport, jobs and better lives for our residents."
Andy Burnham, Mayor - Greater Manchester Combined Authority

"A motion will be developed on behalf of the Committee to take to the full Council the need for greater co-ordination and leadership in the county, including leadership on the council estate, vehicles, EV roll out, planning incentives and a county-wide coordinated approach with key partners including Electricity North West"
Chair of Lancashire County Council External Scrutiny Committee

"Cumbria had had a clear region-wide recommendation for decarbonisation by 2037 but each local authority was currently working to ratify their targets. It is helpful to have these discussions with Electricity North West to understand the importance of the decision-making timetable and the impact on business planning to ensure that investment does not become a barrier to adoption of LCT technologies and regional investment."
Stephen Hall - Assistant Director of Economy and Environment Economy & Infrastructure - Cumbria County Council

84% of our Plugged In Panel told us it was important or very important that the North West reaches net zero. When presented with four timeline options for how fast Electricity North West should move to make its operations net zero, with 58% of members voting for the option of reaching net zero carbon emissions in our operations by 2038 to align with the end of RIIO-ED4 and the UK's seventh carbon budget. 27% of panel members told us that we should align our targets by a mid-point between 2038 and 2050.

"I believe it's worth investing more money now to save money long term. I also think we should be leading the way, hopefully encouraging other large organisations to follow suit in reaching or exceeding local and national targets"
Plugged In Panel Member

"If they have the ability to do so, they should so it earlier. They should not align themselves with a particular area's goals as it shows preference for a specific set of customers, who all expect the same service"
Plugged In Panel Member

We undertook a similar exercise with our Sustainability Stakeholder Advisory Panel and based on the four proposals presented, stakeholders were unanimous that option 4 was most appealing. This was regarded as the most ambitious option and is aligned to Greater Manchester's commitment to decarbonise by 2038. Decarbonisation has always been a top priority for the members of Youth Focus North West and they consistently ranked it as one of their top priorities in our discussions with them.

"We will always prioritise Low Carbon Technologies as it's our future"
Youth Focus North West member

Headline commitment #3: We will reduce the number of power cuts and the average time people are without power by 20%. The average number of power cuts per customer will reduce from one every four years to one every five years and average time off supply will drop from 25 to 20 minutes a year.

Reliability has consistently come top of our customers' priorities and is seen by many as simply a 'hygiene factor'. Improvements in reliability are almost universally welcomed.

In our initial priorities research consumers were asked the priority areas they felt that we should be focusing on in RIIO-ED2. Reductions in the frequency and duration of power cuts were stated as the most important areas to focus our investment.

"Keeping your life running, ultimately if you don't provide a service, all of this is futile"
Domestic Customer, Rochdale.

‘Delivering a reliable network’ was ranked the most important priority for investment by our Plugged In Panel. Members of the panel stressed the importance of the service that we provide and how other activities rely heavily on firstly delivering a reliable network. They also highlighted the significant negative impacts an unreliable network would have on many customers lives, particularly the most vulnerable customers.

“A reliable supply is paramount and impacts on vulnerable customers and will be more critical in the future as we decarbonise and switch to electric cars and other sources of supply”
Plugged In Panel member

“As a major consumer of electricity, and with a huge reliance on grid supplied power, interruptions to its power supply would be catastrophic for the operation of the business”
Manchester Airport Group, large energy users in-depth interviews

We continuously engage with our advisory panels to develop our plans and set challenging targets to deliver our stakeholders’ strategic priorities, “Keep our customers lives running” is one of them. This priority continues to remain important with 88% of stakeholders who attended our summer 2020 regional advisory workshops feeling that it was important to invest in improving network reliability further.

Also, stakeholders attending our Chief Executive Advisory Panel recognised reliability as an important issue and noted the inconvenience of short duration interruptions, particularly to businesses, often caused by transient faults which can be difficult to locate.

Other examples:

Tree planting: When discussing our vegetation management we were asked by customers how many trees we cut down. Further research with our arborist teams showed that we did not have a reporting framework to measure that, we have always measured our work by spans of overhead line cleared (the distance between two wooden poles constituting one span).

The challenge was put to us that if we were cutting down trees and not replanting them, were we having a negative effect on the environment and carbon reduction? We have since updated our reporting practices and our proposals committing us to planting or funding the planting of 10,000 trees in our region a year, enough to replace every tree we fell.

78% of our Plugged In Panel said that doing more to reduce the environmental impact when trees are cut down was important to them.

“Trees play an important role in the wildlife in this country, so whilst it is essential for the network not to be damaged from trees, there needs to be a balance that protects biodiversity.”
Plugged In Panel member

“When a tree is cut back, another should be planted as swiftly as possible.”
Plugged In Panel Member

Our £1m community energy fund: Additional investment to double a ‘Powering our Communities’ fund to £1m per annum to help communities become more resilient, through generating their own energy, supporting energy efficiency or other ways to use and manage energy locally

Many of our community energy organisations have told us that the lack of finance and support are amongst the biggest challenges they are facing.

Customers felt that this fund would stimulate activity, and that this was a good way to support local communities while also meeting net zero targets and lowering energy costs for customers.

"This is vital support. Many projects are community / volunteer led. Making the process as easy as possible will help projects identify early on whether it's viable"
Online Community Member

"Initiatives like this will hopefully be a catalyst for community action"
Online Community Member

Removing overhead lines in beauty spots: While our stakeholders in particular National Parks and Areas of Outstanding Beauty are hugely supportive of this initiative, customers give it a low priority and are not willing to pay for the expansion of the scheme. Instead of scaling up this activity based on stakeholder requests, we are proposing to keep it at a similar level to ED1 so as not to overburden bill payers.

"We have responded to several government consultations requesting that the undergrounding allowance is retained after the current programme finishes in 2023. We are delighted that the regulator has agreed that this vital and successful work - to reduce the visual impact of pre-existing lines on protected landscapes - should continue into the new programme. We look forward to continue working with staff from Electricity North West and the protected landscapes to remove wire clutter from our most stunning landscapes"
Amanda McCleery, Friends of the Lake District

Our Plugged in Panel felt that this wasn't as important compared to other propositions as it appeared to be a largely aesthetic outcome and that the scale of investment required and speed of implementation would be a barrier.

"It would be nice, but at the current rate it would take 500 years. 34km per five years with 3,500km+ cables to bury. It is not a practical objective."
Plugged In Panel Member

Young people in Cumbria also felt that there was an element of fairness between rural and urban communities and questioned the investment needed to put cables underground versus the costs associated with power cuts.

"For those people living in Cumbria it isn't their fault for the make up of our network. The work to put cables underground can be expensive but then this is balanced with the costs associated with power cuts and overhead cable repairs."
Young person from Cumbria

Expansion of Smart Street: Stakeholders were supportive of more ambitious targets for the expansion of Smart Street to customers in areas of high fuel poverty, so that all these customers can save money on their bills (CVP, see section 5.4)

"It's a no brainer - it'll help customers to save a lot of money: £1 cost = £60 saving"
Plugged In Panel Member

Smart Street was endorsed by our Consumer Vulnerability Advisory Panel on the basis that this intelligent voltage optimisation technique has been proven to enable networks and customers' appliances to perform more efficiently and reduce customer energy consumption by up to 8%. Stakeholders supported the site selection criteria of areas where there is a high uptake of low carbon technologies and areas of fuel poverty.

Emergency street works: A stretching target of three days to complete repairs, resurface and clear sites after emergency roadworks compared to an average of 5.1 days in ED1.

"Roadworks can cause noise problems for residents. The visually impaired and mobility scooter users often find it difficult to negotiate reduced width pavements when the space is encroached upon by signage, barriers etc."
Online Community Member

Our online community were subsequently asked what they expected us to do to reduce the impact of roadworks and a poll in which 140 people took part demonstrated that reducing the duration of roadworks was a priority.

Local authorities have asked that we work collaboratively to identify opportunities for delivering street works in a more co-ordinated manner that minimises congestion.

"Long disruption (i.e. road traffic problems) causes pollution, costs money and is frustrating."
Greater Manchester Combined Authority

Stakeholders from Bolton Council told us they had concerns about the prolonged nature of disruption associated with repairs and the impact on traffic flow in busy locations.

On top of this, our willingness-to-pay research gave us a clear view of the levels of service that customers wanted and, crucially, were willing to pay for.

It showed that the average that customers were willing to pay for agreed service levels was £28. However, we set ourselves a higher benchmark in recognition of those customers who may be less able or willing to pay. We decided that we should take a figure that 80% of customers were willing to pay, for the desired outcomes. 80% of customers were willing to pay up to £9.80 for an improved package.

We then took the service levels identified for these priority areas, alongside other initiatives identified through other research, to create an overall plan that could be delivered for a £9.80 increase in the bill that customers pay.

Our acceptability testing showed an 83% overall acceptance of our plans. Further details on our customer research approaches, and the results will be included in Appendix 2 in our July draft.

4.6. Building on our engagement for ED2

Our ED2 engagement programme has been the most ambitious we have ever attempted, and we are anxious to build upon what we have learned, and to retain some of the most successful elements of the programme. Our 40-strong deliberative panel of customers was a huge success and provided great value insight helping us to arrive at a set of proposals that are rooted in the priorities of local communities.

We will retain this panel model in ED2 as well as maintaining large scale customer research and ongoing triangulation. We will also ensure that the work we have done to build up our engagement over the past two years does not go to waste. We will add to our experience, resources and capabilities to continue giving customers and stakeholders an even stronger voice in our activities.

We are also currently consulting on our engagement strategy for ED2 alongside this draft version of our plan. The strategy will be available as an appendix to our July draft.

5. What we'll deliver based on what you've told us

5. What we'll deliver based on what you've told us

This section examines our proposals in detail – offering an accessible description of the initiatives that form the backbone of our plan.

We have summarised the feedback that informed each proposal – to make it easy to see how our plans have been informed and shaped by conversations with our customers and stakeholders.

Where useful, we have included incremental investment figures for various projects. However, section 9 contains a much more detail breakdown of how our ED2 business plan will be funded.

5.1. Meeting the needs of customers and network users

As detailed in our track record in section 3, our customer satisfaction scores are already high, but customers have told us of a few areas where we can improve, such as customer services and supporting those in vulnerable circumstances.

5.1.1. Meeting customers' needs

Example customer and stakeholder input to this priority area

- Our Plugged in Panel has emphasised to us our role as a service provider and therefore that meeting customer needs is a central function of our work.
- During the qualitative stage of our initial priorities research customers told us that customer service was important as they needed to be informed of power cuts and whether Electricity North West are doing any work in their area.
- In a joint 2019 DNO WTP study, the highest valued initiative tested (out of 18 tested) was, 'during power cuts increase proactive contact with customers so that over 60% of all customer contact is through proactive methods'.
- Our innovation project, Avatar on The Future of Customer Service also indicated that traditional communication channels such as telephone and IVR are very likely to compete in the future with AI based solutions and other innovative platforms such as Crowd Service.
- During a playback session in December 2020 Members of Youth Focus North West told us "Meeting our customer needs" should be a high priority given that, as a monopoly, Electricity North West is customers' only option.

5.1.1.1. Making it even easier for customers to contact us

Customers can currently contact us via phone, our website, social media, email and post. Customers have told us that they want new ways to contact us, but that because of the urgency of some contacts, and so as not to disadvantage any customers, we must focus on taking phone calls.

We will set a realistic target to improve our customer satisfaction for ease of contact to nine out of ten.

In ED1 we launched additional ways for customers to get in touch such as our automated chatbot. We also use multiple languages and work with external agencies to provide translation services. We will continue this work in ED2 to continuously improve our offer to customers.

The advantages of this approach mean that people can contact us when it suits them, rather than waiting for specific working hours of certain teams. It also frees up the phones for people who don't easily have another option.

<table>
<tr><th colspan="2">Outcome description</th><th colspan="2">Current performance level</th><th rowspan="2">Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td colspan="2">2 new communication channels: Chat Bots & Self Service Facilities</td><td colspan="2">5 existing channels</td></tr>
<tr><th colspan="4">Customer and stakeholder evidence sources</th><td rowspan="4">• Running the customer contact centre
• Keeping our records up to date
• Maintaining & replacing our back-office IT systems
• Managing our IT
• Managing our buildings
• Running our corporate functions</td></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td>One-to-one</td></tr>
<tr><td>☑</td><td></td><td>☑</td><td>☑</td></tr>
<tr><th colspan="2">Incremental cost of proposal</th><th colspan="2">Target delivery date</th></tr>
<tr><td colspan="2">£0.5m</td><td colspan="2">31 March 2024</td><td></td></tr>
</table>

5.1.1.2. Providing additional support to businesses during power interruptions

Businesses can sometimes take a financial and even a reputational hit due to the impact of power cuts. It can also be more disruptive without the latest information to help make decisions on whether to continue or send people home for the day.

To give businesses additional support during power outages (either planned or unplanned) we will continue our innovative Business Priority Services Register – similar to the PSR for our domestic customers.

Businesses signing up to this free service will receive a range of support, such as 30 days' notice of any planned power cuts. We'll also offer advice on how they can obtain generators, and we'll proactively contact them during unplanned power cuts to keep them up to date and help them plan.

<table>
<tr><th colspan="2">Outcome description</th><th colspan="2">Current performance level</th><th rowspan="2">Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td colspan="2">Operate a Priority Services Register for Business Customers</td><td colspan="2">Trialed in ED1</td></tr>
<tr><th colspan="4">Customer and stakeholder evidence sources</th><td rowspan="4">• Running the customer contact centre
• Running our control room
• Keeping our records up to date
• Project management
• Work management
• Repairing faults
• Dealing with severe weather</td></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td>One-to-one</td></tr>
<tr><td>☑</td><td></td><td>☑</td><td>☑</td></tr>
<tr><th colspan="2">Incremental cost of proposal</th><th colspan="2">Target delivery date</th></tr>
<tr><td colspan="2">£0.2m</td><td colspan="2">1 April 2023</td><td></td></tr>
</table>

5.1.1.3. Improving the speed and quality of our responses to customers

We receive around 400,000 telephone calls from customers each year and this continues to grow. We will increase the size of our customer team to answer enquiries more quickly. This will also support resolving a minimum of 80% of complaints made within 24 hours.

We will improve our overall customer service so that at least nine out of ten customers are satisfied, compared to our current performance of 89%. This improved customer service will enable customers to get the answers they need more quickly.

Where we receive complaints we do root-cause analysis to drive how we prevent complaints or improve the process. We will continue this during ED2.

One of our roles is to connect new domestic or commercial properties to our electricity network, or change the location or size of existing services, so that customers get the power they need.

Customers will benefit from an easier connections process which is responsive to their needs, from initial application through to works being completed.

We will achieve this by being responsive to customer feedback, including the development of digital technology and an improved website to make it easier for customers to track their project.

<table>
<tr><th colspan="3">Outcome description</th><th colspan="2">Current performance level</th><th>Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td colspan="3">Enhanced customer team resolving >80% of complaints in 24 hours</td><td colspan="2">83%</td><td rowspan="5">• Running the customer contact centre
• Keeping our records up to date
• Project management
• Inspecting and maintain the network
• Running our corporate functions
• Managing our IT</td></tr>
<tr><th colspan="5">Customer and stakeholder evidence sources</th></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td colspan="2">One-to-one</td></tr>
<tr><td></td><td></td><td>☑</td><td colspan="2">☑</td></tr>
<tr><th colspan="3">Incremental cost of proposal</th><th colspan="2">Target delivery date</th></tr>
<tr><td colspan="3">£0.3m</td><td colspan="2">31 March 2024</td><td></td></tr>
</table>

5.1.1.4. Providing faster quotes and faster completion for new connections

We will beat Ofgem's standard for the time it takes us to quote and connect new connections customers. We will also increase customer satisfaction to nine out of ten through continuous improvement looking at the processes and systems we use to streamline and develop improvements.

<table>
<tr><th colspan="3">Outcome description</th><th colspan="2">Current performance level</th><th>Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td colspan="3">Exceed Ofgem targets</td><td colspan="2">Exceed Ofgem targets</td><td rowspan="5">• Running the customer contact centre
• Keeping our records up to date
• Designing and Planning
• Project management
• Work management
• Managing materials and stock
• Managing our buildings
• Running our corporate functions</td></tr>
<tr><th colspan="5">Customer and stakeholder evidence sources</th></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td colspan="2">One-to-one</td></tr>
<tr><td></td><td></td><td></td><td colspan="2">☑</td></tr>
<tr><th colspan="3">Incremental cost of proposal</th><th colspan="2">Target delivery date</th></tr>
<tr><td colspan="3">£3.8m</td><td colspan="2">31 March 2024</td><td></td></tr>
</table>

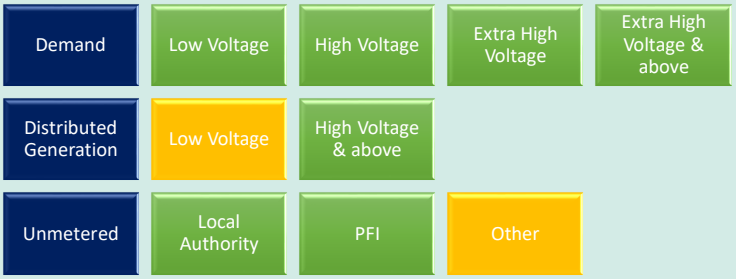
5.1.1.5. Maintain high levels of competition in connections in the North West

Connections customers tell us that the best thing we can do to deliver value to them through efficient prices and high quality service is to maintain a competitive environment for connections providers in our area.

We are the most successful network operator in demonstrating that there is active competition in our area. Ofgem carried out competition tests where new connections work was categorised into 11 market segments.

Two of these were 'excluded' market segments which covered small connections (up to four premises) and where competition was expected to be less likely to develop; for these customers other mechanisms (eg customer satisfaction survey and time to connect incentive) are in place to ensure they receive good service.

Of the other nine market segments, Electricity North West successfully passed seven representing more than 95% of all connections in our area as shown in green in the diagram below:



We will maintain our high levels of competition in connections in ED2 as the best way of providing choice and value to customers.

<table>
<tr><th colspan="3">Outcome description</th><th>Current performance level</th><th rowspan="10">Activities to help deliver this outcome (see section 8)
• Running the customer contact centre
• Keeping our records up to date
• Designing and Planning
• Project management
• Work management
• Managing materials and stock
• Managing our buildings
• Running our corporate functions</th></tr>
<tr><td colspan="3">Continue enabling competition</td><td>Competition enabled in 95% of connections markets, more than any other DNO</td></tr>
<tr><th colspan="4">Customer and stakeholder evidence sources</th></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td>One-to-one</td></tr>
<tr><td></td><td></td><td></td><td>☑</td></tr>
<tr><th colspan="2">Incremental cost of proposal</th><th colspan="2">Target delivery date</th></tr>
<tr><td colspan="2">Nil</td><td colspan="2">Ongoing</td></tr>
</table>

5.1.1.6. Reducing the time it takes to complete emergency roadworks

Emergency roadworks are required if our underground cables are damaged. Roadworks can cause disruption to local communities and commuters through extended travel time, loss of trade to businesses, noise and air pollution.

Local authorities have asked that utility companies work collaboratively to identify opportunities for delivering roadworks in a more coordinated manner, in order to minimise congestion. Our customers were also supportive for reducing the time to complete roadworks. In response, we will work more flexibly in ED2 to reduce the average time taken to finish emergency repairs in the highway or pavement from 5 days down to an average of 3 days.

This will be measured from the time of repairs commencing to the site being tidied up and restored to its previous condition.

<table>
<tr><th colspan="3">Outcome description</th><th>Current performance level</th><th rowspan="2">Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td colspan="3">Faster reinstatement of emergency streetworks</td><td>5 days</td></tr>
<tr><th colspan="4">Customer and stakeholder evidence sources</th><td rowspan="4">• Running the control room
• Keeping our records up to date
• Project management
• Work management
• Managing material and stock
• Operational training
• Vehicle repair and operations
• Maintaining & replacing IT systems
• Investing in tools and equipment
• Innovation
• Repairing faults
• Running our corporate functions</td></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td>One-to-one</td></tr>
<tr><td>☑</td><td>☑</td><td>☑</td><td>☑</td></tr>
<tr><th colspan="2">Incremental cost of proposal</th><th colspan="2">Target delivery date</th></tr>
<tr><td colspan="2">No additional allowances, but incentive rewards if improvement delivered successfully</td><td colspan="2">31 March 2026</td></tr>
</table>

5.1.1.7. Increasing community-focused approaches to engagement

We will introduce a more local community-focused approach to engagement and communications about work and services in our region. We will recruit and train a specialist team to work with local communities to engage about Electricity North West's current and future activities in local areas.

A recent example of this is engagement with a community in Golborne, Greater Manchester, which had suffered multiple power cuts in a short period of time. Community feedback resulted in us planning, scheduling and carrying out repairs in Golborne within two weeks.

We wrote to 2,000 customers to keep them informed, engaged with the local MP and arranged for an online Q&A with customers on Facebook. Customers will gain more tailored information and support over key issues that are affecting them through this approach.

<table>
<tr><th colspan="3">Outcome description</th><th>Current performance level</th><th rowspan="2">Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td colspan="3">Community engagement team improving access to information on network issues</td><td>Successful trials</td></tr>
<tr><th colspan="4">Customer and stakeholder evidence sources</th><td rowspan="4">• Running the customer contact centre
• Keeping our records up to date
• Project management
• Maintaining & replacing IT systems
• Managing our IT
• Running our corporate functions</td></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td>One-to-one</td></tr>
<tr><td></td><td></td><td>☑</td><td>☑</td></tr>
<tr><th colspan="2">Incremental cost of proposal</th><th colspan="2">Target delivery date</th></tr>
<tr><td colspan="2">This forms part of our overall customer experience proposals</td><td colspan="2">31 March 2024</td></tr>
</table>

5.1.2. Supporting electricity users in vulnerable circumstances

Vulnerability can mean many things. Our current definition in Electricity North West is: “A customer or community which feels it may be left vulnerable by real or perceived barriers to the service Electricity North West and their trusted partners provide during a loss of electricity now or in the future.”

Input from customers and stakeholders in this area highlighted the importance of addressing transitory vulnerability and designing services with inclusion in mind.

More information will be included in our dedicated appendix on our electricity users in vulnerable circumstances strategy alongside our July submission.

Example customer and stakeholder input to this priority area

- Our online community told us that our Priority Services Register is an essential service to certain people who may be in vulnerable circumstances and we should continue to promote it.
- Our Plugged In Panel told us that they thought power cuts would affect customers in vulnerable circumstances more severely, as they could be reliant on electricity for their immediate health, such as in-home medical equipment refrigerating medicines, so we need to effectively prepare for and mitigate predictable circumstances.
- Our Plugged In Panel told us that there are many difficulties faced by people in vulnerable circumstances and that tackling these should be central to all our considerations. The panel also stressed the importance of a reliable electricity supply to support the health and wellbeing of customers in vulnerable circumstances.
- Our Plugged In Panel also raised concerns about the expected rise in levels of fuel poverty in the current economic crisis and the need for Electricity North West to support those customers.
- At one of our Powering Up Recovery events Citizens Advice told us that they think Covid-19 is not only going to affect people's ongoing ability to live daily lives well into the future; but it will also affect their ability to invest in their homes and net zero – for things like electric vehicles and making that switch because they can be expensive.

5.1.2.1. Collaborating more closely with other utilities

We will collaborate more closely with other utility providers (e.g. water and gas) in the North West to provide improved services to customers in vulnerable circumstances.

To achieve this we will jointly fund new research projects and partnerships that improve support services, share awareness campaigns (e.g. safety) and share data to keep our Priority Services Register as up to date as possible.

This joined-up-approach is more efficient because it prevents the need for utility providers to always communicate separately with customers.

A recent example is a new collaboration between Age Concern, Electricity North West, United Utilities and Cadent Gas alongside Preston North End Community and Education Trust, in a joint effort to reach and support older people in Lancashire.

Customers will benefit from a more efficient and cost effective service with improved support for customers in vulnerable circumstances across the North West.

Key consultation question

When we carried out acceptability testing on all our proposals, this one ranked top of all of them and achieved 90% acceptability from customers. As such, should we look to do even more? If so, what?

Outcome description		Current performance level		Activities to help deliver this outcome (see section 8)
Enhanced co-ordination with utility providers to support vulnerable customers		Utilities Together forum with Cadent and United Utilities		• Running the control room • Keeping our records up to date • Maintaining & replacing IT systems • Innovation • Managing our IT • Running our corporate functions
Customer and stakeholder evidence sources				
Max-diff	Willing-to-pay	Acceptability	One-to-one	
		☑	☑	
Incremental cost of proposal		**Target delivery date**		
£1m		31 March 2024		

5.1.2.2. Doubling investment in referral networks

We will double our investment into referral networks to £500k per year to enable trusted partner organisations to provide customers in vulnerable circumstances with the support they need.

Funded partnerships allow us to refer customers in vulnerable circumstances to organisations (e.g. Citizens Advice) that are trusted by local communities and provide extra support.

This can include energy efficiency advice, free first-time central heating, grants to insulate or upgrade a customer's heating system and volunteers making regular contact with lonely or isolated people.

Customers will benefit from health and wellbeing benefits associated with connecting customers to support services when they need them most.

Key consultation question

This proposal was one of our lowest scoring proposals with customers, but 76% still said it was acceptable. Do you think we need to be more ambitious or less ambitious with this proposal to make it more acceptable?

Outcome description		Current performance level		Activities to help deliver this outcome (see section 8)
£500k per annum invested in referral networks		£250k per annum		• Running the control room • Running our corporate functions • Running the customer contact centre
Customer and stakeholder evidence sources				
Max-diff	Willing-to-pay	Acceptability	One-to-one	
		☑	☑	
Incremental cost of proposal		**Target delivery date**		

£1.3m	31 March 2024	

5.1.2.3. Expanding the reach of our Priority Services Register

We currently have almost 1m people registered on our free Priority Services Register (PSR) for customers in vulnerable circumstances, out of 5m people in our region. This is around 50% of all those eligible.

We will increase membership of the PSR to a minimum of 60% of those eligible for registration, targeting areas of the North West that have the greatest number of customers in vulnerable circumstances.

The PSR is a free support service to customers who need extra help during a power cut, either over the phone or face-to-face. We will continue to develop and expand our PSR and the services we offer to those on it including support available during power cuts.

We will enhance the service provided to members through making contact more frequently to check everything is okay, arranging visits from Customer Welfare Officers for those who need extra help, providing tips to prepare and stay safe during power cuts and developing new support services.

