



**Delivering on  
our promises**

Business Plan Commitments  
Report 2021-22

# Performance snapshot – NPg DNO group<sup>1</sup>

<b>Network</b>	<b>Network</b>		<b>Actual 2021-22</b>				
	Number of customers		3.9m				
Total DNO network length		97,193km					
<b>Reliability &amp; Availability</b>	<b>Reliability &amp; Availability</b>		<b>Actual 2021-22</b>	<b>Target 2021-22<sup>2</sup></b>	<b>Status</b>	<b>Trend<sup>3</sup></b>	
	<b>Customer interruptions<sup>4</sup></b>	Northeast	Inc. exceptional events	66.6	-	-	▼
			Exc. exceptional events	50.2	59.2	Achieved	▼
		Yorkshire	Inc. exceptional events	56.7	-	-	▼
			Exc. exceptional events	51.2	62.0	Achieved	▼
	<b>Customer minutes lost<sup>4</sup></b>	Northeast	Inc. exceptional events	212.2	-	-	▼
			Exc. exceptional events	46.5	52.8	Achieved	▼
		Yorkshire	Inc. exceptional events	62.1	-	-	▼
			Exc. exceptional events	43.9	53.5	Achieved	▼
	<b>Incentive performance reward/(penalty) – IIS<sup>5</sup></b>	£m	£12.7m	-	-	-	▼
£/customer bill		£1.22	-	-	-	-	
<b>Customer Satisfaction</b>	<b>Customer Satisfaction</b>		<b>Actual 2021-22</b>	<b>Target 2021-22<sup>2</sup></b>	<b>Status</b>	<b>Trend<sup>3</sup></b>	
	Overall Broad Measure of Customer Satisfaction score out of ten (rank out of six) <sup>6</sup>		8.82 (5th)	8.2	Achieved	-	
	<b>Incentive performance reward/(penalty) – BMCS<sup>7</sup></b>	£m	£1.6m	-	-	-	-
£/customer bill		£0.15	-	-	-	-	
<b>Connections</b>	<b>Connections</b>		<b>Actual 2021-22</b>	<b>Target 2021-22<sup>2</sup></b>	<b>Status</b>	<b>Trend<sup>3</sup></b>	
	Time-to-quote (days) <sup>8</sup>		8.1	4.8	Missed	▼	
	Time-to-connect (days) <sup>8</sup>		46.2	39.3	Missed	▲	
	<b>Incentive performance reward/(penalty) – connections lead time</b>	£m	£0.0m	-	-	-	▼
		£/customer bill	£0.00	-	-	-	-
<b>Incentive on Connections Engagement penalty – ICE (if applicable)</b>	