Customers will benefit from increased resilience and health and wellbeing benefits associated with reducing the stress and anxiety that can be caused by a loss of power.

<table>
<tr><th colspan="3">Outcome description</th><th colspan="2">Current performance level</th><th>Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td colspan="3">Minimum 60% of eligible customers on the Priority Services Register</td><td colspan="2">50% of eligible customers on the Priority Services Register</td><td rowspan="6">Running the customer contact centre
Keeping our records up to date
Project management
Work management
Operational training
Repairing Faults
Dealing with severe weather
Managing our IT</td></tr>
<tr><td colspan="5">Customer and stakeholder evidence sources</td></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td colspan="2">One-to-one</td></tr>
<tr><td>☑</td><td></td><td>☑</td><td colspan="2">☑</td></tr>
<tr><td colspan="2">Incremental cost of proposal</td><td colspan="3">Target delivery date</td></tr>
<tr><td colspan="2">£5.1m</td><td colspan="3">31 March 2028</td></tr>
</table>

5.1.2.4. Creating an innovation fund to ensure no one is left behind

One of the risks of a rapid path to decarbonisation is that customers with lower incomes and fewer opportunities will get left behind, as more affluent customers take-up new technologies and reap the benefits. This could widen social and economic gaps further, creating an even more unequal society.

To help prevent this imbalance, we will introduce a new £250,000 annual fund to remove the barriers that prevent the take-up of low carbon technologies, such as electric vehicles or solar panels, so that no customer gets left behind.

Key barriers to these technologies include their cost and the need for greater education and support to understand them.

This fund is a specific new idea brought by one of our stakeholders as a suggestion on how we could increase engagement and communication with key groups. We are looking for new developments to trial and learn

from. The investment level will support our learning and if we find something that works and want to develop further, we would make a business case to develop it.

Customers will benefit from innovative solutions to ensure that everyone can benefit from a future energy system that is both smart and fair and ensures that no customer gets left behind.

<table>
<tr><th colspan="2">Outcome description</th><th colspan="2">Current performance level</th><th>Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td colspan="2">Establish innovation fund to remove barriers to LCT uptake</td><td colspan="2">N/A</td><td rowspan="5">• Running our customer contact centre
• Managing our buildings
• Running our corporate functions</td></tr>
<tr><th colspan="4">Customer and stakeholder evidence sources</th></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td>One-to-one</td></tr>
<tr><td></td><td></td><td>☑</td><td>☑</td></tr>
<tr><th colspan="2">Incremental cost of proposal</th><th colspan="2">Target delivery date</th></tr>
<tr><td colspan="2">£1.3m</td><td colspan="2">30 September 2023</td><td></td></tr>
</table>

5.1.2.5. Supporting customers in fuel poverty

We will work more closely with trusted organisations to understand fuel poverty and deliver support services, investing £2m per year to support 250,000 fuel poor customers by 2028.

In the North West 12.1% of households (approx. 250,000 customers) are in fuel poverty, which is when people cannot afford to keep adequately warm at a reasonable cost, given their income.

These households are in more vulnerable circumstances than most when power cuts occur, because they don't have surplus income to cope during the power cut (for example getting a hot meal).

Working alongside local agencies we will provide a more integrated range of support services investing £2m per year to reach all 250,000 fuel poor customers by 2028. This is a quadrupling of our investment from ED1.

Energy efficiency advice, grants and debt management support will help recipients financially, but also build their confidence and knowledge. Wellbeing and other health challenges will also be supported through a referral scheme which will make it easier for customers to get the help they need.

<table>
<tr><th colspan="2">Outcome description</th><th colspan="2">Current performance level</th><th>Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td colspan="2">250,000 customers in fuel poverty supported</td><td colspan="2">N/A</td><td rowspan="5">• Running the customer contact centre
• Managing our IT
• Managing our buildings
• Running our corporate functions</td></tr>
<tr><th colspan="4">Customer and stakeholder evidence sources</th></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td>One-to-one</td></tr>
<tr><td>☑</td><td></td><td>☑</td><td>☑</td></tr>
<tr><th colspan="2">Incremental cost of proposal</th><th colspan="2">Target delivery date</th></tr>
<tr><td colspan="2">£7.5m</td><td colspan="2">31 March 2028</td><td></td></tr>
</table>

5.1.2.6. Offering timed appointments

We will continue to offer timed appointments to customers who are having work completed at their property, or to those who require a welfare visit.

Connections and cut-out work which is predominantly in someone's house are always appointment based. Planned welfare visits are arranged through discussion with customers and have either a timed appointment or, if support on the way, timed expectations.

We will maintain this important service for contacting and arranging visits with customers in vulnerable circumstances if they need them, and offer them timed appointments to make life easier. Visits will be made by a Customer Welfare Officer to explain what is happening, provide reassurance and tailored support.

<table>
<tr><th colspan="2">Outcome description</th><th colspan="2">Current performance level</th><th>Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td colspan="2">Timed appointment service for PSR customers established</td><td colspan="2">N/A</td><td rowspan="6">Running the customer contact centre
Keeping our records up to date
Project management
Work management
Operational training
Running our corporate functions
Inspecting and maintaining the network
Managing our IT</td></tr>
<tr><th colspan="4">Customer and stakeholder evidence sources</th></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td>One-to-one</td></tr>
<tr><td>☑</td><td>☑</td><td>☑</td><td>☑</td></tr>
<tr><th colspan="2">Incremental cost of proposal</th><th colspan="2">Target delivery date</th></tr>
<tr><td colspan="2">£2m</td><td colspan="2">30 September 2023</td></tr>
</table>

5.1.2.7. Developing new customer advisory panels

We will establish new representative customer advisory panels to include direct input to our plans from members of the public.

A customer advisory panel is a group of customers that come together to review our business plans and provide feedback on our performance.

In developing this ED2 business plan, we established a new deliberative customer panel which has proved hugely insightful and beneficial. We want to capitalise on this investment and learning and introduce a new customer advisory panel to provide ongoing feedback on our strategy to support customers in vulnerable circumstances.

To ensure the panel is representative it will include a diverse range of customers that truly reflects the wide range of people that live in the North West.

Part of the panel's remit will be to provide feedback on our plans for ensuring customers understand changes in the energy sector through videos, community sessions, education in schools and referral networks. The outcome will be a strengthening of consumers' voices in business decision making, influencing investment, future policy and customer benefits.

Key consultation question

This proposal was one of our lower scoring proposals but 79% of customers still found it acceptable. How do you think we should take this forward (if at all). If you have been involved in any of our existing panels, have you found them useful? Would you recommend that we hold more? If we did, how should we split them? By region, topic, type of customer etc.

<table>
<tr><th colspan="2">Outcome description</th><th colspan="2">Current performance level</th><th>Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td colspan="2">Vulnerable customer panel established</td><td colspan="2">N/A</td><td rowspan="5">Running the customer contact centre
Running our corporate functions</td></tr>
<tr><th colspan="4">Customer and stakeholder evidence sources</th></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td>One-to-one</td></tr>
<tr><td></td><td></td><td>☑</td><td>☑</td></tr>
<tr><th colspan="2">Incremental cost of proposal</th><th colspan="2">Target delivery date</th></tr>
<tr><td colspan="2">£2.5m</td><td colspan="2">30 September 2023</td></tr>
</table>

5.2. Maintaining a safe and resilient network

On average, an Electricity North West customer experiences a power cut less than once every three years and is without electricity for around half an hour every year. This represents a reliability level of 99.994%, a performance which is in the upper quartile of all 14 electricity distributors in GB.

We were the only electricity distribution network operator to commit to ensuring none of our customers would suffer a service that Ofgem would classify as “worst served” by the end of the current business plan period in 2023. We are on track to deliver on this commitment and (in 2019/20) only 268 of our customers were in this category.

5.2.1. Delivering a reliable network

Example customer and stakeholder input to this priority area

- As part of the qualitative stage of our initial priorities research 'keeping your life running' was ranked as of one of top priorities by customers as electricity is so key to day-to-day life. We have more consensus on this area across all stakeholder groups than any other.
- Our Plugged In Panel stressed the importance of the service the we provide and how other activities we may carry out rely heavily on firstly delivering a reliable network. They also highlighted the significant negative impacts an unreliable network would have on customers' lives, particularly those in the most vulnerable circumstances.
- Our online community told us that 'delivering a reliable network' was even more important now due to Covid-19. Members told us that Covid-19 had made them think more about how much they rely on electricity, for example working from home.
- Our Plugged In Panel told us that replacing old equipment before it fails should be an investment priority as it will prevent problems occurring in the future.
- Our Plugged In Panel also acknowledged the need to improve performance for customers receiving multiple power cuts and those experiencing fuel poverty as the panel had desire for fairness and 'not leaving people behind'.
- Our ongoing engagement with our stakeholder advisory panels helps us develop our plans and set challenging targets to deliver stakeholders' strategic priorities. "Keep our customers lives running" is one of them. This priority continues to remain important with 88% of stakeholders who attended our summer 2020 regional advisory workshops saying it was important to invest in improving network reliability further. Our Chief Executive Advisory Panel also recognised reliability as an important issue and noted the inconvenience of short duration interruptions,

5.2.1.1. Improving network health

The electricity network is a complex system comprising overhead lines, underground cables, substations, transformers and switchgear.

Much of this equipment is long-lived. In fact, some of our underground cables are over a century old. Over time, these assets can degrade and become increasingly prone to failure, causing power cuts.
The largest part of our investment programme is devoted to the replacement and refurbishment of existing equipment.

We measure the overall health and risk on the network using an industry standard approach. We will undertake a targeted and efficient programme of asset renewal which maintains the overall condition of the network.

Key consultation question

While 80% of customers found this proposal acceptable in our testing, business customers and stakeholders in particular have asked us to do more than just maintain the health of the network and invest to improve it.

We could maintain the overall health and risk of failure of the network at current levels for £240m. By increasing investment by £30m we could reduce the risk of failures by 10%. This would add approximately 60p a year to the average domestic customer bill.

Does this sound like a value for money investment? Should we look to be even more ambitious? Or should we focus on keeping bills low and not make the extra investment?

<table>
<tr><th colspan="3">Outcome description</th><th colspan="2">Current performance level</th><th>Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td colspan="3">Ensuring the overall health of the network and the risk of failure is maintained at current levels</td><td colspan="2">Maintaining current level of network risk</td><td rowspan="6">• Running the control room
• Keeping our records up to date
• Designing and planning
• Project management
• Work management
• Managing materials and stock
• Operational training
• Vehicle repair and operations
• Setting network policy and standards
• Maintaining & replacing IT systems
• Investing in our buildings
• Replacing our vehicle fleet
• Investing in tools and equipment
• Innovation
• Replacing and refurbishing network assets
• Managing our people
• Managing our IT
• Managing our buildings
• Running our corporate functions</td></tr>
<tr><th colspan="5">Customer and stakeholder evidence sources</th></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td colspan="2">One-to-one</td></tr>
<tr><td></td><td></td><td>☑</td><td colspan="2">☑</td></tr>
<tr><th colspan="3">Incremental cost of proposal</th><th colspan="2">Target delivery date</th></tr>
<tr><td colspan="3">£73m over current levels and a total cost of £239m</td><td colspan="2">31 March 2028</td></tr>
</table>

5.2.1.2. Reducing the number of power cuts

The frequency of power cuts is measured through the number of interruptions a customer experiences on average. We commit to reduce the number of interruptions experienced by customers on average by a further 20% from their levels in the 2021-2023 period. This will reduce the average from around once every four years to once every five years.

We will reduce the number of customers affected by each fault on the network by installing new automated control equipment.

Last year, the North West network had the second best performance out of the 14 distribution network operators for power cut frequency. This proposal will improve performance even further with customers benefitting from improved reliability.

Outcome description	Current performance level	Activities to help deliver this outcome (see section 8)

<table>
<tr><td colspan="2">Reduce frequency of power cuts by 20% from 2021-2023 levels</td><td colspan="2">Once every four years
28 interruptions per year per 100 customers</td><td rowspan="11">• Running the customer contact centre
• Running the control room
• Keeping our records up to date
• Designing and planning
• Project management
• Work management
• Managing materials and stock
• Operational training
• Vehicle repair and operations
• Setting network policy and standards
• Maintaining & replacing IT systems
• Investing in our buildings
• Innovation
• Repairing faults
• Dealing with severe weather
• Inspecting and maintaining the network
• Tree cutting
• Improving performance
• Looking after worst served customers
• Managing our people
• Managing our IT
• Managing our buildings
• Running our corporate functions</td></tr>
<tr><td colspan="4">Customer and stakeholder evidence sources</td></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td>One-to-one</td></tr>
<tr><td>☑</td><td>☑</td><td>☑</td><td>☑</td></tr>
<tr><td colspan="2">Incremental cost of proposal</td><td colspan="2">Target delivery date</td></tr>
<tr><td colspan="2">No upfront allowances – payment on results only via Ofgem’s IIS incentive mechanism</td><td colspan="2">31 March 2028</td></tr>
</table>

5.2.1.3. Reducing the length of power cuts

The overall time that customers are without electricity is expressed using the Customer Minutes Lost term. We also commit to reduce this by a further 20% from the levels in 2021-2023 in the RIIO-ED2 period. This will reduce the average time without electricity in a year from around 25 minutes to 20 minutes. We will do this by rolling out new innovative technology to identify faults and their location faster, and training more engineers to be able to respond quickly to these faults.

Last year, the North West network had the fourth best performance out of the 14 distribution network operators for power cut duration. This proposal will improve performance even further with many customers benefitting from reduced disruption.

<table>
<tr><th colspan="2">Outcome description</th><th colspan="2">Current performance level</th><th>Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td colspan="2">Reduce time off supply by 20% from 2021-2023 levels</td><td colspan="2">27 minutes lost per year per 100 customers</td><td rowspan="11">• Running the customer contact centre
• Running the control room
• Keeping our records up to date
• Work management
• Managing materials and stock
• Operational training
• Vehicle repair and operations
• Setting network policy and standards
• Maintaining & replacing IT systems
• Investing in our buildings
• Replacing our vehicle fleet
• Investing in tools and equipment
• Innovation
• Repairing faults</td></tr>
<tr><td colspan="4">Customer and stakeholder evidence sources</td></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td>One-to-one</td></tr>
<tr><td>☑</td><td>☑</td><td>☑</td><td>☑</td></tr>
<tr><td colspan="2">Incremental cost of proposal</td><td colspan="2">Target delivery date</td></tr>
<tr><td colspan="2">No upfront allowances – payment on results only via Ofgem’s IIS incentive mechanism</td><td colspan="2">31 March 2028</td></tr>
</table>

		• Dealing with severe weather • Inspecting and maintaining the network • Tree cutting • Improving performance • Looking after worst served customers • Managing our people • Managing our IT • Managing our buildings • Running our corporate functions

5.2.1.4. Improving reliability for those with a poor service

We maintain high standards of reliability by investing in the network, using new technology to minimise the impact of faults when they do occur and continuing to improve our operational response and practices. However, there is still a significant minority of customers, predominantly in rural areas, who receive a performance that is worse than the average.

This is often due to the presence of a large number of overhead cables, combined with greater exposure to storms, wind-borne debris and falling trees.

While the average time to locate and repair these faults is relatively short compared to those on underground networks, the overall pattern remains one of significantly better performance in urban areas.

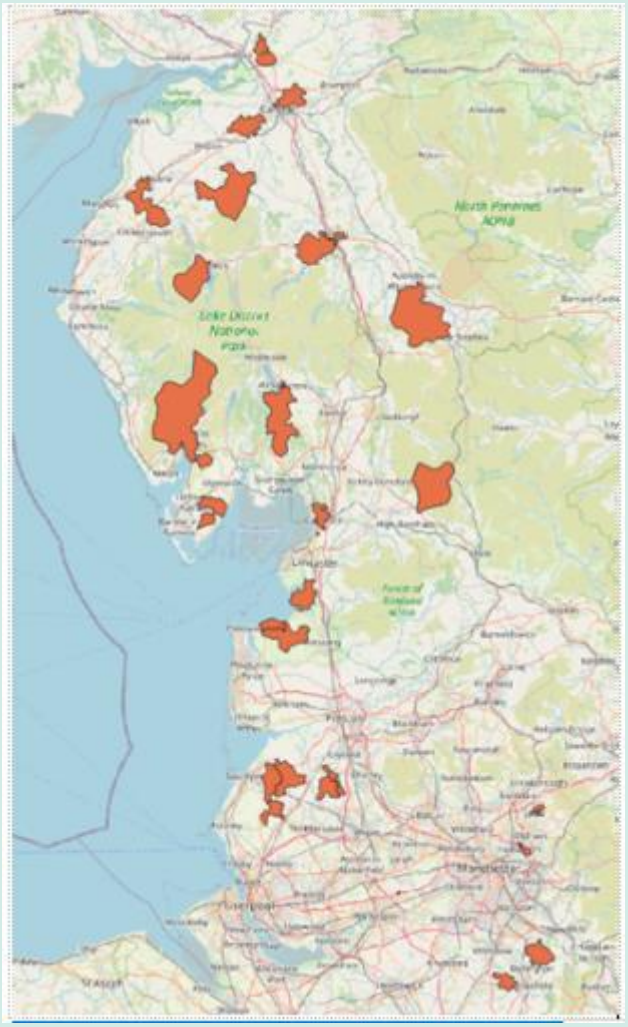
Our customers and stakeholders want us to improve the levels of service we provide to customers in more exposed parts of our network.

In response, we will deliver a targeted programme of enhancements to improve the reliability of the poorest performing parts of the network.

This will be based on using Ofgem's new definition of a 'worst-served customer'. We have assessed all the areas which would have qualified under this new measure since 2016 and have designed proposed measures for each of them.

This programme will benefit 4,159 Worst-Served Customers and a further 30,102 customers on the same circuits for a cost of £20m over RIIO-ED2.

As part of this programme, we are committing to delivering a minimum 50% performance improvement on the 27 specific circuits which can be seen on the map below:



Outcome description	Current performance level	Activities to help deliver this outcome (see section 8)
Invest to improve the service for 4,100 'worst-served' and 30,100 poorly-served customers with a 50% improvement target	Limited programme using Ofgem's ED1 worst served customer scheme	• Running the customer contact centre • Running the control room • Keeping our records up to date • Designing and planning • Project management • Work management • Managing materials and stock • Operational training • Vehicle repair and operations • Setting network policy and standards • Maintaining & replacing IT systems • Investing in our buildings • Investing in our buildings • Improving performance • Looking after worst served customers • Managing our people • Managing our IT • Managing our buildings

Customer and stakeholder evidence sources			
Max-diff	Willing-to-pay	Acceptability	One-to-one
☑	☑	☑	☑

Incremental cost of proposal	Target delivery date
£20m	31 March 2028

		• Running our corporate functions

5.2.1.5. Improving reliability for those in vulnerable circumstances

The adverse consequences of a power cut can be considerably greater for customers in vulnerable circumstances.

One of the most impactful things we can do to support communities with a large number of vulnerable customers is therefore to improve the reliability of the local network.

We consider 236,000 of our 2.4m customers (10%) to be in the most vulnerable circumstances. This includes but is not limited to customers with a chronic/serious illness. Some of these customers live in areas (often highly urbanised) which already enjoy a very reliable electricity supply, but many will suffer the inconvenience of more frequent power cuts.

In ED2 we plan to complete a targeted programme of network investments that will:

- reduce the future likelihood of a loss of supply for groups of customers with known high vulnerabilities fed from known poorly performing parts of the network. This will total £3m and benefit 844 customers with a known vulnerability at an average cost of £3,393 per vulnerable customer. Other customers in these areas will also benefit from the improvements
- mitigate the impact of high voltage faults on customers with a known high vulnerability. This will be focused at areas which, whilst they may have reasonable current reliability, are vulnerable to extended power cuts due to the network construction. This will be achieved by means of automation, introducing remote control to distribution substations and ensuring the availability of alternative routes to provide power if there is a fault. This will total £16.6m and benefit 16,617 highly vulnerable customers at an average cost of £1,000 per vulnerable customer.

Key consultation question

This was a popular proposal in our acceptability testing, ranking 5th with 88% acceptability. We have added some more detail on costs and how we would achieve this improved network performance. Do you still think that this is a good proposal? Is it ambitious enough? Does it provide good value for money?

Outcome description		Current performance level		Activities to help deliver this outcome (see section 8)
Improved network reliability for customers where there is a high incidence of customers in vulnerable circumstances		Investments for 56 key sites only (hospitals etc.)		• Running the customer contact centre • Running the control room • Keeping our records up to date • Designing and planning • Project management • Work management • Managing materials and stock • Operational training • Vehicle repair and operations • Setting network policy and standards • Maintaining & replacing IT systems • Investing in tools and equipment
Customer and stakeholder evidence sources				
Max-diff	Willing-to-pay	Acceptability	One-to-one	
☑	☑	☑	☑	
Incremental cost of proposal		**Target delivery date**		

£20m	31 March 2028	• Managing our people • Managing our IT • Managing our buildings • Running our corporate functions

5.2.1.6. Measuring and reporting short power cuts

Very short power interruptions (e.g. lasting less than three minutes) are not currently included in our performance reporting as they have traditionally caused less disruption and their exclusion encourages the use of remote control and automation on the network to restore interruptions quickly.

As the country becomes more reliant on electricity, we recognise the increasing impact of any power cut, regardless of the length. We will work with other network operators to develop a reporting framework for these short interruptions to help us establish new ways of monitoring and ultimately addressing them.

The benefit will be accurate and consistent measurement across the country to determine whether any new standards should be introduced.

5.2.2. Building a resilient network

Example customer and stakeholder input to this priority area

- Our Plugged In Panel told us that with the increase in extreme weather and flooding that building resilience into the network must become a bigger priority moving into the future. They felt it would improve Electricity North West's long-term efficiency and would have a positive impact on other priorities, particularly the reliability of the network and environmental concerns.
- There was a strong emphasis on building up resilience against cyber-attacks which were viewed by our Plugged In Panel as a serious threat due to the extent of damage which could be if they were to happen. Improving the resilience of the network to new and more frequent forms of cyber-attacks was seen as a worthy investment.
- Through our acceptability testing qualitative focus groups customers told us it was good to be proactive and safeguard the network against external threats.
- Our Local Resilience Fora engagement meetings allowed us to do specific engagement on our plans with this expert group made up of emergency responders including local authorities, emergency services, utilities and NHS providers. They emphasised the need for us to target investment in protecting the network against foreseeable threats such as bad weather.

5.2.2.1. Improving flood protection

The effects of climate change have led to some dramatic weather patterns in recent years, which have had an adverse impact on our network and our customers.

For example, in 2015, Storm Desmond caused flooding at Lancaster's major substation, cutting power to more than 60,000 customers. We invested £6m to raise key equipment at the substation 3m above the ground, to keep them safe if the site flooded again.

In ED2, we will build on the work completed to date, by improving flood defences to our highest voltage substations serving more than 10,000 customers, in line with the recommendations of the National Flood Resilience Review. This means implementing defences at sites identified as vulnerable through new data and by continuing our programme to improve flood defences to high voltage transformers.

This programme will increase flood protection to 21 substation sites serving 345,000 customers at a forecast cost of £4.2m. Its completion means that all of our major substations will be protected to at least 1/100 year flood risk, including assumptions on future climate change impacts.

<table>
<tr><th colspan="2">Outcome description</th><th colspan="2">Current performance level</th><th>Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td colspan="2">Protect 21 sites from risk of flooding in a 1 in 100 year storm event</td><td colspan="2">All sites protected to previous standard</td><td rowspan="6">• Running the control room
• Keeping our records up to date
• Designing and planning
• Project management
• Work management
• Managing materials and stock
• Operational training
• Vehicle repair and operations
• Setting network policy and standards
• Maintaining & replacing IT systems
• Investing in our buildings
• Replacing our vehicle fleet
• Investing in tools and equipment
• Improving resilience to extreme events – preventing flooding
• Managing our people
• Managing our IT
• Managing our buildings
• Running our corporate functions</td></tr>
<tr><th colspan="4">Customer and stakeholder evidence sources</th></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td>One-to-one</td></tr>
<tr><td></td><td></td><td>☑</td><td>☑</td></tr>
<tr><th colspan="2">Incremental cost of proposal</th><th colspan="2">Target delivery date</th></tr>
<tr><td colspan="2">Total cost of £4.2m</td><td colspan="2">31 March 2028</td></tr>
</table>

5.2.2.2. Improving our management of trees near overhead lines

Trees or branches falling onto power lines can cause power cuts and damage. For example, high winds during Storm Ciara in 2020 caused tree damage to our network, resulting in power cuts to 27,000 customers.

Our teams of trained tree cutters and surveyors will increase inspections of vegetation near overhead lines in ED2, and work collaboratively with landowners to prune, fell and dismantle more trees at risk of damaging our network.

In ED2, we will also have to address the impacts of diseased trees, particularly Ash Dieback – a highly destructive disease caused by a fungus – which is rapidly spreading through the country. Ash Dieback causes ash trees to weaken and pose a greater risk of falling onto overhead lines with consequent impacts on power cuts and safety. To mitigate these impacts, we (together with the other network operators and bodies such as

local authorities and highways agencies) will need to start proactively removing these trees before they pose a danger.

We have also reviewed the number of trees that we cut down during our proactive vegetation management activities. While most trees are pruned or coppiced by our skilled arborists, some trees do need to be fully cut down. Due to the need to fell diseased trees affected by Ash Dieback, during ED2 we may have to cut down up to 10,000 trees a year. We are planning to replace the same number of trees that we cut down in ED2. Customers have also asked us to increase our work to promote biodiversity in other ways see section 5.3.2.6

Key consultation question

This proposal achieved 85% support from customers in our acceptability testing. But we've now significantly increased the ambition here to replace every tree we cut down – up to 10,000 a year rather than the original proposal of 365 a year. This would ensure that any reliability benefits will not come at the cost of the environment in our region. This new proposal came from our ongoing engagement and we're keen to hear your views on its scale.

<table>
<tr><th colspan="2">Outcome description</th><th colspan="2">Current performance level</th><th>Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td colspan="2">Enhanced tree management dealing with Ash Dieback and also ensuring fewer tree-related faults due to storms</td><td colspan="2">Compliance with current standards</td><td rowspan="6">• Running the control room
• Keeping our records up to date
• Designing and planning
• Project management
• Work management
• Managing materials and stock
• Operational training
• Vehicle repair and operations
• Setting network policy and standards
• Maintaining & replacing IT systems
• Investing in our buildings
• Replacing our vehicle fleet
• Investing in tools and equipment
• Tree-cutting
• Managing our people
• Managing our IT
• Managing our buildings
• Running our corporate functions</td></tr>
<tr><td colspan="4">Customer and stakeholder evidence sources</td></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td>One-to-one</td></tr>
<tr><td></td><td></td><td>☑</td><td>☑</td></tr>
<tr><td colspan="2">Incremental cost of proposal</td><td colspan="2">Target delivery date</td></tr>
<tr><td colspan="2">£3m per year plus £3m per year for Ash Dieback</td><td colspan="2">31 March 2028</td></tr>
</table>

5.2.2.3. Improving telecommunications resilience

Controlling the electricity network is dependent on being able to communicate with the equipment remotely. We will improve the resilience of equipment that enables us to monitor and manage the electricity network remotely from our central control room.

We own and operate a private communications and data network to do this. We will invest more in this network to increase its resilience against physical, virtual and weather-related threats.

Customers will benefit from faster restoration of power during faults due to automated responses and remote control of the network.

<table>
<tr><th>Outcome description</th><th colspan="3">Current performance level</th><th>Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td>Enhanced communications infrastructure resilience</td><td colspan="3">Establishing internet protocol connections to all major substations</td><td rowspan="8">• Running the control room
• Keeping our records up to date
• Designing and planning
• Project management
• Work management
• Managing materials and stock
• Operational training
• Vehicle repair and operations
• Setting network policy and standards
• Maintaining & replacing IT systems
• Investing in our buildings
• Replacing our vehicle fleet
• Investing in tools and equipment
• Repairing faults
• Dealing with severe weather
• Inspecting and maintaining the network
• Managing our people
• Managing our IT
• Managing our buildings
• Running our corporate functions</td></tr>
<tr><th colspan="4">Customer and stakeholder evidence sources</th></tr>
<tr><th>Max-diff</th><th>Willing-to-pay</th><th>Acceptability</th><th>One-to-one</th></tr>
<tr><td></td><td></td><td>☑</td><td>☑</td></tr>
<tr><th colspan="2">Incremental cost of proposal</th><th colspan="2">Target delivery date</th></tr>
<tr><td colspan="2">£1.5m</td><td colspan="2">31 March 2028</td></tr>
</table>

5.2.2.4. Increased cyber resilience

As electricity networks become increasingly data-enabled, it is more important than ever that the data networks that support them are resilient to external threats. In the ED2 period, we will focus on levelling up our current cyber security capability.

The government introduced the Network and Information Systems (NIS) Regulations 2018 to increase the overall cyber security and cyber resilience of Operators of Essential Services (OES) such as ourselves.

The regulations require us to take appropriate and proportionate technical and organisational cyber security measures to manage risks and minimise the impact of incidents affecting these systems.

We have completed a self-assessment using the Cyber Assessment Framework (CAF) which has informed our medium-term cyber security improvement plan. This sets out the steps we plan to take in ED2 and beyond to comply with the regulations and exceed them.

<table>
<tr><th>Outcome description</th><th colspan="3">Current performance level</th><th>Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td>Comply with requirements of Network & Information System Regulations</td><td colspan="3">Completed self assessment under new Cyber Assessment Framework</td><td rowspan="8">• Running the control room
• Maintaining & replacing IT systems
• Investing in our buildings
• Managing our people
• Managing our IT
• Managing our buildings
• Running our corporate functions</td></tr>
<tr><th colspan="4">Customer and stakeholder evidence sources</th></tr>
<tr><th>Max-diff</th><th>Willing-to-pay</th><th>Acceptability</th><th>One-to-one</th></tr>
<tr><td>☑</td><td></td><td>☑</td><td>☑</td></tr>
<tr><th colspan="2">Incremental cost of proposal</th><th colspan="2">Target delivery date</th></tr>
<tr><td colspan="2">£17m</td><td colspan="2">31 March 2028</td></tr>
</table>

5.2.2.5. Improved storm resilience

On average, 70,000 customers are currently affected by large storms every winter. Storms mainly affect the rural areas of our network which have long lengths of overhead power lines.

We will improve the resilience of the network reducing the number of customers affected by large storms by increasing our tree-management programme, rolling out overhead line monitoring and delivering other reliability programmes (e.g. worst served customers) to improve performance.

This work will see fewer customers affected by power cuts caused by storms by 2028. We will report annually on the number of customers affected by storms to customers and stakeholders.

We have investigated potential specific network resilience programmes for areas persistently impacted by storms but analysis shows that the impacts are relatively widespread and sufficiently rare in any particular location to make a targeted programme uneconomic.

<table>
<tr><th colspan="2">Outcome description</th><th colspan="2">Current performance level</th><th>Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td colspan="2">Improve resilience of the network to storms</td><td colspan="2">70,000 people affected each year</td><td rowspan="8">• Running the customer contact centre
• Running the control room
• Keeping our records up to date
• Designing and planning
• Project management
• Work management
• Managing materials and stock
• Operational training
• Vehicle repair and operations
• Setting network policy and standards
• Maintaining & replacing IT systems
• Investing in our buildings
• Replacing our vehicle fleet
• Investing in tools and equipment.
• Repairing faults
• Dealing with severe weather
• Inspecting and maintaining the network
• Tree-cutting
• Improving performance
• Improving resilience to extreme events
• Managing our people
• Managing our IT
• Managing our buildings
• Running our corporate functions</td></tr>
<tr><th colspan="4">Customer and stakeholder evidence sources</th></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td>One-to-one</td></tr>
<tr><td>☑</td><td>☑</td><td>☑</td><td>☑</td></tr>
<tr><th colspan="2">Incremental cost of proposal</th><th colspan="2">Target delivery date</th></tr>
<tr><td colspan="2">Package of measures including flood protection, additional tree-cutting and Sentinel roll-out.</td><td colspan="2">31 March 2028</td></tr>
</table>

5.2.2.6. Investing in ‘black start’ readiness

Black start refers to the process of restarting the network following a national shutdown. Our network is currently compliant to the standards for restoration set by government but these are currently being reviewed to enable faster and more widespread restoration in these circumstances.

We commit to delivering against these new standards when confirmed. This is likely to lead to increased costs for managing our control room operation.

Improving standards will give reassurance to customers that there is a robust emergency recovery process in place.

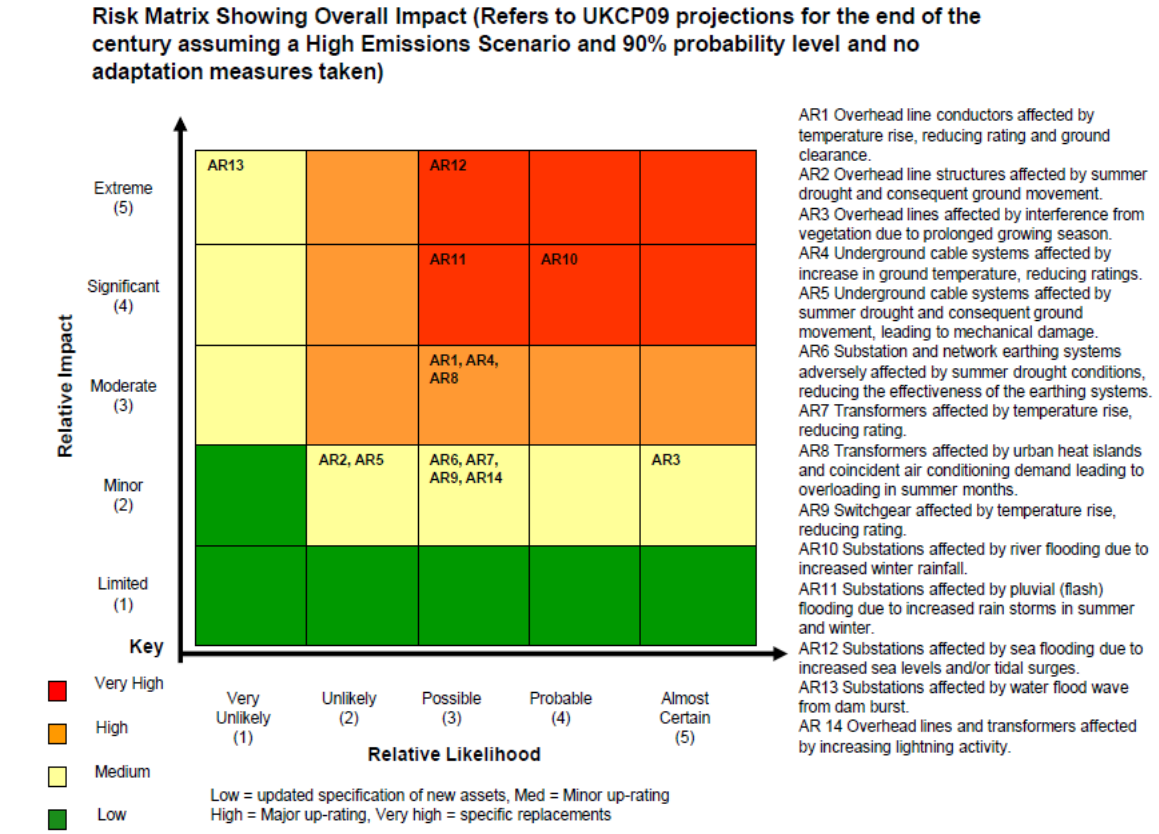
<table>
<tr><th colspan="2">Outcome description</th><th colspan="2">Current performance level</th><th rowspan="2">Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td colspan="2">Ensure compliance with new Black Start resilience standards</td><td colspan="2">Ensuring compliance with current Black Start standards</td></tr>
<tr><th colspan="4">Customer and stakeholder evidence sources</th><td rowspan="4">• Running the control room
• Keeping our records up to date
• Designing and planning
• Project management
• Work management
• Managing materials and stock
• Operational training
• Vehicle repair and operations
• Setting network policy and standards
• Maintaining & replacing IT systems
• Investing in our buildings
• Replacing our vehicle fleet
• Investing in tools and equipment
• Inspecting and maintaining the network
• Preparing for a black start
• Managing our people
• Managing our IT
• Managing our buildings
• Running our corporate functions</td></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td>One-to-one</td></tr>
<tr><td></td><td></td><td></td><td>☑</td></tr>
<tr><th colspan="2">Incremental cost of proposal</th><th colspan="2">Target delivery date</th></tr>
<tr><td colspan="2">Estimated to be around £5m subject to confirmation of the new standard.</td><td colspan="2">31 March 2028</td><td></td></tr>
</table>

5.2.2.7. Maintaining resilience in a changing climate

We face many challenges in ensuring that we continue to deliver leading reliability standards in the face of changing climate patterns. These actions are typically described as ‘adaptation’ to climate change, as distinct from the measures being taken to mitigate or restrict the level of climate change.

In 2021, we will be completing our third Climate Change Adaptation report to Defra, setting out what we consider are the key medium and long-term impacts of climate change on the network. The previous assessment set out that the key risks related to the forecast increased frequency and severity of extreme events and so our plan is focused on continuing to improve the resilience of the network in this regard.

Our measures described on flooding and tree-cutting show the increased work we will undertake to improve resilience in a changing climate.



Overall risk matrix for climate change impacts from our 2015 Adaptation report

Our full measures to ensure our network is resilient to the future challenges of a changing climate will be set out in further detail in our accompanying Climate Resilience Strategy appendix in July.

<table>
<tr><th>Outcome description</th><th colspan="3">Current performance level</th><th>Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td>Implementing Climate Change Adaptation Strategy</td><td colspan="3">Monitoring Climate Change Effects</td><td rowspan="8">• Running the customer contact centre
• Running the control room
• Keeping our records up to date
• Designing and planning
• Project management
• Work management
• Managing materials and stock
• Operational training
• Vehicle repair and operations
• Setting network policy and standards
• Maintaining & replacing IT systems
• Investing in our buildings
• Replacing our vehicle fleet
• Investing in tools and equipment.
• Repairing faults
• Dealing with severe weather
• Inspecting and maintaining the network
• Tree-cutting
• Preventing flooding
• Improving performance
• Improving resilience to extreme events
• Managing our people</td></tr>
<tr><th colspan="3">Customer and stakeholder evidence sources</th><th colspan="2"></th></tr>
<tr><th>Max-diff</th><th>Willing-to-pay</th><th>Acceptability</th><th>One-to-one</th><th></th></tr>
<tr><td></td><td></td><td>☑</td><td>☑</td><td></td></tr>
<tr><th colspan="2">Incremental cost of proposal</th><th colspan="2">Target delivery date</th><th></th></tr>
<tr><td colspan="2">Included under other proposals</td><td colspan="2">31 March 2028</td><td></td></tr>
</table>

		• Managing our IT • Managing our buildings • Running our corporate functions

5.2.3. Keeping our communities safe

Electricity is potentially very dangerous and maintaining the safety of our customers and operatives is fundamental to everything we do.

We continually inspect and maintain our equipment, replacing or upgrading assets which are deemed no longer fit-for-purpose.

We ensure our engineers are well-trained and able to operate safely, supported by rigorous procedures, compliance assurance and a strong behavioural attitude to safety.

In ED2, we will deliver several major programmes to safeguard public safety, working beneath the streets and in high rise buildings. These programmes build on our work in ED1.

Example customer and stakeholder input to this priority area

- Customers during our initial priorities research told us that it should be priority for Electricity North West to always ensure the network is safe for customers. During the qualitative stage customers ranked 'delivering a safe network' as their top priority with reasons being that safety should 'always come first' and that all other areas are reliant on an initial safe network.
- Members of our Plugged In Panel emphasised that keeping employees and customers safe must be a priority in every aspect of our work, especially considering the potential dangers posed by electricity.
- During our 2019 regional stakeholder advisory workshops stakeholders told us that 'keeping our employees and customers safe' wasn't something that could be easily traded off.

5.2.3.1. Making electricity in high rise buildings safer

Often building owners do not realise that they may be responsible for the network in the building, and this lack of clarity on ownership can cause issues with maintenance.

In ED1 we began a programme of proactively contacting building owners and establishing if they are or wish to formally become the building network owner, or if they want to formally agree that we should be the owner. Until responsibilities are formalised we take responsibility and act and assess the condition of cables and fit circuit breakers and monitor communal electrical cables at high-risk properties 24/7.

Formal agreements mean that we can more easily gain access to the properties to properly inspect the electricity infrastructure and install monitoring devices and renew their internal wiring where required.

Our monitoring equipment enables us to identify where faults are developing which may indicate a risk of an electrical fire. We will expand our programme to cover buildings which are considered high risk (111 properties) as well as highest risk (52 properties) during ED2. To assess risk we take into consideration the number of customers residing in the property, access and exit restrictions and the location of equipment.

We will also continue our programme of rewiring buildings where inspections and monitoring indicates a potential safety risk.

Key consultation question

This proposal ranked fourth out of all our proposals with 90% of customers saying it was acceptable. Do you think we should aim to do more with it by spending more to complete the work more quickly or do even more?

<table>
<tr><th colspan="2">Outcome description</th><th colspan="2">Current performance level</th><th rowspan="6">Activities to help deliver this outcome (see section 8)
• Running the customer contact centre
• Running the control room
• Keeping our records up to date
• Designing and planning
• Project management
• Work management
• Managing materials and stock
• Operational training
• Vehicle repair and operations
• Setting network policy and standards
• Maintaining & replacing IT systems
• Investing in our buildings
• Replacing our vehicle fleet
• Investing in tools and equipment
• Repairing faults
• Inspecting and maintaining the network
• Maintaining a safe network
• Managing our people
• Managing our IT
• Managing our buildings
• Running our corporate functions</th></tr>
<tr><td colspan="2">Installing electrical monitoring in 111 high risk high-rise buildings</td><td colspan="2">Monitoring electrical risks in 52 highest risk high-rise buildings</td></tr>
<tr><th colspan="4">Customer and stakeholder evidence sources</th></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td>One-to-one</td></tr>
<tr><td></td><td></td><td>☑</td><td>☑</td></tr>
<tr><th colspan="2">Incremental cost of proposal</th><th colspan="2">Target delivery date</th></tr>
<tr><td colspan="2">Continuing at current levels of investment</td><td colspan="2">31 March 2028</td></tr>
</table>

5.2.3.2. Delivering safety campaigns

We will continue to participate in industry-wide safety awareness campaigns eg household safety, electrical goods safety, farming and fishing near overhead lines.

We already collaborate in shared awareness campaigns with the other distribution network operators, co-ordinated through the Energy Networks Association, our representative national body.

We will enhance these national campaigns by taking the lead in developing more regionally-focused campaigns, in conjunction with other utility operators (e.g. water and gas) in the North West. Joined-up messaging will make it easier for customers to access important safety information.

We will increase public awareness of the dangers of electricity and behaviour-change that saves lives.

Key consultation question

This proposal ranked in the middle of our acceptability testing at 82% acceptability, but we don't have as much customer or stakeholder evidence on this as we'd like. Do you agree with us running these types of campaigns, and do you have thoughts on the extent of such campaigns and how we could measure their success? Who should we target? And where?

<table>
<tr><th colspan="2">Outcome description</th><th colspan="2">Current performance level</th><th>Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td colspan="2">Regionally focused, multi-utility safety campaigns</td><td colspan="2">National safety awareness campaigns</td><td rowspan="5">• Running the customer contact centre
• Running our corporate functions</td></tr>
<tr><th colspan="4">Customer and stakeholder evidence sources</th></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td>One-to-one</td></tr>
<tr><td></td><td></td><td>☑</td><td>☑</td></tr>
<tr><th colspan="2">Incremental cost of proposal</th><th colspan="2">Target delivery date</th></tr>
<tr><td colspan="2">This forms part of our overall Customer experience proposals</td><td colspan="2">31 March 2028</td><td></td></tr>
</table>

5.2.3.3. Increasing safety education

We will work with schools to expand our safety and science technology, engineering and maths (STEM) education programmes. This will include delivering curriculum linked educational material and awareness campaigns in person and online, to promote skills and opportunities in the electricity industry and ensure customers take precautions when working with or near electrical equipment to significantly reduce the risk of injury in our community.

Our educational work will include other key topics such as decarbonisation and sustainability, STEM skills and careers, targeting schools, college and university students to promote inclusivity.

We currently undertake a programme of visits to schools in partnership with trusted third party providers. The programme is currently delivered to 3,500 primary school children each year and has recently developed a range of online resources. Based on positive feedback from those who receive this, we will continue to grow and evolve our primary key stage two (KS2) offering and significantly scale up what we offer to secondary schools and colleges in KS3 and KS4 linking to our recruitment and inclusion in our people strategy.

We will review the ongoing effectiveness of the programme that will see increased engagement in safety issues among young people, changing behaviour and saving lives and increase awareness and interest amongst a diverse future workforce.

<table>
<tr><th colspan="2">Outcome description</th><th colspan="2">Current performance level</th><th>Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td colspan="2">Wider safety education focused on secondary schools</td><td colspan="2">Safety education focused on primary schools</td><td rowspan="4">• Running the customer contact centre
• Running our corporate functions</td></tr>
<tr><th colspan="4">Customer and stakeholder evidence sources</th></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td>One-to-one</td></tr>
<tr><td></td><td></td><td>☑</td><td>☑</td></tr>
</table>

Incremental cost of proposal	Target delivery date	
This forms part of our overall Customer experience proposals	31 March 2028	

5.2.3.4. Improving overhead line safety

We will deploy our new 'Sentinel' technology developed in ED1 to install sensors on sections of overhead lines to detect any dangerous low-hanging lines.

Faults on rural networks can sometimes cause overhead power lines to hang low whilst remaining live, which also creates a public safety hazard. This can be a particular issue during storm events with multiple occurrences.

New technology developed by Electricity North West will enable the detection of damaged equipment earlier and help us to pinpoint the location of faults, enabling more efficient despatch of repair crews.

Customers will benefit from the faster removal of safety hazards caused by network faults as well as reduced likelihood of power cuts. The system will also allow us to identify issues more quickly in storm situations where we can have many faults to deal with.

As this technology is still being trialled, we are still working on our proposals for ED2 which we will include in our final submission in December 2021.

Outcome description		Current performance level		Activities to help deliver this outcome (see section 8)
Roll-out Sentinel technology across the overhead line network		Developed and trialed the Sentinel technology		• Running the control room • Keeping our records up to date • Designing and planning • Project management • Work management • Managing materials and stock • Operational training • Vehicle repair and operations • Setting network policy and standards • Maintaining & replacing IT systems • Investing in our buildings • Replacing our vehicle fleet • Investing in tools and equipment • Innovation • Maintaining a safe network • Managing our people • Managing our IT • Managing our buildings • Running our corporate functions
Customer and stakeholder evidence sources				
Max-diff	Willing-to-pay	Acceptability	One-to-one	
		☑	☑	
Incremental cost of proposal		**Target delivery date**		
Indicative £24-30m but will be confirmed in our final submission		31 March 2028		

5.2.3.5. Keeping rural transformers safe

We will replace small rural substations in exposed parts of the network. We have 220 small ground-mounted substations in rural settings which are not housed in buildings. This increases the chances of customers coming into contact with them, posing a safety risk. In addition, they were installed in the 1950s

and do not have modern standards of protection, meaning that fault restoration can be a lengthy process. Many of the substations are now reaching the end of their design life and their condition is starting to deteriorate.

We will progressively replace all of these substations with safer equipment, with 50% replaced by 2028 and the remainder by 2033. The prioritisation of the replacement will be based on the condition of the equipment.

<table>
<tr><th colspan="2">Outcome description</th><th colspan="2">Current performance level</th><th>Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td colspan="2">Replace 110 small rural transformers</td><td colspan="2">Maintaining aging rural transformers</td><td rowspan="8">• Running the control room
• Keeping our records up to date
• Designing and planning
• Project management
• Work management
• Managing materials and stock
• Operational training
• Vehicle repair and operations
• Setting network policy and standards
• Maintaining & replacing IT systems
• Investing in our buildings
• Replacing our vehicle fleet
• Investing in tools and equipment
• Innovation
• Maintaining a safe network
• Managing our people
• Managing our IT
• Managing our buildings
• Running our corporate functions</td></tr>
<tr><th colspan="4">Customer and stakeholder evidence sources</th></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td>One-to-one</td></tr>
<tr><td></td><td></td><td>☑</td><td>☑</td></tr>
<tr><th colspan="2">Incremental cost of proposal</th><th colspan="2">Target delivery date</th></tr>
<tr><td colspan="2">£4m</td><td colspan="2">31 March 2028</td></tr>
</table>

5.2.3.6. Enhancing security at major sites

We have an obligation to maintain the security of our sites and prevent trespassing which might cause major power cuts and safety risks. We install additional measures at our most critical sites in response to their level of risk. We will continue this programme in ED2, maintaining existing preventative measures and installing new ones where the risk level changes.

<table>
<tr><th colspan="2">Outcome description</th><th colspan="2">Current performance level</th><th>Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td colspan="2">Maintain security programme</td><td colspan="2">Expanded security programme to counter new threats</td><td rowspan="8">• Running the control room
• Keeping our records up to date
• Designing and planning
• Project management
• Work management
• Managing materials and stock
• Operational training
• Vehicle repair and operations
• Setting network policy and standards
• Maintaining & replacing IT systems
• Investing in our buildings
• Replacing our vehicle fleet
• Investing in tools and equipment</td></tr>
<tr><th colspan="4">Customer and stakeholder evidence sources</th></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td>One-to-one</td></tr>
<tr><td></td><td></td><td></td><td>☑</td></tr>
<tr><th colspan="2">Incremental cost of proposal</th><th colspan="2">Target delivery date</th></tr>
<tr><td colspan="2">Continue at current levels</td><td colspan="2">31 March 2028</td></tr>
</table>

		• Innovation • Maintaining a safe network • Managing our people • Managing our IT • Managing our buildings • Running our corporate functions

5.2.3.7. Improving safety of underground cable pits

In ED1, we will complete a programme to inspect all 18,000 link boxes on our network. Link boxes are underground cabinets where low voltage cables come together and can be connected or disconnected. They can pose a risk to the public, because if ground gases build up in the chamber, a fault on the network can ignite them. There have been a number of such cases nationally during ED1.

Many of these are located in pavements causing a safety risk. Our ED1 programme will have either maintained, replaced or fitted a 'blast bag' to these link boxes, depending on their location and risk.

In ED2, we will expand this work to cover cable pits – these are larger versions of link boxes containing higher voltage cables, often located in roadways. This programme will see us replace cable pits in poor condition and install blast bags in the rest to mitigate any impact if a fault does occur.

<table>
<tr><th colspan="2">Outcome description</th><th colspan="2">Current performance level</th><th>Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td colspan="2">Intervene on entire cable pit population to improve safety</td><td colspan="2">Developed efficient techniques during link box programme</td><td rowspan="8">• Running the control room
• Keeping our records up to date
• Designing and planning
• Project management
• Work management
• Managing materials and stock
• Operational training
• Vehicle repair and operations
• Setting network policy and standards
• Maintaining & replacing IT systems
• Investing in our buildings
• Replacing our vehicle fleet
• Investing in tools and equipment
• Maintaining a safe network
• Managing our people
• Managing our IT
• Managing our buildings
• Running our corporate functions</td></tr>
<tr><th colspan="4">Customer and stakeholder evidence sources</th></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td>One-to-one</td></tr>
<tr><td></td><td></td><td></td><td>☑</td></tr>
<tr><th colspan="2">Incremental cost of proposal</th><th colspan="2">Target delivery date</th></tr>
<tr><td colspan="2">£3m</td><td colspan="2">31 March 2028</td></tr>
</table>

5.2.3.8. Carrying out proactive safety checks on cut-outs

A cut-out is a piece of electrical equipment that forms the link between our electricity cable and the internal wiring in customers' properties.

In RIIO-ED2, most customers will have smart meters and meter readers will no longer be physically inspecting meters and cut-outs. Previously we have relied on them informing us of any issues with the cut-out.

Although some of the early smart meters will be being replaced by 2028, to ensure the cut-outs remain safe, we will need to start our own periodic inspections in ED2 and ensure we act on any issues found.

The inspection regime will cost approximately £1 million per year and will ensure customers continue to have peace of mind.

<table>
<tr><th colspan="3">Outcome description</th><th>Current performance level</th><th rowspan="11">Activities to help deliver this outcome (see section 8)
• Running the control room
• Keeping our records up to date
• Work management
• Managing materials and stock
• Operational training
• Vehicle repair and operations
• Setting network policy and standards
• Maintaining & replacing IT systems
• Investing in our buildings
• Replacing our vehicle fleet
• Investing in tools and equipment
• Maintaining a safe network
• Managing our people
• Managing our IT
• Managing our buildings
• Running our corporate functions</th></tr>
<tr><td colspan="3">Initiate regular cut-out safety check programme</td><td>N/A</td></tr>
<tr><th colspan="4">Customer and stakeholder evidence sources</th></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td>One-to-one</td></tr>
<tr><td></td><td></td><td></td><td>☑</td></tr>
<tr><th colspan="2">Incremental cost of proposal</th><th colspan="2">Target delivery date</th></tr>
<tr><td colspan="2">£1m per year</td><td colspan="2">31 March 2028</td></tr>
</table>

5.3. Delivering an environmentally sustainable network

5.3.1. Leading the North West to net zero

Enabling the transition to a net zero carbon future is the biggest challenge that energy networks currently face. The UK is on a transformative journey to decarbonise, and as the North West's electricity distributor, we have a crucial role to play.

In ED2, we will invest strategically in our network so that we have the capacity in place to support the expected increase in electricity demand from electric vehicles and the changing needs of businesses and homes.

We will continue to develop our next generation network management system which will enable rapid, automated control of our network – vital to respond to a more complex, decentralised network.

We will continue to evolve our own role, by helping local, renewable energy schemes connect to our network, and by providing advice to homes and businesses on how to take advantage of low carbon technology. And we will continue to provide regional leadership, working with key stakeholders such as local authorities to help them develop and implement their low carbon development plans for the coming years.

Example customer and stakeholder input to this priority area

- We have recognised the priorities of our national stakeholders in the transition to net zero particularly taking into consideration Ofgem's Decarbonisation Plan and the Climate Change Committee's Sixth Carbon Budget. Our own research mirrored that of the Department for Business, Energy and Industrial Strategy (BEIS) showing that more than 60% of customers did not understand the term 'net zero'. This has informed how we position questions and the background material that we prepare to enable engagement.

- At our Powering Up Recovery events the majority of our local and regional political and business stakeholders told us that we should take a proactive approach to bring forward future investment to increase network capacity and enable faster pathways to net zero.

- Our targeted engagement with the three county councils in our region revealed that they all have different net zero ambitions. However they have recognised the key role that Electricity North West has as an anchor institution in the region and our important role in supporting local action. We are working closely with Cumbria and Lancashire County Councils as well as Greater Manchester Combined authority at all levels, including CEO-level.

- In qualitative focus groups as part of our initial priorities research most consumers felt that this is an important area to focus on as part of Electricity North West's role in being a good corporate citizen.

- Our Plugged In Panel emphasised the urgency needed to tackle climate change and the responsibility of Electricity North West to play a key role in modelling the best approach and acting as a sector lead in energy distribution.

- During the qualitative stage of our acceptability testing, domestic customers told us that as their dependency on electricity increases we need to make sure we are able to meet demand. Also, business customers welcomed the idea that we would work with other organisations to improve their behaviours.

- Decarbonisation and Net Zero has always been a top priority for the members of Youth Focus North West and they consistently ranked it as one of their top priorities in our discussions with them. During these discussions they told us that they will always prioritise net zero and low carbon technologies as it's their future with members expecting that their first cars would be electric and that there was no alternative.

- We conducted primary research with a representative sample of domestic consumers in our region regarding their awareness, ownership and attitudes towards low carbon technologies (LCT), including the divers and barriers to take-up. Consumers told us that they were interested in low carbon technologies however claimed that lack of knowledge was as a key barrier to them adopting LCTs in the future. Targeted engagement with our business community revealed awareness of the need to take greater action to support decarbonisation, but this was often constrained by time, resources, competing priorities, and not knowing what to do first.

5.3.1.1. Helping customers connect low carbon technologies

Demand for electricity is likely to increase significantly from its current levels over the next decade, as the transport and heat sectors become increasingly electrified.

Although there are likely to be some offsetting reductions from energy efficiency improvements and changes in industrial demand, we nevertheless need to plan for a large overall increase in consumption.

At the same time, we expect to see an increase in the connection of renewable generation to our network – another big change which also has implications for our network investment plans.

Meeting this increasing demand by simply expanding the network is not financially sustainable. We know from our research that bill payers would not accept the large price hikes that this would entail.

Instead, we need to take a more strategic approach – by providing the right capacity in the right place at the right time, and by making the existing network work harder.

Key consultation question

This proposal ranked 35th in our acceptability testing with 79% acceptability from customers. We have updated this proposal to make it clear that we will also share the connection costs of new low carbon technologies across all customers, to encourage take up.

Customers have told us that we should fund this through everyone's bills, rather than charging individuals to connect new low carbon technologies to the network.

Do you think that this is the right thing to do? Some of the early adopters of low carbon technologies are more well off, but some of the largest roll-outs of low carbon technologies, such as solar panels, that we have seen on our network are undertaken by social housing providers.

Should we all pay a small amount to keep the connection costs 'free' (at the point of connection) so that low carbon technologies are encouraged and more accessible to all? We'd love to hear your views as we continue to debate and discuss this proposal with customers and stakeholders.

<table>
<tr><th colspan="2">Outcome description</th><th colspan="2">Current performance level</th><th>Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td colspan="2">Ensuring capacity is provided in the right place and at the right time as electricity demands increase</td><td colspan="2">Providing capacity in line with our network management plans and forecasts</td><td rowspan="6">• Running the control room
• Keeping our records up to date
• Design and planning
• Project management
• Work management
• Managing materials and stock
• Operational training
• Vehicle repair and operations
• Setting network policy and standards
• Maintaining & replacing IT systems
• Investing in our buildings
• Replacing our vehicle fleet
• Investing in tools and equipment
• General reinforcement at EHV
• General reinforcement at LV and HV</td></tr>
<tr><th colspan="4">Customer and stakeholder evidence sources</th></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td>One-to-one</td></tr>
<tr><td>☑</td><td>☑</td><td>☑</td><td>☑</td></tr>
<tr><th colspan="2">Incremental cost of proposal</th><th colspan="2">Target delivery date</th></tr>
<tr><td colspan="2">£70m increase on current levels of reinforcement expenditure</td><td colspan="2">31 March 2028</td></tr>
</table>

		• Fault Level Reinforcement at EHV • Fault Level Reinforcement at LV and HV • Managing our people • Managing our IT • Managing our buildings • Running our corporate functions

5.3.1.2. Removing constraints for renewables

We will help renewable electricity generation connect to the network, such as solar and wind power.

At the moment, certain parts of our network (e.g. city centres) are restricted in the amount of renewable generation that can connect because of the characteristics of some of the equipment installed there. If we don't support this, far less renewable generation will be able to connect in the North West.

We will make the network ready so that renewable electricity generation can be connected to more of our network, focusing on the areas most likely to see more renewable connections where we can replace our equipment in advance.

By helping connect more renewable electricity generation we will enable the reduction of carbon emissions and help tackle climate change.

<table>
<tr><th colspan="2">Outcome description</th><th colspan="2">Current performance level</th><th>Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td colspan="2">Remove constraints for renewable generation connection</td><td colspan="2">Constraints exist in certain areas of network increasing the cost of renewable generation connection</td><td rowspan="8">• Running the control room
• Keeping our records up to date
• Design and planning
• Project management
• Work management
• Managing materials and stock
• Operational training
• Vehicle repair and operations
• Setting network policy and standards
• Maintaining & replacing IT systems
• Investing in our buildings
• Replacing our vehicle fleet
• Investing in tools and equipment
• General reinforcement at EHV
• General reinforcement at LV and HV
• Fault Level Reinforcement at EHV
• Fault Level Reinforcement at LV and HV
• Managing our people
• Managing our IT
• Managing our buildings
• Running our corporate functions</td></tr>
<tr><th colspan="4">Customer and stakeholder evidence sources</th></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td>One-to-one</td></tr>
<tr><td>☑</td><td>☑</td><td>☑</td><td>☑</td></tr>
<tr><th colspan="2">Incremental cost of proposal</th><th colspan="2">Target delivery date</th></tr>
<tr><td colspan="2">£30m above current levels.</td><td colspan="2">31 March 2028</td></tr>
</table>

5.3.1.3. Establishing a new £1m annual community energy fund

Community energy projects are citizen-led schemes to reduce, generate or purchase energy. Examples include neighbourhood-led solar or hydro projects.

In ED1 we currently offer a £75,000 fund per year to support these projects and helped six such projects last year.

These projects enable local, renewable electricity to be generated and connected to the network, as well as increasing awareness about energy efficiency and local action. The more power that is saved or connected locally means the lower the cost of the distribution of that power, saving money and emissions.

In ED2, we will increase this fund to £1 million per year. This will enable more projects to go ahead.

Alongside the funding, we will provide a free, dedicated support service to help guide community groups in the development of their projects, applications for funding and the connection of their projects to our network.

<table>
<tr><th colspan="2">Outcome description</th><th colspan="2">Current performance level</th><th>Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td colspan="2">£1m per year fund</td><td colspan="2">£75,000 per year fund</td><td rowspan="6">• Keeping our records up to date
• Running our corporate functions</td></tr>
<tr><th colspan="4">Customer and stakeholder evidence sources</th></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td>One-to-one</td></tr>
<tr><td>☑</td><td>☑</td><td>☑</td><td>☑</td></tr>
<tr><th colspan="2">Incremental cost of proposal</th><th colspan="2">Target delivery date</th></tr>
<tr><td colspan="2">£4.6m</td><td colspan="2">31 March 2028</td></tr>
</table>

5.3.1.4. Unlooping customers' power supplies

A looped service describes a situation where two or more households are connected to the electricity main with the same service cable. Hundreds of thousands of homes were historically connected to the power network in this way over the years to save the costs of connecting each individual property to the mains cable.

However, this historic practice of sharing a service cable restricts the number of additional devices a household can connect to. This can prevent adoption of new technologies such as electric vehicle chargers – a change unforeseen when the original connections were made.

In ED2, we will unloop the electricity services to properties installing low carbon technologies such as Electric Vehicle chargers, putting in new cables to connect individual properties to the mains. The costs of this vary depending on the existing arrangements but typically cost £2k per new service connection.

We will do this when we are notified about electric vehicle charger connections or where customers want to connect heat pumps. Our forecasts for the take up of these technologies gives a strong indication of how many will take place in regions where our services were traditionally connected in a looped manner. This will be the start of an ongoing programme that will be necessary to eventually remove all looped services in the North West.

Key consultation question

This proposal ranked relatively low in our acceptability testing, but 79% of customers still found it acceptable. We have added more information and context to this proposal showing we'll target investment based on requests for this work to be done. We've also upped our ambition with the aim of eventually removing all looped services in our region.

<table>
<tr><th colspan="3">Outcome description</th><th>Current performance level</th><th>Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td colspan="3">Unloop services to properties adopting low carbon technologies</td><td>Few hundred services unlooped when requested</td><td rowspan="11">• Running the control room
• Keeping our records up to date
• Design and planning
• Project management
• Work management
• Managing materials and stock
• Operational training
• Vehicle repair and operations
• Setting network policy and standards
• Maintaining & replacing IT systems
• Investing in our buildings
• Replacing our vehicle fleet
• Investing in tools and equipment
• Replacing network assets - Services
• Managing our people
• Managing our IT
• Managing our buildings
• Running our corporate functions</td></tr>
<tr><th colspan="4">Customer and stakeholder evidence sources</th></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td>One-to-one</td></tr>
<tr><td></td><td></td><td>☑</td><td>☑</td></tr>
<tr><th colspan="2">Incremental cost of proposal</th><th colspan="2">Target delivery date</th></tr>
<tr><td colspan="2">£70m</td><td colspan="2">31 March 2028</td></tr>
</table>

5.3.1.5. Providing a decarbonisation advice service

We will provide free advice to households and businesses, to help them adopt low carbon technologies and make their properties more energy efficient.

Information will be delivered through the development of our online hub, awareness campaigns on social media and a range of other communication methods. We will also work with partners to ensure information is up to date and accurate regarding the power network.

<table>
<tr><th colspan="3">Outcome description</th><th>Current performance level</th><th>Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td colspan="3">Continue to provide, develop and promote decarbonisation advice hub</td><td>Online decarbonisation hub recently established</td><td rowspan="7">• Running our customer contact centre
• Running our corporate functions</td></tr>
<tr><th colspan="4">Customer and stakeholder evidence sources</th></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td>One-to-one</td></tr>
<tr><td>☑</td><td>☑</td><td>☑</td><td>☑</td></tr>
<tr><th colspan="2">Incremental cost of proposal</th><th colspan="2">Target delivery date</th></tr>
<tr><td colspan="2">Continue at current rates</td><td colspan="2">31 March 2028</td></tr>
</table>

5.3.2. Our direct environmental impact

Example customer and stakeholder input to this priority area

- In qualitative focus groups as part of our initial priorities research most consumers felt that this is an important area to focus on as part of Electricity North West being a good corporate citizen. Customers also said that if we were leading a charge on net zero that it was important to get our own business in order first.

- Through our ED1 2020 Social Value Research we heard from customers their views that we have a duty to maintain our network in an economical and efficient way, to preserve amenity, and to conserve and enhance the natural beauty, wildlife and the cultural heritage of designated landscapes.

- Our Plugged In Panel stressed the importance of Electricity North West to lead by example in reducing its own carbon footprint. 58% of Our Plugged In Panel told us that we should reach net zero carbon emissions in our operations by 2038 to align with the end of RIIO-ED4 and the UK's seventh carbon budget.

  At our April 2020 Sustainability Stakeholder Advisory Panel the majority of stakeholders told us that we should be reaching net zero carbon emissions in our operations by 2038. This was regarded as the most ambitious option and is aligned to Greater Manchester's commitment to decarbonise by 2038.

5.3.2.1. Reducing our business carbon footprint

We will continue to work to reduce our own business carbon footprint – a move that our stakeholders and customers strongly support.

By 2020, we had reduced carbon emissions by 26%, compared to 2015 levels. We achieved this through a range of initiatives, such as better monitoring of heating in our buildings and installing LED lighting at all our sites. In ED1 we have adapted two of our key sites, our training academy in Blackburn and our depot in Oldham, to be zero carbon buildings. This valuable learning demonstrates we can do so effectively and efficiently at all of our offices and depots.

In ED2, we will continue to lead by example, by accelerating the pace of our own decarbonisation programme, in an effort to become a carbon neutral business by 2038.

We will progressively replace vehicles with electric equivalents and convert our buildings to be much more energy efficient.

There is a lot of work to do on making our buildings more efficient, particularly those built a long time ago – the quicker we do this, the sooner we will see the carbon benefits. We plan to make one of our depots zero carbon for each year of ED2.

We will replace our current vehicles with electric equivalents when they become cost neutral or cost beneficial over their lifecycle. We anticipate that this will lead to our vehicle fleet being 29% electric by 2028.

Outcome description	Current performance level	Activities to help deliver this outcome (see section 8)
Accelerate progress to zero carbon target with five new zero carbon sites and over 25% of vehicle fleet electrified to bring business carbon footprint down to 8,175 tCO2e/yr on average in ED2 (subject to agreement of a science-based target)	26% reduction in carbon footprint two zero carbon sites	• Design and planning • Project management • Investing in our buildings • Replacing our vehicle fleet • Managing our people • Managing our buildings • Running our corporate functions

Customer and stakeholder evidence sources			
Max-diff	Willing-to-pay	Acceptability	One-to-one
☑		☑	☑

Incremental cost of proposal	Target delivery date
£7.4m	31 March 2028

5.3.2.2. Managing oil-filled cables

We will reduce leaks from the relatively small number of bio-oil-insulated electricity cables that remain on our network. We have 44,000km of underground electricity cables. 380km of these (0.9%) are of an older construction that contain oil for insulation.

These older cables can sometimes leak when they are damaged, seals deteriorate or ground conditions change. We have been progressively removing this type of cable from our network over a number of years.

In ED2, we plan to continue with this programme prioritising the highest risk cables and also carefully manage those lengths that do remain using new tracing technologies to ensure that we can identify and fix leaks as soon as they occur. These measures will enable us to minimise the leakage from these cables and we have set an annual leakage target of less than 25,000 litres, representing a 17% reduction on the targets we set for the end of ED1.

Key consultation question

This proposal achieved support from 79% of customers in our acceptability testing but originally focused on a target of replacing a certain length of cable (10km a year). Following feedback we have changed our target to reducing the amount of oil leakage specifically, rather than just measuring lengths of cable replaced (although the work to reduce leakage will still include replacing the highest risk cables). Does this additional information help you to decide on what our level of ambition should be in this area and if it provides value for money?

Outcome description	Current performance level	Activities to help deliver this outcome (see section 8)
Reduce oil leakage from underground cables to less than 25,000 litres per year on average	More than 30,000 litres per year on average	• Running the control room • Keeping our records up to date • Work management • Managing materials and stock

				• Operational training • Setting network policy and standards • Investing in tools and equipment • Repairing faults • Inspecting and maintaining the network • Managing our people • Managing our IT • Managing our buildings • Running our corporate functions
Customer and stakeholder evidence sources				
Max-diff	Willing-to-pay	Acceptability	One-to-one	
		☑	☑	
Incremental cost of proposal		**Target delivery date**		
Included as part of our proposal on improving network health		31 March 2028		

5.3.2.3. Removing overhead lines in beauty spots

Since 2005 we have been working with partners such as the Lake District and Peak District National Park Authorities to remove overhead power lines, and replace them with underground cables, in Areas of Outstanding Natural Beauty (AONBs) and our National Parks.

Overhead lines in these locations can be deemed to be visually intrusive and detract from the landscape. By 2023, we expect to have replaced 150km of overhead lines with underground cables.
In ED2 we will continue our programme working closely with National Parks, AONBs and other key stakeholders to replace 7-8km of overhead lines each year with underground cables in locations identified by our partners of being of particular visual impact.

We will work with experts where appropriate, including archaeologists, the Environment Agency and local councils to minimise other environmental impacts and ensure the work is handled sensitively.

Outcome description		**Current performance level**		**Activities to help deliver this outcome (see section 8)**
Maintain our successful programme of improving visual amenity		Replace 7-8km of overhead line each year		• Running the control room • Keeping our records up to date • Designing and planning • Project management • Work management • Managing materials and stock • Operational training • Vehicle repair and operations • Setting network policy and standards • Maintaining & replacing IT systems • Investing in our buildings • Replacing our vehicle fleet • Investing in tools and equipment • Undergrounding for visual amenity • Managing our people • Managing our IT • Managing our buildings • Running our corporate functions
Customer and stakeholder evidence sources				
Max-diff	Willing-to-pay	Acceptability	One-to-one	
		☑	☑	
Incremental cost of proposal		**Target delivery date**		
Maintained at current levels		31 March 2028		

5.3.2.4. Reducing losses from the network

A small amount of electricity is lost in the process of distributing it to customers, due to it being converted into other forms of energy, eg transformers getting warm.

This is wasteful in terms of carbon emissions and the cost to bill payers for electricity they never get to use. To reduce these losses in ED2, we will upgrade cables and equipment to lower loss equivalents when we are undertaking work and also replace the highest loss equipment on our network, even if the equipment does not require replacement for any other reason.

This proactive investment will save around eight GigaWatt hours of electricity (GWh) per year by 2028 – enough electricity to power around 2,760 homes for a year.

<table>
<tr><th colspan="2">Outcome description</th><th colspan="2">Current performance level</th><th>Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td colspan="2">Reduce losses by 8 GWh per year</td><td colspan="2">1,150 GWh per year</td><td rowspan="6">• Running the control room
• Keeping our records up to date
• Designing and planning
• Project management
• Work management
• Managing materials and stock
• Operational training
• Vehicle repair and operations
• Setting network policy and standards
• Maintaining & replacing IT systems
• Investing in our buildings
• Replacing our vehicle fleet
• Investing in tools and equipment
• Reducing electrical losses
• Managing our people
• Managing our IT
• Managing our buildings
• Running our corporate functions</td></tr>
<tr><th colspan="4">Customer and stakeholder evidence sources</th></tr>
<tr><td>Max-diff</td><td>Willing-to-pay</td><td>Acceptability</td><td>One-to-one</td></tr>
<tr><td></td><td></td><td>☑</td><td>☑</td></tr>
<tr><th colspan="2">Incremental cost of proposal</th><th colspan="2">Target delivery date</th></tr>
<tr><td colspan="2">£10m, equivalent to similar programme in ED1</td><td colspan="2">31 March 2028</td></tr>
</table>

5.3.2.5. Reducing emissions of potent greenhouse gases from equipment

Sulphur Hexafluoride (SF_6) is used throughout the industry as an effective electrical insulator and is in some of our equipment but is a potent greenhouse gas if leaks occur. Currently 0.32% of our total SF_6 is lost via leakage each year.

There are currently few viable alternatives to using SF_6 so we will proactively manage our equipment to minimise leaks, replace old equipment if its condition deteriorates, and also work with industry to stimulate the development of alternatives. As we switch over to installing SF_6-free equipment, we expect the costs to increase in the short-term, until the widespread availability of alternatives.

We are proposing to commit to maintaining our leakage rate to less than 0.3% of our total inventory over RIIO-ED2.

Outcome description	Current performance level	Activities to help deliver this outcome (see section 8)
	0.32% SF_6 loss per year	• Running the control room

Maintain SF_6 leakage rate below 0.3% per year				• Keeping our records up to date • Designing and planning • Project management • Work management • Managing materials and stock • Operational training • Vehicle repair and operations • Setting network policy and standards • Investing in tools and equipment • Innovation • Inspecting and maintaining the network • Reducing environmental impacts • Managing our people • Managing our IT • Managing our buildings • Running our corporate functions
Customer and stakeholder evidence sources				
Max-diff	Willing-to-pay	Acceptability	One-to-one	
		☑	☑	
Incremental cost of proposal		**Target delivery date**		
£9.6m		31 March 2028		

5.3.2.6. Making our sites havens for wildlife

In 2019/20 we transformed nine of our substation sites into low-maintenance, self-pollinating spaces following a suggestion from one of our grounds workers.

Not only do they benefit the local area but they can also reduce the amount of maintenance needed by Electricity North West. Unlike a site with grass that needs regular trimming and weeding, a site filled with self-pollinating wildflowers does not need regular visits.

In addition these sites are in the heart of local communities and many have been taken on to be maintained in partnership with local groups.

We will expand this programme in ED2 to create and support other green spaces and biodiversity schemes, including tree planting schemes where appropriate. Our tree planting commitment is described in section 5.2.2.2

This programme is forecast to cost £600k per year, or £3m over the RIIO-ED2 period.

Key consultation questions

This was a really popular proposal in our acceptability testing ranking 11th with 86% of customers supporting it. What more do you think we could do with these sites? Do you think we could be more ambitious?

Outcome description	**Current performance level**	**Activities to help deliver this outcome (see section 8)**
Create an additional 25 bio-diversity and community green space sites	11 new sites in RIIO-ED1	• Keeping our records up to date • Designing and planning • Project management • Work management • Managing materials and stock • Investing in tools and equipment • Reducing environmental impacts • Managing our people • Managing our IT
Customer and stakeholder evidence sources		
Max-diff / Willing-to-pay	Acceptability	One-to-one
	☑	☑

Incremental cost of proposal	Target delivery date	
£3m	31 March 2028	• Managing our buildings • Running our corporate functions

5.3.2.7. Reducing operational waste and increasing recycling rates

We are committed to make further improvements in our management of waste and recycling in line with our environmental commitment.

To achieve this, we are committing to a range of measures to reduce our waste and environmental impacts in RIIO-ED2. These include:

- producing annual targets for reductions in total waste;
- committing to zero waste to landfill by 2025;
- reducing or recycling 70% of our total waste by 2028;
- reducing or recycling 90% of our excavated waste by 2028; and
- eliminating unnecessary single-use plastics by 2028.

Outcome description				Activities to help deliver this outcome (see section 8)
Meet five new specific waste management targets		N/A		• Keeping our records up to date • Designing and planning • Project management • Work management • Managing materials and stock • Operational training • Setting network policy and standards • Maintaining & replacing IT systems • Investing in our buildings • Replacing our vehicle fleet • Investing in tools and equipment • Reducing environmental impacts • Managing our people • Managing our IT • Managing our buildings • Running our corporate functions
Customer and stakeholder evidence sources				
Max-diff	Willing-to-pay	Acceptability	One-to-one	
			☑	
Incremental cost of proposal		**Target delivery date**		
Minimal additional costs		Dates up to 31 March 2028		

5.3.2.8. Complying with new legislation on PCBs

Polychlorinated Biphenyls (PCBs) are a group of artificially manufactured organic chemicals that have long been recognised as posing a threat to the environment due to their toxicity, persistence and tendency to be absorbed by living organisms.

PCBs were used in electrical equipment such as transformers as an alternative insulating fluid where fire resistance properties were required. Although the use of PCBs has been reduced greatly since the 1970s, we recognise that PCBs still remaining in existing equipment pose an environmental threat.

New legislation requires all PCB-contaminated equipment to be disposed of or decontaminated of PCBs by 31 December 2025. All transformers (and some other network assets) manufactured before 1987 are assumed to be potentially PCB contaminated (unless proven otherwise via testing) and are registered annually with the Environment Agency.

We are working to either test or statistically determine the PCB content of all this apparatus and dispose of all those items that are confirmed as PCB contaminated by 31 December 2025.

All transformers that are removed will be replaced with suitable equipment which will enable a zero-carbon future. For instance, pole mounted transformers that are removed in rural locations will be upsized where the biggest capacity constraints exist, rather than replaced on a like-for-like basis.

All PCB-contaminated equipment will be sent to authorised treatment facilities where the oil will be recovered and the metal components, principally scrap steel and copper, sent for recycling.

<table>
<tr><th colspan="4">Outcome description</th><th colspan="4">Current performance level</th><th>Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td colspan="4">Elimination of PCB contamination risk from our network equipment</td><td colspan="4">N/A</td><td rowspan="6">• Running the control room#
• Keeping our records up to date
• Designing and planning
• Project management
• Work management
• Managing materials and stock
• Operational training
• Vehicle repair and operations
• Setting network policy and standards
• Maintaining & replacing IT systems
• Investing in our buildings
• Replacing our vehicle fleet
• Investing in tools and equipment
• Inspecting and maintaining the network
• Reducing environmental impacts
• Managing our people
• Managing our IT
• Managing our buildings
• Running our corporate functions</td></tr>
<tr><th colspan="8">Customer and stakeholder evidence sources</th></tr>
<tr><td colspan="2">Max-diff</td><td colspan="2">Willing-to-pay</td><td colspan="2">Acceptability</td><td colspan="2">One-to-one</td></tr>
<tr><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td><td colspan="2">☑</td></tr>
<tr><th colspan="4">Incremental cost of proposal</th><th colspan="4">Target delivery date</th></tr>
<tr><td colspan="4">Currently estimated at £32.7m</td><td colspan="4">31 December 2025</td></tr>
</table>

5.3.2.9. Improving environmental management within our supply chain

We recognise that as the electrical distribution network operator in the North West, we have a responsibility to lead and influence others to improve their environmental performance.

We will introduce a mandatory requirement for our top 80% of suppliers (by value) to report on the embodied carbon for the materials and equipment that they provide to us by the mid-point of ED2, where they are considered material to our operations.

<table>
<tr><th colspan="4">Outcome description</th><th colspan="4">Current performance level</th><th>Activities to help deliver this outcome (see section 8)</th></tr>
<tr><td colspan="4">Embodied carbon reporting for 80% of supplies and services</td><td colspan="4">N/A</td><td rowspan="3">• Designing and planning
• Managing materials and stock
• Setting network policy and standards
• Running our corporate functions</td></tr>
<tr><th colspan="8">Customer and stakeholder evidence sources</th></tr>
<tr><td colspan="2">Max-diff</td><td colspan="2">Willing-to-pay</td><td colspan="2">Acceptability</td><td colspan="2">One-to-one</td></tr>
</table>

			☑	
Incremental cost of proposal		**Target delivery date**		
Minimal additional costs		31 March 2026		

5.4. Consumer Value Propositions

While Ofgem sets minimum requirements for energy networks' business plans, many of our proposals exceed these requirements based on input from customers and stakeholders, and what they have told us they are willing to pay for.

As well as exceeding these standards we also have a unique and highly innovative proposal that goes beyond the role typically undertaken by a network operator, but that customers and stakeholders have told us would add significant value and benefits to customers.

5.4.1. Rolling out our Smart Street project to reduce cost and carbon for customers

Smart Street is our award-winning initiative to reduce customers' electricity usage and bills by managing the voltage on the local network.

By using technology at our substations to subtly alter the amount of electricity flowing to homes, we can reduce consumption and save customers' money, without affecting their usage behaviour in any way. Smart Street has been proven to reduce customers' energy consumption by up to 8% - equivalent to a £60 reduction in annual energy bills.

We are currently rolling the project out to 64,000 customers in the North West, as part of a £18m project funded under the Innovation Rollout Mechanism (IRM) in ED1.

In ED2, we will extend Smart Street to a further 150,000 households in our region, through a £51 million investment programme. We will target the deployment of this technology to areas where there are higher populations of customers in fuel poverty.

This technology also increases the available capacity of the network and therefore we will also target the deployment where we expect clusters of low carbon technologies such as solar panels and heat pumps so that more costly network upgrades can be avoided.

While the technology can only be applied to underground networks the cost to serve customers on underground networks is much lower than the cost on overhead lines. We already have in our plan significant investment earmarked to improve the overhead line network such as tree management, worst-served customer programme and the rollout of our Sentinel technology.

6. How we'll enable delivery

6. How we'll enable delivery

This section shows how we will enable the delivery of activities in our proposals, by helping our customers and stakeholders, and developing our own operations and programmes to deliver on what we have proposed.

6.1. Enabling our customers and stakeholders

6.1.1. Our approach to social responsibility

We are conscious of our wider role in the communities that we serve and society as a whole. We have developed a responsibility framework which articulates the company's corporate social responsibility strategy.

Our strategy demonstrates that we consider the social, environmental and economic impacts in our decision-making and that our activity delivers a wide positive, societal impact. The framework is structured to deliver responsible business practices for our people and partners, our communities and our environment.

We will continue to apply and delevop our strategy in ED2 to ensure that we take appropriate measures to manage our impact on our people and partners, our communities and our environment.

Responsibility framework

6.1.2. A new world of distribution system operation

Decarbonisation will require electricity distribution network operators (DNOs) to reinvent themselves. The growth in local, renewable electricity generation (e.g. neighbourhood hydro or solar schemes) and new ways for households and businesses to use energy and even generate their own, has big implications for the way the electricity network is managed.

We will have to speed up our transition from being a 'closed' or 'one way' network, in which we take electricity from the National Grid, reduce its voltage and distribute it to homes and businesses, to an 'open' network, with all sorts of new projects and organisations wanting to get their green energy onto our network.

This changing role will see us carry out more) activities known as distribution systems operation (DSO). This new industry terminology recognises that for companies such as ours, electricity distribution is no longer one way traffic. Rather than just operate a passive physical network, we must operate a highly technical and interactive system.

DSO is not one activity but the delivery and coordination of a range of functions designed to deliver electricity network capacity for use by customers at the most economic price.

In spring 2019 we published our decarbonisation plan, Leading the North West to net zero; we were the only DNO to publish such a plan. The plan sets out our own decarbonisation ambitions as well as how we will help our regional stakeholders decarbonise and achieve their net zero aspirations. The region's ability to reach net zero is dependent on an affordable energy transition plan, which will include us moving to DSO.

In ED2 we will continue to strengthen and deepen our work with our stakeholders and customers helping them adopt low carbon technologies whilst we continue to efficiently develop the systems, processes and people to deliver this transition efficiently.

The challenges of delivering the net zero transformation are shared ones and so we are working collaboratively with regulators, DNOs and other industry partners through the Open Networks (ON) project[17] to develop the products and services that a future smarter and more flexible energy grid will require in order to deliver the zero carbon goals.

Our £20m network management system investment is going a long way to move these changes forward in ED1 and will be fully operational in ED2 giving us greater control of system operation activities and managing and balancing demand locally.

We have also developed and offered flexibility services and capacity trading services to customers. This means that instead of generating more power and increasing the size of the power network to deliver that power to meet peak demand, we will pay electricity users in certain locations to reduce their demand at certain times through formal agreements.

This saves money as the peak demand on the network is lower so less expensive investment is required in the network.

We created a simple video to help customers understand this and enable them to give us their views of this new world: https://www.youtube.com/watch?v=5BNYunSWY8Q

[17] https://www.energynetworks.org/creating-tomorrows-networks/open-networks

Our customer video to help customers understand DSO and enable them to discuss it

In ED1 we also became the only network operator to provide services to National Grid's balancing services markets – known as the Fast Reserve Market – through our ground-breaking innovation project CLASS. This technology is meeting the need, identified by Ofgem and the Department for Business, Energy and Industrial Strategy (BEIS), to solve peak demand problems on distribution and transmission networks, doing so in a low carbon way by reducing requirements for power generation using fossil fuels.

Key to delivering a smarter future grid to enable zero carbon is to ensure that the vast amounts of quality data and communications required to sustain a more flexible grid are provided for in a robust and efficient way. We have consulted on our digitalisation strategy which set out how we will transform our capability in this area. This also included our reflections on the recommendations of the Energy Data Task Force[18] and how we propose to incorporate them in our future plan.

We received comprehensive feedback on our proposals and will include this in our subsequent strategy which will be included as an appendix to our July plan.

Our DSO strategy, analysis of DSO functions and our digital and data strategies describe the progress we have already made and sets out the next steps we are taking in the transition to DSO.

The core DSO functions and processes developed through the Open Networks industry-wide initiative since 2017, centre on the efficient delivery of the additional electricity network capacity identified by our distribution future electricity scenarios (DFES)[19] work.

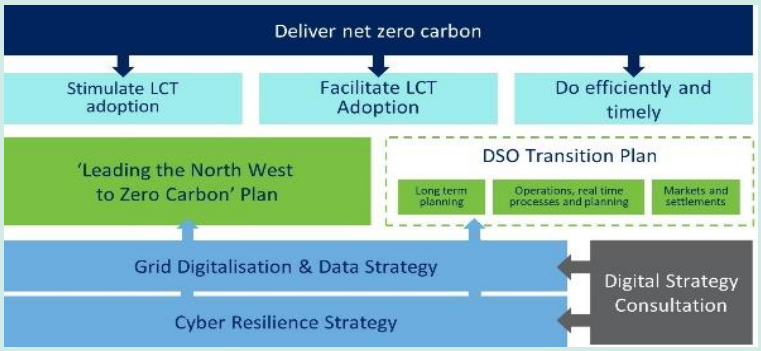
These processes incorporate whole system thinking – not just electricity but other utilities and how our network plays a role in wider society and other industries. The joint development of solutions for both local electricity distribution networks and national electricity transmission networks is a great example of collaborative working, as is the use of flexibility to provide low cost network capacity to connect low carbon technologies

Further details of our DSO transition strategy will be included in an appendix in July. Our latest version is available via our website[20].

[18] https://www.gov.uk/government/groups/energy-data-taskforce
[19] https://www.enwl.co.uk/dfes
[20] https://www.enwl.co.uk/go-net-zero/our-plans-to-go-net-zero/dso/

6.1.2.1. Stakeholder involvement in DSO transition

Our customers and stakeholders have told us that they want to be involved in our DSO transition.



In ED1 we explained to our stakeholders how our Carbon and DSO Transition Plans dovetailed to support our region's approach to delivering net zero emissions. In response we published our decarbonisation plan, 'Leading the North West to Net Zero.

The plan delivered a range of actions to support the development of local government plans for decarbonisation. This is an ongoing action and as a trusted voice we will stimulate the adoption of low carbon technologies by continuing to promote simple affordable actions that customers, businesses and stakeholders can take to lower their carbon emissions.

We will work with the DSO stakeholder community to help shape the DSO transition and our methodologies for forecasting and modelling. Their help will guide us so that we can ensure transparency and fairness in our decision making.

We will seek input from national stakeholders through our joint work with other licensees at an industry level. We will continue to work with other licensees within industry groups such as the Energy Network Association (ENA) Open Networks Project, to develop and implement new standards and best practice.

Data will be a particularly important focus as it is a foundational element for the transition to DSO. We continue to seek guidance from stakeholders on how to deliver bespoke engagement plans, particularly for the customers in vulnerable circumstances ensuring fairness and inclusivity so no-one is left behind by the transition.

6.1.2.2. Data and data sharing

In ED1 we supported the Energy Data Task Force's recommendations [21]and, with industry colleagues, started preparing the available data for sharing from within network operator businesses.

We will presume that all data is open, unless after triaging it, it is classified as confidential or commercially sensitive. In ED2 we will publish the Digital Strategy and Action Plan, regularly updating them as required and we will make available a wide range of planning and operational data that meets the expectations of the Data Best Practice guidance and guided by our stakeholders; for example, following feedback from our stakeholders we propose to publish:

[21] https://es.catapult.org.uk/reports/energy-data-taskforce-report/#:~:text=Energy%20Data%20Taskforce%3A%20A%20Strategy%20for%20a%20Modern,and%20understand%20data.%202%20Recommendations.%20...%203%20Appendicies

- heatmaps for all voltage levels that will indicate the hosting capacity/ available headroom by network asset;
- a range of forecasts, by scenario, for all voltage levels and areas of the network; and
- near real-time constraint and merit order information that will enable flexible resources to participate in managing the network and enter into bilateral arrangements to trade curtailment risk.

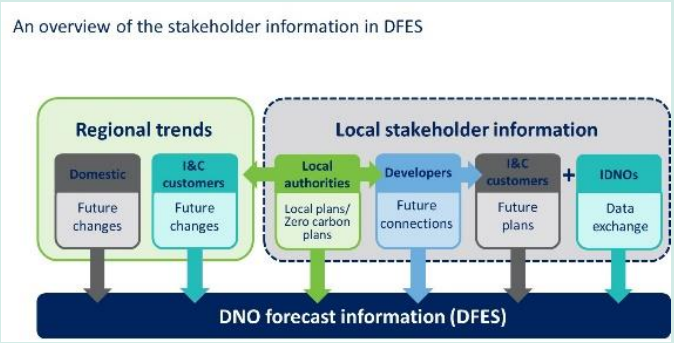
All our data will be accessible via a data repository on our website for customers, stakeholders, and other interested third parties. They can either download our published data, or where practical use a visualisation tool for greater insights.

Application Programming Interfaces (APIs) will also be available to allow data sharing services/platforms to retrieve and host our published data.

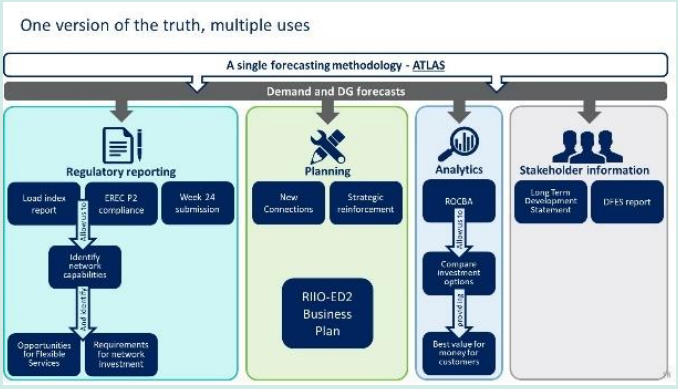
6.1.2.3. Forecasting and network planning

One of our principal roles with DSO is to ensure we economically create the capacity our customers need in sufficient time to allow them to decarbonise their lives. This can only be efficiently achieved through the analysis and understanding of current and future network power flows. The processes of forecasting and network planning are key to enabling us to understand the real world needs of technologies such as electrified transportation and electric heat on domestic and non-domestic demand.

Forecasting: ED1 saw us develop and introduce the ATLAS [22] forecasting methodology. ATLAS takes information from our regional stakeholders and using the national Future Energy Scenario framework creates a range of future network demand and generation forecasts.



These help us understand how the network can accommodate the capacity needs of our stakeholders. We continue to enhance the capabilities of ATLAS; for example, we are currently developing an EV uncertainty framework. ATLAS also allows us to create a range of forecasts, including a central risk scenario known as the Central Outlook which is used for all planning activities.



This approach allows us to produce our stakeholder facing Distribution Future Electricity Scenarios (DFES), Long Term Development Statement (LTDS) and Network Development Plan (NDP) information together with various regulatory reports such as load indices. All of this data is published on our website, and provided to other industry/national data sharing services/platforms.

[22] https://www.enwl.co.uk/go-net-zero/innovation/smaller-projects/network-innovation-allowance/enwl008---architecture-of-tools-for-load-scenarios-atlas/

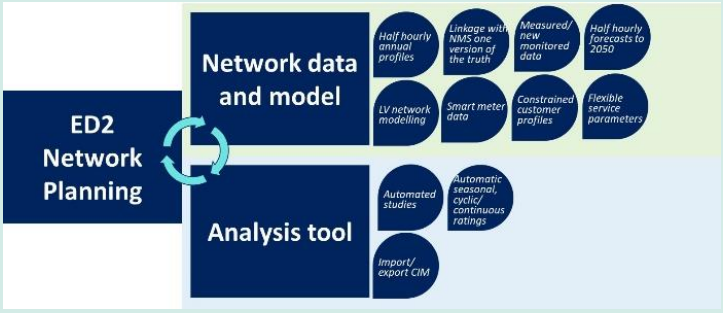
Our stakeholder engagement shows that customers require us to only invest in capacity where we have confidence in future needs aligned with our stakeholders' regional net zero targets; therefore in ED2 we will improve ATLAS further by incorporating aggregated smart meter data together with power flow information from our own LV network monitors to improve the accuracy of our HV and LV network forecasts. We will also incorporate data from other sources, for example from IDNOs.

Our 'connect and manage' research in ED1 has shown how monitoring and analysis can enable significant additional capacity to be released using existing assets that customers have already paid for. By the end of ED1, LV monitoring will be installed at 5,000 of our most populous ground mounted substations supplying around 1.1 million customers, and we will have access to consumption data from smart meters for up to 70% of our domestic customers.

In ED2 we will continue tactical installation of network monitoring on HV and LV circuits that will help us deliver savings to our customers through the continuation of the Connect and Manage programme. Additional capacity will be released during ED2 from existing assets facilitating the adoption of more LCTs. This greater visibility of the LV and HV networks will enable us to model networks more accurately, and more efficiently target new capacity provided through flexibility services or new assets. Our HV and LV data will be published, both on our website and on industry/national data sharing services/platforms.

Network planning: In our planning methodology document we explain how we use the forecasts derived from the future needs of our stakeholders, to make well justified, efficient and transparent decisions. The document defines the analysis methodology and our processes to ensure compliance with the national network resilience standard EREC P2/7.

In ED2 we will refresh and upgrade our network planning tools. This will enable us to plan more complex network solutions with the increasing numbers of flexible connections and flexible services solutions within ANM arrangements as well as sharing our single network model and network data with all stakeholders using the Common Information Model (CIM) protocol. This will enable many benefits, such as:



- enabling developers to determine their own point of connection;
- clearly indicating where we have network capacity availability; and
- assisting flexibility services providers to locate in the optimum position for whole system benefits.

6.1.2.4. Increasing options and transparent decision making

In facilitating DSO, we must always ensure that we deliver any new capacity needed by our customers in the most efficient manner possible. This section explains how we will ensure all possible options are identified, how we manage the uncertainty inherent in forecasts, and how we select the most efficient option in a transparent and open manner using our ROCBA evaluation tool.

Increasing solution options: Positively engaging with as many solution providers as possible in all our decisions is key to our strategy of delivering efficiencies for customers. In ED2 we will engage the help of others to find new solutions to our network issues, ensuring that we have the widest range of options possible for evaluation and adopt the most suitable economic approaches.

We will publish information on all network constraints to encourage potential solutions from all parties eg flexibility providers, customers, the Electricity System Operator (ESO), Transmission Operators (TOs), other Distribution Network Operators (DNOs) and Independent Distribution Network Operators (IDNOs), and groups such as local or community energy groups. This holistic approach would, for example, allow a community energy group to bring forward a proposal for an energy efficiency programme in its locality to solve a network capacity need.

Managing uncertainty within investment planning: Since autumn 2016 our network investment decisions have been informed by our pioneering Real Options Cost Benefit Analysis (ROCBA) tool, developed in conjunction with the University of Manchester. ROCBA enables us to evaluate the relative economic benefits of all intervention options against the needs across the whole range of our network forecasts, defined by ATLAS.

It allows us to evaluate flexibility services, energy efficiency measures, investment deferral, or network reinforcement on an equal basis to ensure we take informed 'least regrets' decisions. Whilst we plan and design our networks using our Central Outlook scenario, ROCBA allows us to test our options against all possible future scenarios, defined from our DFES, before deciding upon the right course of action.

The Common Evaluation Methodology (CEM) and tool, developed within the Open Networks Project is derived from the ENWL ROCBA tool and as such is the industry equivalent for flexibility evaluations. During ED2 we will continue to develop ROCBA to maintain its position as a state-of-the-art decision support tool across all network investment strategies.

Managing uncertainty within delivery: We need to ensure we appropriately manage the cost variability inherent in the delivery of any selected capacity solutions and that all intervention options are examined equitably. To achieve this, we will include uncertainty in asset-based intervention costs.

In the case of a flexibility services provision the cost of delivery is largely fixed by contract and depends only on its utilisation; whilst for traditional asset-based reinforcement the budget design cost may increase due to external factors.

To ensure the value of flexibility is treated equitably at all stages we will re-evaluate our decisions as delivery progresses. For example, if pre-construction planning indicates a material cost increase in an asset solution, we will re-evaluate the decision based on the new cost data and change the solution if it is more efficient to do so. Due to the nature of asset-based work it is possible that outturn costs may change during project delivery, so we will require that such works are undertaken on a fixed cost basis with shareholders, not customers, bearing the variation risk. This will ensure flexible and asset solutions are equitably compared.

Transparent decision making: Being transparent with our DSO decision making is critical to ensuring our customers and stakeholders are confident that we are efficiently delivering capacity to meet their needs. In ED1 we started publishing all the information and supporting models used to arrive at our capacity-related decisions in simple and easy to understand language, as our stakeholders had previously told us that we should simplify our materials to support their understanding and aid their ability to make informed decisions.

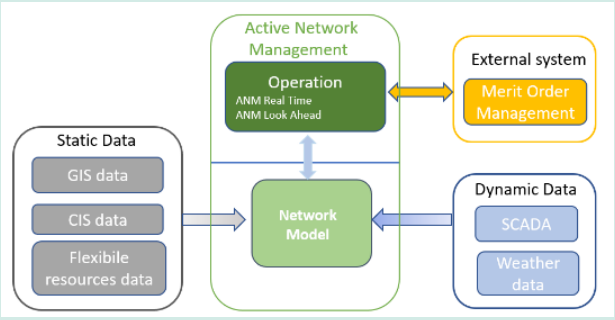
To further improve transparency in ED2 we will introduce two additional measures to allow our customers and stakeholders to challenge our proposed decisions:

1. After a decision is made and before entering into contract with the successful tenderer(s) we will introduce a standstill period. This will allow a period for scrutiny and challenge of our proposed decision.
2. We will introduce a decisions review process, to ensure that any decisions that are challenged are independently reviewed. A decision will be overturned if the process has not been followed correctly or relevant factors have not been adequately considered. In addition, if the decision-making process itself is found to be flawed an independent body will be empowered to review the methodology and make recommendations to modify it.

6.1.2.5. Real time network management

Our customers have told us consistently that they want us to improve the resilience of power supplies, enable a net zero carbon future and keep bills low. The key to delivering more from existing networks and meeting this challenge is to implement the latest real time network management tools, such as Active Network Management, which uses new flexible resources such as storage and flexible demand to meet capacity needs.

Active Network Management: In ED1 we implemented a new Network Management System (NMS) and Active Network Management (ANM) system, both developed by Schneider Electric. The ANM system is made up of two core components. The first component is the system which carries out network modelling activities in real time to manage network constraints using flexible network assets, flexible connections, and flexibility services; the second component is a Merit Order Management (MOM) system. The MOM system holds the contractual data for all flexible connections, and flexible services which ANM uses to control network power flows.



ANM directly integrates with NMS and holds real time data for the network topology, running arrangements, metering data, and other system monitoring devices. The MOM system has been developed as a separate, standalone system so that it is ring fenced from other DNO activities.

The MOM system determines the order in which flexible resources are to be dispatched in real time to ensure our network operates within its capability; for example, a network constraint. In ED2 we will further develop the MOM solution to facilitate secondary trading of distribution flexibility services, including trading of curtailment liability by linking it to platform-based marketplace services. In addition, we will determine if the MOM system could be more efficiently or equitably managed by a third party.

Flexibility services: In winter 2020 we published our expected ED2 requirements for flexibility services and sought feedback from interested parties in the form of an Expression of Interest (EoI). This provided the market with indications of our future needs and volumes; whereas the EoI responses allowed us to understand the market's preferences and intentions in terms of capacity and likely forward prices in specific locations.

In ED2, to ensure our customers receive the most efficient DSO service, we will tender for the provision of all market operation services. We will invite third parties to tender to run our flexibility auctions, procure

flexibility services on our behalf, facilitate the secondary trading of curtailment risk and other DSO ancillary services such as provision of services to the ESO markets.

To further promote competition for platform-based marketplace services in ED2, we will regularly re-tender for the services. This will include seeking fixed cost provision, rather than percentage of flexibility purchased, and being open to non-standard tenders to help develop alternative routes to flexibility services providers.

Resolving ESO/DSO conflicts: The potential conflicts between the needs of national electricity system operation (ESO) and local DSO remain one of the most important and challenging areas.

By the end of ED1 we will publish our rules, after consultation, for generating the merit order for flexibility services to be utilised (ie the curtailment stack/list) and how each network user will be able to access the information on all network constraints. Customers who have accepted a flexible connection already receive information on the usage of their flexibility, via the curtailment index methodology. In ED2 we will ensure they have visibility of all network constraints that affect them including visibility of the respective flexibility merit orders.

Sharing of this merit order information with each flexibility service provider will help them identify their curtailment risk in advance, so that they can evaluate the impact on other contractual obligations eg provision of flexibility to other parties such as the ESO or suppliers. By introducing bilateral trading, it will allow the potential to trade away their curtailment liability with others in the stack, or trade to accept additional curtailment risk in return for financial reward. We expect only a few trades initially and so will facilitate these trades through a broker-type service offered by us, acting as a neutral market facilitator (ie a user will ask us to find a willing trading party).

In ED2 we will move to a platform-based marketplace to facilitate direct bilateral trading of curtailment risk, which will reduce the friction of trading curtailment and any associated transaction costs. Our customers and stakeholders told us that these measures are essential to improving flexibility market liquidity and delivering optimum whole system benefits.

We believe that when presented with their curtailment risk information our customers will make rational economic decisions considering their curtailment liabilities and obligations in the energy and ancillary services markets.

On the basis that other system and network licensees could benefit from having our curtailment information we will, on request, provide them access to the real-time data, via Inter Control room Protocols (ICCP) where appropriate, with a sufficient level of granularity to allow them to cross reference against their own service provisions i.e. MPAN/MSID.

In sharing data at this granularity, the other relevant licensees can satisfy themselves that coordinated conflict management or primacy rules are a backstop, and distributed energy resources will be able to stack revenues for their flexibility services, which community and local energy groups consistency tell us is important for their financial success.

6.1.3. Whole systems thinking

During ED1, we have been working closely with key stakeholders to help them develop new economic plans in which decarbonisation has a central role.

We have worked with Cadent Gas to develop three regional energy masterplans – providing near to mid-term certainties around the future of energy supply and demand.

The plans have a crucial role in providing certainty for stakeholders, allowing them to act in areas such as transport policy, regional renewable generation and heat.

The documents will underpin regional government energy action plans and have been already been launched with key regional stakeholders, such as Greater Manchester Combined Authority.

Alongside these plans, our 'Leading the North West to Zero Carbon' plan[23], published in 2019, articulates how we will lead and encourage businesses, our customers and our colleagues on the decarbonisation journey.

In ED2 we will build on this work with other utilities to develop plans together that benefit the whole region. We are committed to developing these pathways every two years, and sharing them with stakeholders as part of their work on local area action plans.

The joint Ofgem/BEIS Smart Systems and Flexibility plan[24] recognises that our electricity system is undergoing fundamental change. As the system changes and technologies evolve, there are greater opportunities arising for companies to collaborate to generate optimal whole system outcomes.

To perform our role as a DNO effectively and to ensure an efficient, co-ordinated and economical system, interactions between local electricity distribution networks and national electricity transmission networks are already an integral part of our way of working, and there are established processes in place to facilitate the flow of information and system planning.

The work that has been undertaken to date, and continues via the Open Networks project, has identified further improvements and developments that can be made to system co-ordination and collaboration to provide increased consumer benefits.

We maintain that collaboration across the sector will be critical to delivering these important changes for customers and we remain committed to our leadership and active support of the various Energy Networks Association (ENA) groups addressing these issues. The output from the Open Networks project has demonstrated the importance and benefit of this collaboration we will continue to be an integral part of the project as it develops.

6.1.3.1. Whole system outcomes

Our stakeholders have told us that we should consider our network needs together with the needs of the whole energy system when making decisions to maximise benefits and ensure a more cohesive approach to energy system planning and operation. This wider responsibility is central to our DSO transition plan and encompasses data sharing, forecasting and planning.

Within network planning: In ED2 we will share, in planning and operational timescales, our reactive power (MVAr) forecasts at the interface points with National Grid ESO to enable the ESO to enhance their modelling of reactive power flows for managing network voltage.

Within investment decisions: In ED2 we will introduce a process and methodology within the ROCBA evaluation tool to identify and evaluate the benefits of the options from the perspective of other system or

[23] https://www.enwl.co.uk/globalassets/innovation/zero-carbon-documents/leading-the-north-west-to-zero--carbon.pdf

[24] https://www.ofgem.gov.uk/publications-and-updates/upgrading-our-energy-system-smart-systems-and-flexibility-plan

network licensees. Where possible it will be quantitative, but even if it is only qualitative it will allow us to consider whole system benefits in our decision-making.

Promoting whole system options: The publication of a full range of heatmaps, from 132kV to LV, in ED2 will facilitate the development of the flexibility services markets and enable third party options to be developed for mitigating network needs.

In DCPR5 (2010-2015, the price control before ED1) we successfully delivered the CLASS project using Low Carbon Network innovation funding. CLASS showed how demand can be varied using voltage control. In ED1 CLASS became business as usual and now, as well as managing our own peak demand needs, CLASS can be used by the ESO for managing frequency and system security. In ED2 the CLASS functionality will be evaluated further to be offered to the ESO for the provision of reactive power absorption for managing network voltage.

6.1.4. Helping our customers and stakeholders decarbonise

As a network operator we have a dual role to play in the drive to reach net zero. As well as reducing our own carbon footprint, we have a responsibility to lead and support our customers and other stakeholders to do the same.

Through our cycle of engagement we have heard from many different types of stakeholders including large businesses, small and medium-sized businesses (SMEs), local and county councils and the combined authorities and housing associations. It's clear that they believe our role extends beyond the day-to-day operation of the electricity network; it's also our job to act as a neutral and trusted source of help and advice to support them on their decarbonisation journey.

Many of our customers and stakeholders are concerned about the impacts of climate change and want to do all they can to help mitigate global warming to 1.5°C in line with the latest scientific advice. They have told us they expect our approach to carbon emissions reduction to be guided by the science too. We are working with the Manchester-based Tyndall Centre for Climate Research to inform and guide our approach which we will continue to adapt as scientific understanding evolves.

Supporting customers with decarbonisation is a core DSO function which will contribute to the achievement of net zero.

6.1.4.1. How we'll support customers to decarbonise in ED2

During ED2, in line with our Leading the North West to Net Zero plan, we will continue with our dedicated service to support customers with their decarbonisation plans and encourage the mass uptake of low carbon technologies. We will continue our cycle of engagement to gain more insight and understanding of our customers' experiences and use this to develop our services further.

Current services which will continue in ED2:

- Dedicated website resources and engagement events
- Targeted support to help businesses overcome barriers to the adoption of low carbon technologies
- Decarbonisation pathways research to help provide confidence to investors.
- Additional support in ED2:
- A clear strategy for stakeholders including an action plan so they can see how we are responding to their issues and hold us to account
- Enhanced resources targeted at overcoming specific barriers to the uptake of low carbon technologies

- Expansion of our dedicated resources to additional customer groups including SMEs and domestic customers.

In addition to the above actions we will lead by example and share information about our own decarbonisation journey. Our commitments to reduce our carbon emissions can be found in our Environmental Action Plan to be published in July.

The proposals outlined above form part of our DSO stakeholder engagement approach which will ensure our DSO Strategy is informed by a diverse range of stakeholder views.

6.1.4.2. Understanding the issues facing customers

In 2019 we published our 'Leading the North West to Net Zero Carbon' plan which sets out how we will reduce our own emissions and help our customers and colleagues to do the same. This plan was published in response to stakeholder feedback, particularly from Greater Manchester Combined Authority (GMCA), who set their own ambitious carbon reduction target and were looking to business leaders to do the same. We have aligned our target with GMCA and have committed to reduce carbon emissions from our business to net zero by 2038. This a key objective of our 'Leading the North West to Net Zero Carbon' plan which will be delivered in ED2 as part of our Environmental Action Plan.

With the launch of our plan we employed a dedicated strategic decarbonisation manager who is responsible for understanding our customers' and stakeholders' decarbonisations aspirations and developing services to meet their needs. This engagement has been underpinned and informed by research undertaken with the Tyndall Centre and Impact Research which has given us a greater understanding of the barriers faced by businesses and how we can tailor our advice and messaging to suit different audiences.

As well as supporting the uptake and connection of low carbon technologies to our network, we know that customers expect us to go further and offer decarbonisation advice and support. They see us as a trusted source of expert advice on low carbon technologies and energy efficiency measures.

One of the main issues customers and stakeholders face, particularly larger organisations such as local authorities and businesses, is uncertainty and the perception that there isn't enough network capacity to meet the extra demand created by the uptake of low carbon technologies. In ED1, working in partnership with our main gas network, Cadent, we became the first DNO to produce decarbonisation pathways to address this.

The pathways provide near- to mid-term certainties around the future of energy supply and demand and are intended to support local authorities in their decision-making and investment planning.

GMCA is not the only authority to set a challenging net zero target in our region. We are also working closely with Cumbria County Council and Lancashire County Council and the 24 district, borough, and city councils and 15 unitary authorities in our region to understand their plans and develop effective working partnerships to help them achieve their goals.

Our region is geographically diverse, ranging from the dense urban populations of Greater Manchester to the rural counties of Lancashire and Cumbria, all of which have their own net zero challenges.

Cumbria's carbon footprint shows that visitors are responsible for 50% of Cumbria's consumption based carbon footprint[25], many of whom drive to the area from other parts of the UK. When this is considered

[25] 6.1 $MtCO_2e$ from visitors whilst in Cumbria and visitor travel to and from Cumbria Vs 6.3 $MtCO_2e$ from Cumbrian Residents. Data taken from Cumbria Carbon Baseline Report 2020.

alongside the dispersed nature of communities across the county and the reliance on private vehicles for transport it shows that electric vehicle charging infrastructure will be key to decarbonising the country. Cumbria is also blessed with natural resources which means it can generate more energy than it needs. The council has requested our support to help identify how the benefit of this excess generation can be maximised for the county. Understanding the individual needs and ambitions of our stakeholders is key to working in partnership with them to identify and support the most efficient and economical routes to decarbonisation.

We recognise that our business customers face a number of barriers to the adoption of low carbon technologies. Many of them do not have dedicated energy managers to research new technologies and can be put off by reports of poor user experiences from others. Other barriers include the complexity of integrating onsite renewable energy generation and the cost to install equipment. In some cases there may also be reinforcement charges to add to the overall cost.

At the same time we know that these businesses recognise the need to decarbonise and understand the reputational and wider societal benefits of doing so. As large energy users account for 62% of electricity demand in our region, it's a priority for us to help them reduce their demand and carbon emissions. We are committed to working with businesses to help them identify and adopt the most appropriate decarbonisation solutions.

6.1.4.3. Stakeholder engagement to inform ED2 proposals

The stakeholder engagement tools we have used to inform the development of our proposals to support our customers with decarbonisation in ED2 include:

- Tyndall Research on the top five things business can do to decarbonise
- Impact Research on the uptake of new technologies
- Decarbonisation pathways produced in partnership with Cadent and Northern Gas Networks
- Interviews with key industry stakeholders
- Analysis of customer enquiries and correspondence we have received
- Iterative consultation, guidance and feedback from the Sustainability Panel
- Willingness to pay and acceptability research as well as information from one to one meetings, our deliberative panel, online community and advisory panels

Our willingness to pay and acceptability testing shows that there is strong support from customers and stakeholders for education and outreach programmes to help customers on their decarbonisation journey. As a result we will:

- continue to engage with GMCA, county councils, local authorities and businesses across our region. Our relationships with these key stakeholders will be managed as part of our company-wide, topic-led stakeholder engagement strategy which is embedded across the business and ensures our stakeholders are kept informed and can influence all parts of our business;

- update our decarbonisation pathways in partnership with the Cadent every two years throughout ED2 to make sure they include the latest forecasts and technology developments and provide the certainty our partners have told us they need to make their investments;

- deliver targeted engagement and outreach support to different customer segments in our region to help them overcome the barriers to the uptake of low carbon technologies. These customers include, but are not limited to, large energy users, SMEs and domestic customers;

- continue to develop our Go Net Zero[26] web portal which has been developed to provide the trusted source of information that customers and stakeholders have told us they want. The content of the portal incorporates research from the Tyndall Centre on the top five actions different business sectors can take to reduce their emissions. It also includes detailed guides on low carbon technologies and case studies of our own decarbonisation projects. We will promote and develop this resource to expand the number of businesses we support in ED2;

- work in partnership with other DNOs to deliver support to SMEs through organisations such as local chambers of commerce. Support will therefore be tailored to their needs by the expert organisations that they are used to working with. This will also ensure support is provided for an important group of customers who are hard to reach and at risk of being left behind in the energy system transition; and

- provide advice and support to domestic customers and promote via an outreach programme targeted to encourage households to take action to reduce their emissions and install low carbon technologies.

6.2. Enabling our people and business

6.2.1. Innovation

Since 2010, we have invested over £80 million in research, exploring and trailing new technologies and commercial models with our stakeholders and academic partners. We have invested a further £50 million in operational technologies to make our network smarter.

These investments have driven a whole host of improvements for customers, halving the number and duration of supply interruptions and delivering reductions in bills. Continued investment in research and engagement has given us insights into what is needed to adapt our business in future. Customers will soon see new choices in how they interact with us and how they connect to, and use, our network.

Innovation is key to our success. We seek to innovate every day across all our business activities to ensure that we can respond to the evolving needs and expectations of our customers in an increasingly uncertain energy future. All of our innovation projects are aligned with our innovation strategy –to address the challenges of energy system transition, while maintaining a safe and reliable network and ensuring that the most vulnerable in our communities can benefit from changes we make elsewhere in the energy industry.

To ensure we target our innovation resources appropriately across the full range of current and future challenges, and our stakeholders have visibility of the areas on which we are focused, we have forged our innovation strategy and associated plan around three core challenges facing distribution network operators:

1. The energy system transition (the change in energy use required to facilitate the net zero carbon targets)
2. Asset management (further optimising our use of existing assets)
3. Vulnerability (ensuring everyone benefits from our innovation and that no one is left behind)

To ensure we have a balanced portfolio of projects and achieve the best overall outcomes for our customers, we have identified five key innovation themes which relate to the challenges of the low carbon future and to our business plan. Each of our projects is designed to support one or more of these themes:

[26] www.enwl.co.uk/GoNetZero

- **Consumer vulnerability:** We will support the needs of consumers in vulnerable circumstances today and in the future, and ensure that everyone can experience the benefits of the energy transition and any adverse effect of change is minimised.
- **Net zero and the energy system transition:** To facilitate and accelerate the UK's transition to net zero greenhouse gas emissions before 2050.
- **Optimised assets and practices:** To develop and implement industry-leading techniques for optimising assets and practices for energy networks.
- **Flexibility and commercial evolution:** To develop and test innovative solutions to increase the flexibility, transparency and efficiency of the energy system, enabling information to be more open and networks to be more responsive to change.
- **Whole energy system:** To enable joined up and efficient approaches across multiple aspects of the energy system around planning, forecasting, design, construction, operation, maintenance and data.

Our innovations have helped to keep bills low while responding to the challenges of a net zero future. We will include further details in the following appendices to our plan in July: Innovation strategy; Data strategy; and IT strategy.

6.2.2. The future of our workforce

To deliver this plan and set of commitments for ED2 we require a modern, diverse, high-quality, well-trained workforce fit for the future.

It is our people who deliver our service. While we operate a huge network of critical infrastructure, it is our people who make it happen.

Current discussions with Ofgem indicate that we will introduce a reporting metric to measure what they term 'workforce resilience' which will include the following measures:

- Workforce satisfaction
- Diversity & inclusions
- Health & Safety
- Mental health in the workplace

We will continue to work on the detail of this with Ofgem over the coming months. Further details of our resourcing plans will be included in an appendix to our submission in July.

6.2.3. Working with the supply chain to deliver value

Current discussions with our supply chain have been focused on the RIIO-ED1 timeframe and particularly the mitigation of risks posed by the Brexit process and, more latterly, the Covid-19 pandemic.

We are intending to work with our current contractors and suppliers to identify how a longer-term view of the future at an appropriate level of detail may be able to leverage savings and risk reduction in the supply chain that can in turn be passed on to customers.

We will include further consideration of this in future versions of this plan.

7. Keeping customers' bills as low as possible

7. Keeping customers' bills as low as possible

7.1. The impact of our plan on bills

Currently around 16-20% of an average domestic customers' electricity bill comes to Electricity North West so that we can manage and invest in the local network. This interactive graphic from Ofgem[27] shows where the rest of the money from your bill goes. In ED1 to date (between 2015-2021) the average cost for our services to an average household in the North West is £89.14 in today's prices (compared to the average cost of other networks across ED1 to date of £97).

Depending on how much we invest and how we manage our other costs this could go up or down for ED2 (2023-2028).

There is an key tension we have heard again and again from customers throughout our engagement. Customers want us to invest significantly to improve services even further as they recognise an increasing reliability on the power network. They also want to see us hit stretching environmental targets towards net zero, with stakeholders in particular pushing this priority very strongly.

At the same time, they want us to balance the costs of any investment to all bill payers. We recognise the unique position we have been in with half of our two-year engagement cycle being conducted during a global pandemic. Customers and stakeholders have told us that we need to keep bills low, understanding that not everyone can afford bill increases, and that we don't yet fully understand the economic impacts of Covid-19.

Throughout our engagement, many customers, and in particular future customers, asked us if it was possible to means test bills as a way of achieving a fair balance. Whilst we were clear that this is not an option, it focused our minds on how we can provide best value for those who may be struggling. Through our proposals for customers in fuel poverty, and our Smart Street CVP we hope go some way to addressing this point.

We will ensure that our plan continues to represent excellent value for money for all North West customers and that the benefits of the investments we make outweigh the costs to customers. This area has been thoroughly tested through two rounds of willingness-to-pay research and large-scale quantitative acceptability testing with both domestic and business customers as well as stakeholders. We have also held in-depth discussions with our deliberative panel on the issue.

Customers recognise the delicate trade-offs we have to make in the balancing services against costs. This was made clear in our second deliberative panel on costs.

In our willingness to pay and acceptability testing research, 80% of customers told us that they would be willing to pay an additional £9.80 on their bills for the package of improvements in this plan. Given the huge amount of engagement we have done, and the strong views we have heard from the vast majority of customers, we want to deliver a plan to meet this ambition.

To deliver the outcomes that customers and stakeholders have asked for in this plan, we will need to invest almost £2bn over the ED2 period. This is a 49% increase in expenditure and alone would require an additional £9.69 per year from the average domestic customer in the North West.

The great news for customers is that we can deliver this level of investment for less. Through innovation, efficiencies; lower financing costs and good management of our pension deficit throughout ED1, we are able

[27] https://www.ofgem.gov.uk/data-portal/breakdown-electricity-bill

to keep costs as low as possible for customers during ED2 and offset the majority of this bill rise, so that the actual average bill increase is expected to be approximately £2.14.

Based on the current information available we are proposing to add just £2.14 to our part of an average household bill, bringing the average annual bill for ED2 to £91.28, still lower than the average of all networks measured either across ED1 or just this year.

Ofgem published new guidance to networks on financing and returns in March 2021 and we are currently working through the guidance to see the full impact on bills which we will include in our July draft submission.

Key consultation question

80% of customers are willing to pay £9.80 more on their annual electricity bill to deliver all of the proposals in this plan. We think we can deliver all these proposals and the £9.69-worth of investment per customer for just a £2.14 annual increase in bills. What would you prefer us to do?

Option 1: Deliver the proposed plan with £9.69-worth of annual investment per customer but limit the bill increase to an average of just £2.14 to keep bills low for all customers.

Option 2: Deliver an even bigger plan and make the bill increase closer to what 80% of customers are willing to pay, acknowledging that 20% of our customers may be unwilling or unable to pay this much.

7.2. Running an efficient business

We are undertaking a comprehensive programme to assess our costs against those of other companies. By benchmarking our costs against those of other network operators we will be able to see how efficient we are and make sure that we are competitively priced.

We ran a similar benchmarking exercise to develop our plan for ED1 and have re-run it using expert external consultants, Oxera, to validate the findings. This involved looking at the total expenditure of networks, through an approach used by Ofgem for ED1.

We are supplementing this with our own detailed efficiency appraisals using ED1 modelling as our basis and latest data up to 2020. This gives us the latest view of our relative efficiency and areas to focus on in terms of setting stretching targets into the ED2 period.

We will present the results of this programme in our July version of the plan.

We are also working with industry-expert consultants to review our financing arrangements and technical aspects of our plan respectively. This external expertise and scrutiny adds weight to our plans and gives confidence that they have been thoroughly tested.

We will include further details of our benchmarking approach and the evidenced conclusions in an appendix alongside our July draft of our plan.

7.3. How we'll deal with uncertainties

There are many uncertainties around our plan that we simply do not yet know. We make forecasts and assumptions as accurate as possible, but in a fast-moving world it is not possible to clearly state what will happen in seven years' time.

The biggest example of this is around the speed of the transition to net zero. This will impact the demand for electricity and the load on our network that will require investment. We have made assumptions based on sophisticated modelling to reflect this as accurately as possible in our plan however it is still uncertain. One factor that could not have been predicted was the coronavirus pandemic, and we still do not know how it will impact the transition. The recession may mean that the transition is slower than predicted back in 2019.

Our costs for managing the network are agreed through a business planning and price control process before the price control starts in 2023. This means that we have to predict now what will happen in our region and how much investment is needed up to 2028. There is a risk that the business is either over or underfunded depending on what actually happens.

At present, we propose that the majority of uncertainty around potential load on the network is covered by an existing 'capacity mechanism'. While we have included outline forecasts for network reinforcement in ED2, we are proposing that the risk of getting this forecasting wrong is shared with customers. This means that whether we over or underestimate the amount of network investment needed during ED2, then we are only funded for efficient interventions based on what actually happens.

This means that if we overestimate then customers won't pay more than necessary, and if we underestimate then we will be appropriately funded to deliver what is needed for the region.

8. Activities to deliver customer outcomes

8. Activities to deliver customer outcomes

8.1. Engaging with customers and managing network activities

This section describes the core activities that will underpin the delivery of the outcomes that our customers and stakeholders have asked for. We have fantastic experience and expertise in running these business functions, and we strive to continually improve to increase service levels and efficiency, providing excellent value to our region and the communities we serve.

In section 5 we set out all the services and investments that customers and stakeholders have asked us to deliver. Tables in that section indicate what activities it will take to deliver those services. This section explains briefly what each activity involves.

8.1.1. Engaging with customers

8.1.1.1. Running the customer contact centre

The customer contact centre is based in North West of England, recruiting local people who understand our customers and are best placed to engage and support them. It operates 24 hours a day, 365 days a year to provide all customers with an exceptional level of service.

Customers can call our 24-hour emergency number 105 or get in touch via social media on Facebook or Twitter to report power cuts, electrical hazards or incidents. In a power cut, once a customer registers with us we will keep them regularly informed with details of the incident and expected time for the restoration of supplies.

On our website there is also a frequently updated list of any power cuts in our region[28]. Customers can track the repair of an unplanned power cut and keep up to date with information from our engineers.

Our highly skilled customer service experts are on hand to deal with any customer query about our activities and network, whether it covers connection issues, power cuts or more general enquiries. We resolve the majority of issues referred to us about any subject with just one call and on the same day.

Vulnerability can mean many things and we have trained our team of customer service experts to deal with sensitive situations meaning we can help customers if they need some extra support, either over the phone or face-to-face.

Many of the wider factors that cause vulnerability, for example mental health concerns, mobility issues or if a reliance on electricity for medical reasons, are addressed by a range of organisations and we bring many different organisations and sectors to work together to support customers and minimise the impact on their daily lives.

Currently there are about one million people who access support services available through the Electricity North West Priority Services Register (PSR)[29]. For these customers we maintain regular contact to make sure we keep contact details up-to-date and register a unique password so if we ever need to visit a customer at

[28] www.enwl.co.uk/powercuts
[29] www.enwl.co.uk/priority

home they will feel safe knowing it's really us. We also contact them at least six days before any planned work and send reminders the day before to help them prepare as well as sending warnings of bad weather that may cause power cuts.

Once we are aware of a power cut our welfare team will make every effort to contact customers on our Priority Services Register who are affected. We keep our priority customers up to date with text messages and phone calls, prioritise their calls with number recognition and automatically route them straight through to a dedicated team member.

As well as their own details, PSR customers can nominate up to six friends, carers or family members to receive updates on their behalf. If a power cut lasts several hours we can provide additional welfare support such as hot food and drinks, blankets, flasks, analogue telephones that work without electricity, glow in the dark torches, small generators or alternative accommodation.

The Priority Services Register is a database shared by all energy suppliers and distribution networks. The register has 28 different codes to capture a situation or health condition that could leave someone in a vulnerable circumstance should their electricity supply fail. We are committed to simplifying the registration process for everyone, increasing accessibility and minimising the effort required by the electricity user.

8.1.1.2. Running the control room

The control room is at the heart of the day-to-day operations and controls the entire network. Our expert control engineers monitor the network, identify issues and restore power quickly after unplanned power cuts. This team is responsible for identifying all network faults and dispatching appropriate field teams to restore supplies.

The control room team also monitor and manage the safety of everyone working on the network and manage planned network outages for work to be conducted safely. Control room technology enables the first response to power cuts to be addressed by rerouting the network automatically, which means responses can be very quick. Our highly trained engineers in the control room deal with additional complex issues and a range of other activities to keep power flowing.

8.1.1.3. Keeping our records up to date

It is vital to have good asset and geographical records as these are the basis for carrying out work on site and informing decisions about the future network investment requirements. Records are a key safety management tool in terms of ensuring that anyone working on or near our network knows what assets are in the vicinity.

Our data management team ensure that all records of our network are highly accurate, and this data is used in both planning work on the network and to drive our world-leading Network Management System. Our data strategy will be included as a specific appendix as part of our July submission and will describe how we are sharing this information with a wide-range of customers and other parties to enable innovation across the energy value-chain.

8.1.2. Supporting investment delivery

Managing our network requires considerable support activity, whether through the delivery of capital work, or providing the capability to manage day-to-day operations. Therefore, the business undertakes a range of functions to support the delivery of investment and operation of the network.

8.1.2.1. Design and planning

Our operations teams undertake regular detailed inspections to ascertain the condition of assets. Our asset management team uses this data and the latest asset strategies to build the optimised investment programme. This process incorporates the latest innovative solutions to produce an investment programme that factors in innovation efficiencies. The design and planning teams turn the investment programme into detailed scope and solution specifications containing all of the information required to implement the necessary engineering work on site.

Our capacity planning team also undertake the forecasting of future requirements across the network using data from a wide range of national and regional stakeholders to determine trends and what this means for the loading of every asset in the network across multiple future scenarios.

8.1.2.2. Project management

Regional project management teams ensure the timely and efficient delivery of the approved investment programmes ensuring tight control of scope and solution. Our in-house teams focus on delivering the core service of managing and maintaining the network and project managers work closely with engineers and resource managers to ensure we maximise the use of our core team.

We use contracted partners to deliver projects such as excavation, cable laying, overhead lines work and plant installation. This ensures that we retain the right base of skills and experience in the business and gives us flexibility to deal with less predictable or more discrete projects.

8.1.2.3. Work management

Work management is a broad category that includes all the activities required to plan and efficiently deliver investment on the network. It ranges from strategic resource planning through to the efficient co-ordination and scheduling of resources between supply restoration, repair, maintenance and planned capital programme work and the subsequent management, monitoring and reporting of delivery against the plan.

8.1.2.4. Managing materials and stock

We use an external logistics provider with an offsite storage facility, together with local stores in depots supported by a number of satellite stores. Materials that are distributed by our provider are purchased by us through framework agreements with suppliers or are purchased by framework contractors through the same procurement arrangements. Careful stock control and liaison with our policy team ensures that we minimise the stock holdings but always have the right items in stock when required. This arrangement is competitively tendered every five years to ensure we continue to get the best rates.

Our commercial specialists support project managers in the delivery of any network investment and connections work undertaken by specialist contracting resources, focussed on cost control and maintaining high quality.

Contracts with partners have been established through formal market testing to allow for an element of flexibility to deliver additional or a different mix of work, as required. This allows us to increase or decrease resources according to specific project requirements.

We have tested the potential for delivering greater work volumes with our partners across the contracting market and have confidence in our ongoing delivery capability as our programme of work ramps up.
We operate a highly focused and effective procurement team that is closely integrated with our commercial and contract management teams and supports colleagues from across the business using a proven and effective 'category management' procurement approach.

Procurement activities are delivered in accordance with the Utilities Contracts Regulations 2016. The majority of orders placed are via framework agreements that are tendered competitively. Individual 'one off' competitive tenders are generally used for larger capital construction projects.

Our supply chain specialists negotiate competitive agreements by market testing with plant, materials and equipment providers, while also seeking out, encouraging and rewarding supplier innovation. As standard practice, we place two contracts for all key plant elements ensuring an alternative supplier should the principal supplier encounter delivery issues. This contracting strategy allows volumes to be flexed upwards should quantities need to increase beyond a supplier's capacity.

We are able to deliver the benefit of economies of scale in much of our purchasing activities by working in collaboration with other operators. Along with other DNOs and utilities, we established the Selectus buying consortium. For key items where there is commonality of technical specification, we collaborate with other DNOs to consolidate volumes with the greater economies of scale delivering savings.

8.1.2.5. Operational training

Ongoing staff training is a key component of our day-to-day activities. Colleagues who work on the network are appropriately trained and equipped to work safely and efficiently. This is achieved by delivering programmes of specialist technical training for both full-time employees and the contractors who work on our behalf.

In developing our plans for ED2 we have ensured that we maintain appropriate workforce resilience.
We have developed an efficient programme that upskills and multiskilling more staff to improve their operational efficiency and effectiveness. This ensures we can undertake a changing work mix and specific new activities such as an increase in control technologies that enable autonomous and remote control of the network and wider communication of data around the network.

We also continue to operate a modern apprentice scheme with approximately 90 apprentices across the company. This helps recruit and train the next generation of craftspeople and engineers. We have planned in detail the recruitment necessary for the replacement of retirees to ensure our workforce remains resilient. Our purpose-built training academy in Blackburn, Lancashire is key to delivering this training for both new apprentices, but also other colleagues and contractors.

The recruitment of new team members is helping us address the diversity of our workforce as we work towards our goal of having a diverse workforce that is representative of the communities we serve. We will published a detailed workforce resilience strategy in July.

8.1.2.6. Vehicle repair and operations

We need to operate and maintain our vehicle fleet to ensure it is as efficient as possible. We run a fleet of around 600 operational vehicles. This fleet ranges from small vans through to specialist equipment for installing wooden electricity poles and working on steel pylons.

The size and nature of the fleet is determined by the operational requirements. We maintain this fleet through a network of our own garages located at our depots in the more rural north of our region and through contracted specialist partners in the southern part of our region.

8.1.2.7. Setting network policy and standards

Our engineering policy team have established and continue to manage a comprehensive set of asset life management strategies. These strategies cover aspects such as condition assessment requirements, maintenance, refurbishment and replacement specifications.

8.1.3. Replacing and investing in non-operational assets

There are a range of assets which are not used in the real-time management of the network but are nevertheless required to support the efficient running of the business, including IT systems, buildings and vehicles.

These are managed, maintained and replaced as required. Investment requirements are driven by general technology refresh cycles and the need to protect people, processes and systems from threats including cyber-attack and terrorism. We also develop these resources to help our operations run more efficiently, whether by changing how we use vehicles or introducing new tools and techniques.

8.1.3.1. Maintaining and replacing our IT systems

Our non-operational IT is the core systems and services that enable our business functions to operate. This includes our Customer Relationship Management (CRM) system, our website for customer and stakeholder communication, our financial management systems and our asset register. For more information see section 8.4.2 below. We will publish a detailed digital strategy in July.

8.1.3.2. Investing in our buildings

We own a number of offices and operational depots. Some of these are major sites capable of housing hundreds of people and some are small parts of substation sites used by just a few people. We operate a fit-for-purpose accommodation strategy, centred on the delivery of a sustainable, cost efficient property portfolio offering safe and compliant accommodation.

We have already transformed two of our key sites in ED1 to be zero carbon buildings. We plan to continue this activity through ED2 with an extra building per year.

8.1.3.3. Replacing our vehicle fleet

We need to replace vehicles when they become worn out or are no longer fit for purpose. We also purchase new types of equipment that become available that help us do our job quicker or more efficiently. This includes generators and other forms of mobile plant. Examples include expanding our MEWP (Mobile Elevated Work Platform) fleet to enable us to work safely on overhead lines and vegetation management activities, often a long way from the nearest road.

New vehicles are fitted out to an agreed standard by a framework contractor. An example of our embedded innovation is that we have developed components including van racking that can be recycled from one vehicle

to the next. This reduces cost and can speed up the turnaround of new vehicles. Electricity North West branding is standard across each vehicle type and is applied by the fitting out contractor.

We also work with manufacturers to develop safer and more cost-effective vehicles, such as our work with Toyota to develop and fit out a Hilux model which meets our operational needs but is £10,000 per vehicle cheaper than competitors' equivalents. This is now our standard vehicle for this role.

Where the technology is available and the whole life cost is neutral to our customers we will introduce electric vehicles into our fleet.

Further detail will be available in our Environmental Action Plan in July.

8.1.3.4. Investing in tools and equipment

We use a lot of specialist tools in the course of our activities which also need replacing when they become worn out. Where possible, these are increasingly with battery-powered equivalents, eg chainsaws, hedge cutters and road saws. As the network gets smarter with more technology installed, we also need to ensure we have the right tools to install, commission, maintain and fix these new devices.

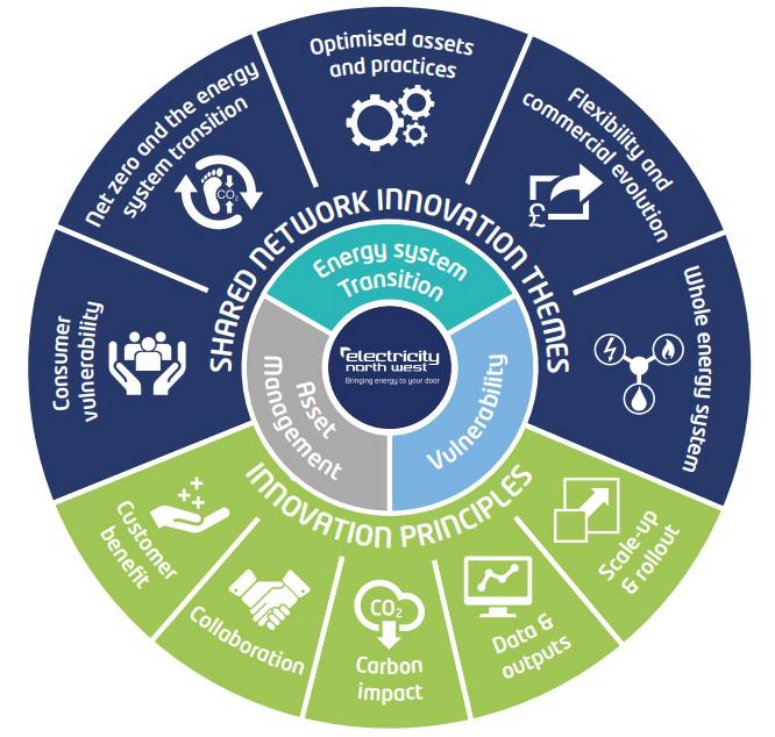
8.1.3.5. Innovation – research and development

Innovation is the 'ideas cauldron' where we take novel techniques and potential solutions, whether they be technological or commercial, and analyse, develop, trial and ultimately transform them into practical solutions to: deliver a better, zero carbon service for our customers; improve network performance and safety; and deliver ever more efficient ways of working.

Innovation extends across all areas of our business and this strategy looks to facilitate our delivery of many of our other key strategies, thus forming an integral part of our overarching business plan. You can read about our track record on innovation in section 3.

We have developed our innovation strategy and associated plan around three core challenges facing distribution network operators:

- the energy system transition (where passive networks become increasingly active),
- asset management (further optimising our use of existing assets), and
- vulnerability (ensuring everyone benefits from our innovation and that no one is left behind).



To ensure our innovation activities are focused on the areas identified as most important by our stakeholders, we have adopted the five innovation themes outlined in the ENA's national strategy. Each of our projects will tackle one or more of these themes:

1. Consumer vulnerability
2. Net zero and the energy system transition
3. Optimised assets and practices
4. Flexibility and commercial evolution
5. Whole energy system

To ensure our innovation projects are aligned with the needs of stakeholders, and that all deliverables are communicated in a manner consistent with our industry peers, our five innovation principles are the pillars which underpin all of our innovation projects.

These principles influence our innovation decision-making process, guiding how we choose which innovations to pursue. To ensure consistency across the industry and alignment with the needs and expectations of stakeholders, these principles mirror those of the electricity industry's national innovation strategy, published by the ENA in March 2020, and are:

1. Customer benefit
2. Collaboration
3. Carbon impact
4. Data and outputs
5. Scale-up and rollout

Further details will be published in July in our innovation strategy.

8.2. Maintaining and repairing the network

The main element of the day-to-day management and maintenance of the network is responding to faults through our 24/7 response service and making any necessary repairs. We also regularly inspect our substation sites and patrol our overhead lines, making good any immediate issues that are observed. Alongside routine maintenance of key equipment, managing the vegetation near our overhead lines and responding to any safety incidents enables us to keep the network safe and reliable for all customers.

8.2.1. Repairing faults

When a fault occurs on the network, we act to restore power as soon as possible, and then repair the network. We restore the vast majority of customers by automated switching from the control room with the remainder restored by generator or repair. In a typical day, we will respond to 35-40 faults causing power cuts, and 30-35 other incidents requiring responses.

Responding to faults quickly is critical to supporting our customers. The majority of fault response work is carried out by our own engineers and technicians supported, when necessary, by a contract partner for activities such as excavation and reinstatement. Our field teams are located at local depots enabling us to store materials, specialist plant and base employees close to areas affected by faults enabling fast supply restoration, particularly during severe weather.

8.2.2. Dealing with severe weather

Another important component of maintaining and repairing the network is preparing for and responding to severe weather events. We have well-tested processes and procedures in place to rapidly respond to extreme weather events. Our response to Storm Emma (2018) and Storm Desmond (2015) demonstrated the company's capabilities and organisation in response to severe storms and equally highlighted the important role we play for the community.

As an example, Storm Emma, the 'Beast from the East' arrived on Thursday 1 March 2018. The numbers of properties affected rose rapidly from an initial estimate of 3,000 to 23,000. Our customer contact centre received more than 5,600 calls during Friday 2 March with more than 3,500 calls handled by our automated messaging system and 800 customer call backs made. Our engineers worked in the highly challenging conditions to gradually bring all 23,000 customers affected by the storm back online, with final restorations made by 21:00 on Saturday 3 March.

The quick and effective response was the result of careful planning and preparation, as well as the dedicated work of our teams. Four days ahead of the weather front hitting the region, we held companywide weather preparation calls, created a specific plan for Storm Emma and worked to keep local stakeholders fully informed.

8.2.3. Inspecting and maintaining the network

Regular inspection and maintenance of equipment is essential to ensure the network is fully operational and fit-for-purpose. Maintenance activities include the activities and testing needed to ensure all assets are in good condition and able to function effectively and safely.

For example, a proportion of older switchgear assets and most network transformers are filled with electrical insulating oil, which as part of maintenance needs changing for clean oil. We operate our own dedicated oil reprocessing plant, which allows us to reprocess and recycle almost 100 percent of all oil used in our equipment, reducing operational costs and benefiting the environment. We also recycle around 95 percent of all electrical plant and equipment removed as part of our activities.

8.2.4. Tree-cutting

We invest in the cutting of trees that grow close to power lines, preventing safety hazards which can cause power cuts. We carry out a regular five-year cyclical programme of cutting trees that grow close to power lines and our tree trimming activity is completed by specialist in-house teams, who consistently deliver industry-leading levels of cost and environmental performance.

We have been working with industry and other stakeholders on an evolved approach to vegetation management that looks to mitigate the increasing risks of diseased trees by implementing a more extensive management process than the routine felling/trimming currently undertaken. This will also address the projected increase in growing rates identified as a key risk in the climate change adaptation reporting.

8.3. Investing in the network

8.3.1. Improving reliability and speed of restoration

8.3.1.1. Improving performance

We've made significant improvements in the overall performance for customers over recent years such that, on average, a customer in our region experiences a power cut less than once every three years and is without electricity for just half an hour every year. This represents a reliability level of 99.994% and represents upper quartile performance across the 14 DNOs within GB.

We do this by investing to maintain the overall health of the network to manage medium and long-term performance and investing in the rollout of new technology to the network to minimise the impact of those faults that do happen. Combined with improvements to our operational response and practices, these measures enable us to minimise the customers affected by faults and restore those who are affected as quickly as possible.

However, there are still many customers who receive a performance significantly worse than the average due to the nature of the network that serves them and exposure to factors such as weather & trees etc. In addition, our research has identified that the importance of electricity is increasing in customers' lives and improving its reliability is a key priority, so we need to continue to improve both the average performance for all customers and the service provided to those who are comparatively poorly served.

Customers and stakeholders support our proposal to deliver a targeted programme of enhancements which aims to improve the reliability of our poorest performing circuits on a sustained basis. We are proposing that this programme replaces the current Worst-Served Customer arrangements which only allow for tactical improvements in response to extremely poor performance.

8.3.1.2. Looking after 'worst served customers'

In ED1 our commitment to deliver for our customers was also distinct in our unique approach to providing electricity to 'worst served customers' (which Ofgem define as customers experiencing 12 or more higher voltage faults over a three year period with a minimum of three faults in each year). Through concerted efforts on this front in recent years we have achieved a significant decline in the number of customers that Ofgem would define as 'worst served'.

Through targeted investment, we have reduced the number of worst served customers from over 1,500 at the start of ED1 to less than 300 in recent years. We have committed that by the end of ED1 no customer will meet Ofgem's definition of 'worst served'.

In response to feedback from us and other stakeholders, Ofgem have amended this scheme for ED2, both by dropping the minimum requirement in each year to two, and by enabling network operators to propose programmes of work in advance, rather than respond to performance issues after they happen

8.3.2. Replacing and refurbishing network assets

Our network is a complex and interconnected system comprising transformers and switchgear, overhead lines and underground cables linking our connections with the National Grid to every home and business within the North West.

Much of this equipment is long-lived and some of our underground cables are over a century old. With time, operation and wear however, assets degrade and become increasingly prone to failure as they age.

To manage this medium-term risk of failure, the largest part of our investment programme is devoted to the replacement and refurbishment of our existing equipment where we carefully assess the condition, health and likely probability of failure of our assets against the consequences of such failure. This enables us to undertake a highly targeted and efficient programme of asset renewal which maintains the overall underlying condition of the network.

We gather information relating to both the health and criticality of all our inspectable assets. This information is known as the Network Asset Indices, and these provide an indication of the risk of condition-based failure of network assets.

For most of our asset types or classes, the approach to undertaking this forecast of probability and consequence of failure is specified in the Common Network Asset Indices Methodology (CNAIM). This is a common and systematised approach to assessing asset risk that was established in the early part of ED1 and approved by Ofgem. Part of this approach is to measure the impact of interventions using the metric of risk points, identifying the difference between the pre- and post-intervention risk.

For ED2, this approach has been further developed in the CNAIM2 methodology such that the difference in lifetime risk resulting from an intervention such as replacement of equipment can be measured and compared to the cost of making the intervention to check that the overall benefits outweigh the costs. A summary of our Network Asset Indices Methodology (NAIM), which fully complies with Ofgem's Common NAIM requirements will be added as an appendix in our July submission.

Further details on our plans for each major equipment type will be published in July. Where appropriate, these will also be supported by Engineering Justification Papers (EJPs) .

8.3.2.1. Civil structures

Much of our equipment is housed in specific buildings or supported by civil structures. We have approximately 15,000 ground-mounted operational sites and of these approximately half have buildings containing operational assets. Management of operational buildings is included as part of our asset management strategy used for all operational equipment and is monitored using the same condition data capture process.

8.3.2.2. Communication equipment

Our communication equipment enables us to monitor and manage the electricity network remotely from our central control room. We own and operate a private communications and data network to do this. This

equipment is also subject to a specific asset management approach which recognises that it has a much shorter operating life than is typical for an electrical network.

Following a massive ramp up in the amount of control equipment on the network over the last decade to deliver significant improvements in reliability, the health of the communications equipment is a key driver of the performance we deliver for our customers.

8.3.2.3. Operational IT

The key strategic focus of our Operational IT in ED1 has been the delivery of a new Network Management System (NMS), which is critical to management of the electricity distribution network. The new system, delivered by our strategic partner Schneider Electric, is the best possible platform for current management and future Smart Grid needs.

NMS not only supports optimal management of the electricity network but it also enables ongoing improvement of customer service based on delivery of better customer data around service impact and restoration. Our Customer Contact Centre employees will have access to NMS data to facilitate this. The new NMS facilitates delivery of future smart grid functionality, including the delivery of innovative DSO capabilities.

Going forwards we build upon the NMS foundation layer as we develop our Operational IT requirements to support the development of flexibility markets and the deployment of these resources to manage constraints on the network.

In July we will publish a detailed Operational IT strategy that will describe the development of our Active Network Management systems and how we will utilise smart meter data to automatically operate and control the network configuration to provide maximum capacity to customers. Some more detail on our overall IT strategy is described in section 8.4.2 below.

8.3.3. Managing the network's safety and environmental impacts

8.3.3.1. Reducing environmental impacts

We recognise the impact our operations have on the environment and regularly report on our impact and what we're doing to reduce it. It's an area supported by our customers and stakeholders and we will set out in our detailed Environmental Action Plan in July how we will reduce it further. A number of environmental improvements can be achieved by changing the network equipment we use, such as cables insulated by a bio-oil, and this activity is the direct work on the network to make such changes.

8.3.3.2. Reducing electrical losses

In parallel with our approach to decarbonising our own operations, there are a range of options for reducing the amount of electricity lost from the network in the form of 'losses'. This electricity has to be generated (with an associated carbon cost) and paid for via bills.

In addition, the connection of large amounts of small-scale renewable generation at lower voltages can actually increase losses from the network. In ED2, we propose to continue our approach to managing losses through a programme of targeted replacement of higher loss equipment and also opportunistically upsize assets (and hence reduce losses) in the course of other work. The basis of this strategy will be set out in July in our detailed losses strategy and relevant Cost Benefit Analyses.

8.3.3.3. Ensuring standards compliance

We have a legal responsibility to ensure our network remains safe. Part of this requires us to ensure adequate clearances of live electrical apparatus from buildings and the ground to minimise the risk of accidental contact.

Since 2006, we have been rectifying these clearance issues where they are known to exist and have largely eliminated them. We do however regularly check our overhead lines for any new issues, eg construction of new buildings near an overhead line and take steps to ensure adequate clearances are maintained.

8.3.3.4. Undergrounding for visual amenity

Since 2005 we have been working with our stakeholders to continually develop a programme of undergrounding for visual amenity in National Parks and Areas of Outstanding Natural Beauty. This programme has successfully removed lines from a number of prominent sites and become a model of public-private partnership working.

Potential sites for undergrounding are identified by stakeholders such as the National Parks Authorities and our engineers design and costs projects to address these sites. The actual site prioritisation and selection is then undertaken by a specialist stakeholder panel. We work with relevant stakeholders to ensure that all of the specific allowance made available by Ofgem for this activity is fully utilised.

8.3.4. Improving resilience to extreme events

As well as maintaining performance under normal operating conditions, we also have to plan for more extreme circumstances. This activity descries the specific work to change the network to manage or mitigate these risks which may have a lower chance of happening, but a big impact on customers when they do occur.

8.3.4.1. Preventing flooding

We have developed a number of innovative techniques to protect parts of our network from flooding during the ED1 period as we have increased protection to address the risks that became apparent during the terrible, record-breaking storms of 2015 and 2016. This involves constructing water tight barriers around some assets, improving pumping capabilities and remote monitoring at others and even lifting whole substations on to 3m high stilts to escape potential flood waters.

8.3.4.2. Preparing for a black start

We are also including in our plan the measures to comply with potential higher standards for black start resilience and also to ensure that our telecommunications equipment remains suitably resilient. As the networks of the future are increasingly data-enabled, it is more important than ever that the data networks that support this are as at least as resilient to external threats that the electrical network.

8.3.5. Ensuring capacity is available for all

The demand for electricity is likely to increase significantly from its current levels in all scenarios as the transport and heat sectors are increasingly electrified. Although there are likely to still be some offsetting reductions from energy efficiency improvements and changes in industrial demand, nonetheless we need to

plan for an increase in low carbon technologies (LCTs) both in consumptions and the connection of renewable generation to our network.

In 2019, we produced our first 'Distribution Future Energy Scenarios and Regional Insights' (DFES) document which identified future projections for load growth in the North West under a range of scenarios. This has formed the basis of our subsequent calls for flexible services in specific locations identified as reaching capacity constraints. In its updated 2020 form[30], it also underpins our longer-term forecasts for reinforcement requirements into RIIO-ED2 and beyond.

A summary of the 2020 DFES document and an explanation of the approach taken to translate its forecasts into investment requirements will be set out in detail in July.

We are working with the industry through the Open Networks project to standardise and further develop the DFES process such that we can give clear signals as to future capacity requirements and a clear and simple approach for potential providers to interact with us and hence unlock the potential of flexible solutions.

In terms of the network requirements, the three main contributory areas are the appropriate and timely provision of capacity, the removal of constraints to the connection of renewable generation and the unlooping of shared services where LCT uptake is likely to enable full utilisation of the LCT and also mitigate against the safety risk of overloaded services.

As part of our plan, we are also proposing the introduction of a capacity mechanism to deal with the uncertainties of future load growth due to consumer uptake of LCTs.

8.3.5.1. Supporting community energy

Community energy has an important role to play in the path to net zero, however to date the number and scale of community energy schemes has been limited. Working with community energy groups we have developed a community and local energy strategy that describes how we can provide specific support to such groups as they develop their projects. In the ED2 period we will also be able to provide additional funding support for the most deserving cases.

8.3.5.2. Supporting energy efficiency

There are a number of ways we will support energy efficiency. We will provide advice to customers via our website and undertake extensive promotion to encourage customers to improve their energy efficiency and tell them how they can do it.

Additionally, when purchasing flexibility from the developing markets we always make it clear that energy efficiency can be used as a valid technique for reducing energy demand. Larger customers are able to contract with us directly and smaller customers through an third party who can aggregate the effects of lots of energy efficiency improvements.

Our third support to energy efficiency is through working on our own network using the Smart Street technology. Smart Street is our innovative and award-winning initiative to reduce customers' consumption and hence bills by dynamically managing the voltage on the LV network. It has been proven to reduce customers' energy consumption by up to 8% leading to a reduction of up to £60 in annual energy bills and we

[30] https://www.enwl.co.uk/get-connected/network-information/dfes/

are currently rolling it out to 64,000 customers in the North West as part of a £18m project funded under the Innovation Rollout Mechanism (IRM) in RIIO-ED1.

There are approximately 290,000 fuel poor households in the North West that cannot afford to keep adequately warm at a reasonable cost, given their income. As such, the scope to roll out the Smart Street initiative further is significant (see CVP, section 5.4).

8.3.6. Making new connections

Connecting properties efficiently and economically is a crucial service for our customers. It is a service that facilitates economic growth and allows us to support delivery of our stakeholders priorities. New connections can be for:

- new electricity demands, such as a newly built house, housing site or business;
- generation connections, such as wind and solar farms, or
- unmetered connections, such as local authority street lights.

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

There are some activities, such as ensuring that all new assets are constructed to suitable standards, that we carry out to protect customers and support the competitive connections market.

The level of activity we undertake in this area will in part be dependent on the result of Ofgem's ongoing Access and Charging review and consequently the extent to which the costs of new connections are charged to those requesting the connection or socialised. Greater socialisation of costs is likely to lead to an increase in the level and number of connections applications.

In terms of service standards, we are currently assuming a continuation of the current ED1 requirements on the timescale for providing quotations and then completing the final connection. This area is currently being discussed within the industry to identify what the form of targets should be going forwards.

8.3.7. Supporting the smart meter roll-out

In some instances work may need to be carried out on our network to facilitate the installation of a smart meter. Our plan is based on a need to undertake work in 7% of the remaining smart meter installations that are still required to complete the roll out and to comply with a nationally agreed service level agreement.

8.3.8. Diverting our equipment

Diversions describe the activity required when we have to move our assets because the current route or site becomes unavailable, for example through the termination of the legal rights to locate our equipment, or because of the construction of a new road.

Where diversions are required, at the specific request of third-parties, we will seek to charge them where appropriate. However, where the diversion means that a new and potentially better asset replaces the old one we will make a contribution to the costs to reflect this improvement in our network.

Every year we deal with a number of claims from property owners relating to the reduction in value or productivity of their property and/or land as a consequence of our assets. In these cases, we often pay the grantor a sum to convert our access right from a terminable wayleave to an easement, which gives us permanent right to remain.

This is done where it is cheaper than moving the assets involved and where there is a continued requirement for the assets. In some cases, it is cheaper to move or divert the assets. This may also be the case where the landowner or developer wishes to develop a new site and serves us with a termination notice.

8.4. Running an efficient company

8.4.1. Managing our people

We have a centralised Human Resources team, responsible for recruitment, payroll, development and the well-being of our people. They also deliver non-operational training, ie that not directly related to operating the network. These training programmes include aspects of our customer service such as our vulnerability awareness training.

8.4.2. Managing our IT

Our information technology (IT) systems fall into two categories: operational technology (OT) and non-operational IT. OT systems are those used to manage the electricity distribution network, while non-operational IT systems are those used to manage the business.

Digitalisation is the process of leveraging technology that uses digitised data and information in order to transform and automate business processes and create additional value for customers and stakeholders. It forms a large part of our digital strategy and covers both operational and non-operational aspects of our IT transformation.

Technology and information are vital to support our collective journey to net zero carbon and will help us transition to delivering distribution system operations (DSO) and implement the recommendations of the UK's Energy Data Taskforce (EDTF).

Our digital strategy is aligned to the objectives and action plans of these initiatives as well as the Department for Business, Energy and Industrial Strategy (BEIS) energy strategy and policies and the Energy Network Association's Open Network Project.

For our customers and stakeholders, this will mean increased openness and transparency through improved digital services, which will support market innovation, energy supply chain efficiency and economic growth.

The three main capability themes that underpin our digitalisation are:

1. *Enablement:* Providing access to data and appropriate technology in the right place at the right time to enable our people to work more safely and efficiently and better serve our customers and stakeholders. We will deliver business change that transforms processes. We will do this to improve customer experience and to support the EDTF recommendations, DSO market innovation, energy supply chain efficiency and economic growth.

2. *Innovation*: Enabling the company and the supply chain to adapt quickly to changes in the operating environment and to innovate by continuing to invest in flexible technology platforms, data quality and data sharing. We will allow other stakeholders to innovate by sharing appropriate data and delivering the EDTF recommendations. We will do this to speed up the realisation of those benefits to our customer and stakeholders.

3. *Insight:* Information and analytics, to enable us, as well as third-parties, to identify opportunities to innovate and continually improve the whole energy system access in an affordable, secure and reliable manner. This includes collecting more data where appropriate, and integrating the data we already hold and that provided by third parties (such as smart meter data, public data and data from suppliers), as well as enhancing our ability to analyse that data through the application of data science, operational modelling and electrical network modelling. Our smart meter data privacy policy sets out what we store and how we protect it.

Our digitalisation plans include:

- a digitalisation strategy addressing the digital and data best practices;
- a digital architecture design and associated delivery plans; and
- identification of how the plans are being co-ordinated between network companies, enabling access and interaction.

Central to the secure and sustainable provision of IT to the business and to customers is the overarching strategic focus on cyber security. In ED2, it is critical to ensure that we can maintain and prepare our systems so that they are protected and can withstand an ever-evolving cyber risk landscape. Through the ED2 period, we will focus on levelling up our current cyber security capability by placing a greater emphasis on automation and integration technologies and processes.

The OT within our organisation will remain segregated from the wider IT network and will not be subject to the cloud first strategy we are applying to IT.

In July we will publish further detail on our digital strategy and our cyber resilience plans.

8.4.3. Managing our buildings

The aim of our property strategy is to provide a consistent standard across the estate, encourage staff to respect their working environment, identify and implement innovation wherever there is demonstrable benefit, develop the non-operational estate to its maximum potential and achieve the optimum balance between leasing and owning the non-operational estate.

Excluding network locations, our property estate consists of 14 sites, a combination of offices and industrial depots servicing the whole business footprint. In addition, we have a training academy located adjacent to or Blackburn depot and our control rooms are based at our Manchester and Preston office locations.

8.4.4. Running our corporate functions

Many colleagues are involved in running our corporate functions and meeting all our statutory and regulatory obligations as well as delivering efficient overall management and support of the business. We operate a robust governance and control framework including extensive external audit. These activities include paying suppliers, running the finance function, dealing with Ofgem and dealing with investors and financial markets,

communications and stakeholder engagement, managing and paying taxes and insuring the network and operations.

8.5. Performing our other business functions

We undertake some activities that are driven by the requests of individual customers, by the need to support specific projects or to ensure that we comply with the obligations placed on us as a network company. Most of these are funded in slightly different ways to our other areas of expenditure, with many of them funded by the customer who requests the work.

8.5.1. Making metered connections (outside price control)

Our customers can choose who makes their connection for them. We offer an end to end connections service. Alternatively they can use an independent connection provider (ICP), who will complete the work required and then transfer ownership of the equipment installed to us to operate and maintain, or an independent distribution network operator (IDNO) who will complete the work, retain ownership and operate and maintain the equipment on the customer's behalf.

Irrespective of who the customers choose, they pay for the work to make the new connections to our existing network.

In some cases, connecting to our network requires us to reinforce the existing network to create additional capacity or ensure any additional load from increased demand does not compromise the quality of supply for new and existing customers.

8.5.2. Making unmetered connections (outside price control)

There are circumstances in which it is not practical or financially viable to meter a supply as the cost of metering could considerably outweigh the value of the electricity consumed. These are typically connections to street lighting and other highway equipment. Our plan includes the activities of making new connections, transferring connections to new equipment and disconnecting existing unmetered connections.

8.5.3. Undertaking other customer-funded activities

There are other services that we provide to a variety of customers on request, these services include:

- where a customer wishes to move their service position;
- revenue protection activities to combat theft of electricity; and
- construction of assets for other DNOs or National Grid at shared sites.

8.5.4. Paying our licence and grid connection costs

Ofgem determine how much we should pay for our distribution licence fees and to National Grid for the costs of their transformers to connect our network to the national grid.

9. Overall expenditure forecasts

9. Overall expenditure forecasts

This section summarises the key trends in the costs for the activities described in section 8. We have significantly improved efficiency during the current regulatory period, sharing significant savings with customers through lower prices. This has been enabled by the powerful efficiency incentives that are a key feature of the RIIO regulatory regime. These gains are consolidated into our forecasts here, delivering significant additional benefit to customers. We also plan for continued efficiency improvements across the ED2 period with underlying efficiency improving by 0.5% per annum.

Our overall forecast is for expenditure to rise significantly across the RIIO-ED2 period as we increase our activity levels and deliver a greater range of services for our customers at the new efficient cost levels. Our efficiency enables us to deliver all of the outcomes that our customers and stakeholders have asked for and said that they value. We will strive to continually improve to increase service levels and efficiency, providing excellent value to our region and the communities we serve.

This section uses the same structure as section 8 so that the costs of the activities are clear and highlights some of the key drivers for change between the ED1 and ED2 periods.

9.1. Summary cost breakdown

The table below summarises the costs of delivering all of the proposals in described in section 5 of this draft plan, with the costs shown for each of the activities required to enable this delivery as described in Section 8.

There follows an explanation of the key drivers of the costs for each activity using the same structure.

20/21 prices	Category	Description	Early draft business plan £m	ED1 average £m	ED2 average £m	Change
Engaging with customers and managing network activities	Engaging with customers	Running the customer contact centre Running the control room Keeping our records up to date	68.5	8.1	13.7	69.2%
	Supporting investment delivery	Design and planning Project management Work management Managing materials and stock Operational training Vehicle repair and operations Setting network policy and standards	248.1	43.8	49.6	13.3%
	Replacing & investing in non-operational assets	Maintaining & Replacing our IT Systems Investing in our buildings Replacing our vehicle fleet Investing in tools and equipment	92.5	11.5	18.5	61.4%
	Innovation (research, design and development)		28.3	7.0	5.7	-19.0%

Maintaining and repairing the network	Repairing faults		325.9	51.2	65.2	27.2%
	Dealing with severe weather					
	Inspecting and maintaining the network					
	Tree-cutting					
Investing in the network	Improving reliability and speed of restoration	Improving performance	40.0	6.0	8.0	33.3%
		Improving service for worst-served customers				
	Replacing and refurbishing network assets	Services	451.4	65.0	90.3	39.0%
		Rising lateral mains				
		Woodpole lines				
		Steel towers				
		LV & HV cables				
		EHV & 132kV cables				
		LV & HV plant				
		EHV & 132kV plant				
		Civil structures				
		Communication equipment				
		Operational IT				
	Managing the network's safety and environmental impacts	Maintaining a safe network	114.0	8.6	22.8	163.6%
		Reducing environmental impacts				
		Reducing electrical losses				
		Ensuring standards compliance				
		Undergrounding for visual amenity				
	Improving resilience to extreme events	Preventing flooding	4.2	2.3	0.8	-62.8%
		Protecting critical national infrastructure				
		Preparing for a black start				
	Ensuring capacity is available for all	General reinforcement at EHV	231.8	13.6	46.4	241.5%
		General reinforcement at LV and HV				
		Fault level reinforcement at EHV				
		Fault level reinforcement at LV and HV				
	Supporting energy efficiency		51.0	-	10.2	-
	Making new connections		8.2	1.3	1.6	29.7%
	Supporting the smart meter roll-out		9.9	4.0	2.0	-50.1%
	Diverting our equipment		32.9	4.8	6.6	37.7%
Running an efficient company	Managing our people		266.0	38.1	53.2	39.8%
	Managing our IT					
	Managing our buildings					
	Running our corporate functions					

Total net costs inside the price control	**1,972.7**	**265.1**	**394.5**	**48.8%**

Performing our other business functions	Making metered connections (outside price control)	408.2	84.1	81.6	-2.9%
	Making unmetered connections outside price control				
	Undertaking other customer funded activities				
	Paying our licence and grid connection costs				
	Total net costs outside the price control	**408.2**	**84.1**	**81.6**	-2.9%
	Total DNO net costs	**2,380.9**	**349.2**	**476.2**	**36.4%**

9.2. Engaging with customers and managing network activities

9.2.1. Engaging with customers

Many of the proposals for new or expanded services described in section 5 of this draft plan require an expansion of resources dedicated to communicating to customers or direct support for customers in more vulnerable circumstances. Therefore the costs for these activities are increasing significantly.

9.2.1.1. Running the customer contact centre

Our customer contact centre is at the heart of all our engagement with the communities we serve across the North West and leads the ways we support customers in vulnerable circumstances. Whilst underlying costs in the contact centre are forecast to reduce with increased efficiency, the involvement of the contact centre in half of all the proposals in this business plan and the considerable steps for in support for customers in fuel poverty and other vulnerable circumstances means that these is a significant increase in expenditure in this area.

These new services include collaboration with other utilities to support vulnerable customers, managing the use of timed appointments for vulnerable customers and continuing to expand the Priority Services Register. Increasing communication channels for customers, expanding our enquiry and complaints service, increasing our support funds and increasing support to business customers are also drivers of increased cost.

9.2.1.2. Running the control room

Our control room is the hub that drives the performance of the network. Whilst underlying costs are falling, there are two cost pressures that are reflected in control room expenditure forecasts. The increased investment programme drives more outage management for the control room to co-ordinate and the connected nature of all new equipment presents a growing commissioning requirement for control room staff.

Developments in our Operational IT platforms to support our distribution system operation roles and facilitate the region's transition to net zero all also require significant control room involvement.

9.2.1.3. Keeping our records up to date

Good data is an enabler for the vast majority of our proposals and therefore the data management team that keep our records up to date are involved in many of the new investments we will be making in ED2. We have invested heavily in improving the quality of our asset data recently in preparation for the smart meter roll out

and the development of our new Network Management System. This provides the opportunity for some cost savings in ED2 to be realised.

9.2.2. Supporting investment delivery

The costs for work to support investment delivery such as design and planning and project management are driven in part by the programme of work we have to deliver. Our programmes of work to provide capacity on our network in support of the transition to net zero and to maintain the overall health of the network and its risk of failure are growing significantly, as described later in this part of the draft plan, and therefore these supporting activities will also increase. However, these increases are much lower than the increases in the overall capital programme because of improving efficiency and economies of scale.

9.2.3. Replacing and investing in non-operational assets

9.2.3.1. Maintaining and replacing our IT systems

The key driver of our costs related to non-operational IT is the need to refresh and replace legacy systems, particularly our enterprise management system for finance and work management which will be no longer be supported by its vendors because of its age in the ED2 period.

9.2.3.2. Investing in our buildings

There are two drivers of costs in this category, our work to maintain our buildings on an ongoing basis and work to deliver an additional carbon neutral depot every year of ED2. This is driving up costs compared to the average cost levels across the ED1 period.

9.2.3.3. Replacing our vehicle fleet

Our vehicle forecasts are based on two component parts, the costs of vehicles replaced on a like-for-like basis; and the costs of introducing electric vehicles into our fleet.

We expect to maintain our fleet at the current size of approximately 960 vehicles, wheeled plant and trailers, replacing vehicles at the end of their asset life.

Where the technology is available and the whole life cost is neutral to our customers we will introduce electric vehicles into our fleet. We estimate that the additional initial purchase costs will be offset by a reduction in fuel costs over an eight-year period. This will mean that the introduction of electric vehicles will result in a higher capital outlay, but costs will be recovered in the remaining years of ED2 and ED3.

Approximately half of the fleet will be scheduled for replacement during the five year period of ED2. From the total vehicles identified for replacement we plan to replace about 200 with an electric equivalent. This will focus predominantly on the replacement of our 4X4 vehicles and jointer vans along with a continued increase in the use of electric mini diggers.

The scale of this electric vehicle fleet justifies the inclusion in our forecasts of the costs of electric vehicle maintenance facilities including a workshop and telematic application technology.

9.2.3.4. Investing in tools and equipment

We use a range of specialist tools and equipment in undertaking our activities and these need continual repair and replacement. In ED2, some of the new technology that we will be using on the network will also need specialist equipment to commission and maintain it.

9.2.4. Innovation – research and development

Our innovation programme has been extremely successful in developing new techniques to support the transition to a zero carbon economy in ED1. We have also developed and proven new technologies, such as Smart Street, that deliver significant customer benefits and will be rolled out further as part of this business plan. We plan to continue our innovation programme at a broadly similar expenditure level to ED1.

9.3. Maintaining and repairing the network

We expect the volume of faults to fall slowly as we continue to maintain overall asset risk and target the weakest parts of the network. However, as we deploy new techniques to identify faults before they impact our customers this does create a new volume of work to basically fix the network before the fault actually happens.

We have looked at the initiatives that we have identified to deliver the improved service levels described in section 5 and produced a list of additional actions that will impact on our costs and performance in the RIIO-ED2 period. We have classified these as either impacting the volumes of faults that we will have to deal with or the unit cost of addressing those faults.

As part of our benchmarking exercise we have reviewed our unit costs against those reported by the other DNOs and adjusted them to reflect our ambition to deliver at a competitive unit cost.

The overall effect is an increase in the costs of repairing faults, reduced costs for inspecting and maintaining the network and increased costs for tree cutting, primarily to improve storm resilience and address the impacts of Ash Dieback disease, as outlined in section 5.2.2.2.

9.4. Investing in the network

9.4.1. Improving reliability and speed of restoration

Our programmes to directly address the service customers receive on our poorest performing circuits and also those areas with high levels of vulnerability will drive an increase in expenditure dedicated to improving the reliability of the network compared to ED1.

9.4.2. Replacing and refurbishing network assets

As described in section 8.3.2 for many of our asset classes our asset management approach utilises the Common Network Asset Indices Methodology (CNAIM) approved by Ofgem to assess asset risk.

Our forecasts for the costs of replacement and refurbishment of those parts of our network where the CNAIM methodology is not appropriate are described separately.

9.4.2.1. Common Network Asset Indices Methodology (CNAIM)

The main aim of the replacement and refurbishment programme is to manage the underlying lifetime risk of the network. This is achieved by intervening on equipment when it is higher risk but before it fails. As equipment deteriorates over time, its risk of failing starts to increase. If it does fail, the consequences can be significant and costly. Judging when to intervene and in what way is a key asset management challenge and one where we have developed sophisticated analytic techniques to assist.

CNAIM covers the vast majority of our overground equipment including switchgear, circuit breakers and transformers at substations of all voltages; supports for overhead lines (wood poles of steel towers) and the lines themselves at all voltages; underground cables with assisted or pressurised insulation (either gas or oil).

The overall level of investment in ED2 depends on four key assumptions:

- the desired overall risk level to be achieved;
- the assumed incidental impact of other work;
- the balance of interventions across different equipment types; and
- how targeted the programme can be in terms of identifying the very highest risk equipment for priority attention.

We have optimised our investment forecast to ensure the most efficient delivery against the risk target. This optimisation involves three aspects:

- reviewing the balance of investments across asset types;
- re-evaluating the refurbishment vs replacement trade-offs by asset type; and
- ensuring optimal targeting at the highest risk examples of each asset category.

As the network risk is a sum of the risks for all the individual equipment types, it could be possible for example to manage overall risk by significantly over-investing in one type of equipment and completely ignoring another such that its rate of failures begins to increase significantly. This might achieve short-term objectives, but would result in longer-term issues.

Based on customer and stakeholder feedback, our plan aims to deliver a level of lifetime risk in 2028 at the same level as 2023, taking into account the expected incidental impacts on risk of our other proposed programmes (which may also replace poorer-condition assets). As a consequence, we have developed a balanced programme which seeks to deliver stable underlying risk levels at an efficient cost.

The resulting outcome in terms of investment by major equipment type is as follows:

£m (20/21 prices)	Early draft business plan
Transformers	56
Switchgear	63
Overhead lines	77
Underground cables	43
TOTAL	**239**

In our draft submission in July, we will include supplementary Engineering Justification Papers (EJPs) which will give further detail on each of these equipment types.

The unit costs used in our submission are largely based on our experience over the first five years of ED1, benchmarked against the performance of the thirteen other DNOs.

Additional unit cost assumptions have been included associated with EU Ecodesign Transformers and the removal of SF_6 options from newly-installed switchgear.

The refurbishment element of this plan largely reflects the continuation of programmes at their current rates including oil regeneration in transformers, tower painting, switchgear refurbishment and oil cable joint renewals. These options have all been individually modelled and shown to generate better risk reduction per £ than replacement where they are applicable.

9.4.2.2. Non-CNAIM

The largest group of assets not covered by the CNAIM methodology are solid cables. This is because it is not possible to collect data on the condition of these cables without disturbing them and, as they have no moving parts, they do not suffer from wear and consequently have very long lives. Additionally the CNAIM approach of measuring condition does not work well for civil engineering structures and is not yet applied to new devices recently fitted to the network because the is insufficient information on how they age over time and what condition measures are good indicators of potential failure.

For these non CNAIM assets our base forecast assumes that replacement activity broadly continues at current levels, predominantly focused on solid cable replacement. For low voltage and high voltage underground cables we have identified a need to increase expenditure to address a particular type of cable that is starting to fail more often. Future versions of the plan will consider more fully the requirements for ancillaries (eg batteries), smart device management and the strategy for managing cut-outs and service positions in customer's properties post smart metering rollout.

For refurbishment, the base forecast assumes continuation at current levels with a reduction in protection refurbishment work following the completion of significant work in this area in ED1.

9.4.2.3. Civil structures

Civil works are assumed to continue at current, reduced levels as there is currently little evidence to support increased expenditure in this regard other than where our forecasts also include civil costs associated with other asset replacement.

9.4.2.4. Communication equipment

Our programmes of work to replace communication equipment used to control the electrical network increase as the first generation of remote control equipment comes to the end of its life and greater reliance is placed on communicating with all equipment effectively to continue to improve the reliability of the network.

9.4.2.5. Operational IT

The systems to support the implementation of distribution system operations continue to require a significant operational IT expenditure level. This expenditure builds upon the foundation platform of the new Network Management System delivered in the ED1 period.

9.4.3. Managing the network's safety and environmental impacts

There is a significant increase in expenditure in this cost category as a result of the new safety programmes that we are introducing to address small rural transformers, underground cable pits, overhead line safety and cut-out safety. We are also continuing our programme managing safety in high-rise buildings.

New programmes to address environmental issues such as new legislation on PCBs and our own carbon footprint are also increasing costs in this category. We will continue with a proactive programme to reduce electrical losses in our equipment.

This category also includes assumptions on costs associated with discharging our ongoing environmental and safety responsibilities in legislation such as contaminated land remediation and other environmental liabilities.

The costs of our programme to continue with the undergrounding of overhead lines in Areas of Outstanding Natural Beauty and National Parks will be consistent with current activity levels.

9.4.4. Improving resilience to extreme events

9.4.4.1. Preventing flooding

Our programme for flood protection will be considerably smaller than our existing programme because the largest and highest risk sites have already been protected giving reductions in this cost category.

9.4.4.2. Preparing for a black start

We do not anticipate any capital expenditure in response to the revised standards issued by BEIS as the activities associated with meeting the new standard will require additional staff in our control room.

9.4.5. Ensuring capacity is available for all

This is a major area of uncertainty in the ED2 period with the drive to a net zero economy and the associated impacts on the electrification of transport and heat together with growth in renewable generation.

In this version of our plan we have shown the lowest increase scenario on the expectation that we will be able to work with Ofgem to introduce effective uncertainty mechanisms that will revise cost allowances quickly if extra work is undertaken to provide more capacity than this base forecast. Even so this is the area of our cost base with the highest growth forecast given the scale of the future Net Zero challenge.

9.4.5.1. General reinforcement at extra high voltage (EHV)

The forecast of future works required on the 33 and 132kV systems is based on current load forecasts aligned to our DFES. It includes a level of smart grid discount, but more work is required on how we plan for future flexible services market. The DFES itself considers a range of scenarios and the process for standardising these is currently being developed through the Open Networks project.

At this voltage we have adequate short-term capacity to accommodate load growth at 16 of our 17 Grid Supply Points with the exception of the Harker/Hutton group in Cumbria where large numbers of windfarm

applications have essentially used up the capacity. To increase this, we require National Grid to undertake works on their side of the shared site which they are planning to complete in RIIO-T2.

9.4.5.2. Reinforcement at high voltage and low voltage

These projections are also aligned to the forecasts within the DFES. In terms of LCT take up, it is on the lower voltages that many of the constraints will appear in the short term and our programme is likely to include significant proactive programmes of constraint removal where we can identify that these already are or are likely to become in the short-term, a possible barrier to LCT take up in that area.

In addition, this area includes our responses to localised capacity issues that are identified, or are referred in by customers reporting voltage issues, flickering lights etc.

9.4.5.3. Fault levels

We are additionally planning for the continuation of programmes to remove fault level constraints in key areas. The 'fault level' refers to the ability of switchgear to safely clear fault current in the event of a fault and it can limit the capacity of the associated network, either for demand or for export of generation. This can often be the limiting factor that prevents additional generation being connected to a part of the network.

Our 6.6kV network is a particular focus in this regard and this voltage forms the majority of our HV system in Greater Manchester. As a result, we have pioneered innovative re-rating techniques on certain types of existing switchgear and our pioneering Respond project has developed a toolbox of techniques we can employ in this regard on higher voltage equipment.

9.4.5.4. Unlooping

Around 40% of the domestic services in our region are 'looped', ie they are connected to another service cable rather than have a direct connection to the mains. Whilst perfectly safe for traditional domestic demand, their limited capacity can cause issues if a LCT load such as an EV fast charger is connected with a risk of overloading.

We are commencing a programme of unlooping these services at locations with existing LCT equipment in RIIO-ED1 and are planning to significantly scale up this programme in RIIO-ED2 to 'futureproof' those services which may be inadequate due to legacy housing design.

9.4.5.5. Supporting energy efficiency

This is a new category of costs created specifically for the Smart Street programme that we plan to roll out in response to customer and stakeholder demand.

9.4.6. Making new connections

This is the element of new connections costs that are socialised and paid for by all customers in line with the current connections charging rules. In general, customers requiring a new connection pay for the cost of it, but if we are required to reinforce our network at higher voltages to accommodate the request, then some of this cost is shared due to the likely future shared benefit of the additional capacity being created.

Forecasting in this area is highly uncertain as it is based on customer behaviour and general economic conditions in the region, however we work closely with stakeholders including Local Authorities to identify likely growth areas. At present, there is also uncertainty regarding the lasting impact of the Covid-19 pandemic both in terms of the impact on economic activity but also with respect to the policy response and potential related stimulus measures.

At present, Ofgem are also consulting on potential changes to the charging rules through the Access & Charging Review and this may result in changes to customer behaviour and hence the number of connection requests if, for instance, more of the costs are socialised. We are inputting to this debate and will update our assumptions in this area when Ofgem publish their final decision.

9.4.7. Diverting our equipment

This forecast includes an increase in diversions requirements based on land agent activity. No major diversions projects are currently assumed; however we are working with other North West infrastructure providers to identify any specific likely requirements.

9.5. Running an efficient company

While the base costs of our corporate activities are reducing with ongoing efficiency improvements a significant number of our new initiatives require significant support from our corporate functions driving an overall increase in costs.

These include stakeholder engagement and community support activities including the creation of new vulnerable customer panels, expanding our referral networks and support for customers in fuel poverty.

We must also include the costs of our support for community energy schemes and decarbonisation advice as well as the development of flexibility services markets. The costs of increased cyber security requirements also add to ongoing IT costs.

Our community outreach teams will be increasing activity associated with safety campaigns and education.

9.6. Significant projects

The most significant projects identified to date include the following, all of which are likely to cost at least £2m in ED2, and each of which will be covered by a specific accompanying Engineering Justification Paper (EJP) alongside our July draft of this plan.

We are currently consulting on whether to accelerate a sub-set of these projects into ED1 as part of our Green Recovery programme along with other initiatives. These projects will help to support the transition to Net Zero and economic recovery from the effects of Covid-19[31].

Project	Driver	Approximate cost (£m)

[31] www.enwl.co.uk/greenrecovery

Little Hulton (Manchester)	Reinforcement by upgrading cables and replacing the 33kV transformers to accommodate demand growth in NW Manchester.	3.5
Frederick Road GSP (Salford)	Replacing current 132kV transformers with larger units and increasing the size of the overhead line circuits to cater for demand growth in Manchester and Salford.	5.9
Southern Gateway (Manchester)	Establishing a new primary substation in South Manchester to cater for forecast demand growth and give greater network flexibility.	4.3
Northern Gateway (Manchester)	Establishing a new primary substation in North Manchester to cater for forecast demand growth and give greater network flexibility.	4.6
Mayfield regeneration (Manchester)	Establishing a new primary substation in Central Manchester to cater for forecast demand growth and planned inner city regeneration activities.	3.1
Lower Darwen (Lancashire)	Rearrangement of the 132kV feeding arrangements which will add more 132kV switchgear at the site. This will manage voltage problems under fault conditions and therefore ensure customers receive correct voltage levels at all times.	RIIO-ED2 1.8 RIIO-ED3 1.8 Total 3.6
South Manchester GSP	The 132kV switchboard and associated plant is at the end of its useful life and will be replaced. This will improve the reliability of supply in the south Manchester area.	15
Harker GSP (Carlisle)	National Grid will replace their plant on a shared 132kV switchboard in the ED2 period[32]. We will need to divert our circuits to connect to the new plant.	11.3
Lancaster – Burrow Beck 33kV oil cable replacement	The 33kV circuits that provide supply to these areas are old and require replacement. They are filled with oil and pose an environmental risk when they fail. They currently are not reliable. New solidly insulated cables will be used to replace the old cables. This will improve reliability and reduce the risk to the environment to nothing. We will also improve the design of the cable layout, improving reliability to our customers.	2.8
132kV Steel Tower line refurbishment : AF line (South West Cumbria)	This line of towers is part of a ring system providing supplies to the west of Cumbria. It is exposed to year round corrosion and severe weather as it is very near the coast. This causes the towers, conductor and insulators to corrode. We will carry out a programme of replacing parts of the line which are no longer safe	4.7

[32] Where two companies have switchgear connected together to permit electricity to pass from one to another this is known as a shared site. Each company owns their own assets and where a common asset needs replacing this needs both the site owner and the second company to work together to replace their respective equipment.

	to have in service, therefore improving the reliability of the circuits and making them safe.	
132kV Steel Tower line refurbishment : V line (South Cumbria)	This line of towers is also part of the same ring system as the AF line, providing supplies to the west of Cumbria. It experiences the same weather as the AF line with the same effects. We will carry out a programme of replacing parts of the line which are no longer safe to have in service, therefore improving the reliability and safety of the circuits.	4.4
132kV Oil Cable Replacement Whitegate GSP to Greenhill BSP 1 and 2 (Oldham)	Greenhill BSP is fed from two 132kV oil cables which are obsolete and pose both a reliability and environmental risk. We will replace these cables with Solidly insulated cable improving reliability and removing the environmental risk.	12.4
132kV Oil Cable Replacement Agecroft BSP to Frederick Road BSP 1 and 2 (Salford)	Frederick Road has three circuits feeding it at 132kV. Two of the feeders from Agecroft BSP are oil cables which are obsolete and pose both a reliability and environmental risk. We will replace these cables with Solidly insulated cable improving reliability and removing the environmental risk. Note this project also provides increased capacity to the site and is related to the transformer replacement above.	7.2
33kV Tower Circuits in the Huncoat Area HA, HC and HL	Three 33kV tower lines in the Huncoat area of East Lancashire requires intervention because of condition and third party issues. We propose to underground the circuits removing the need for maintenance and solving the third party issues.	4.7

Significant projects map:

electricity north west

Bringing energy to your door

Thank you for all your engagement so far and for taking the time to read our plan.

Send us your responses by Monday 3 May to:

stakeholderengagement@enwl.co.uk

or visit

www.enwl.co.uk/engagementhub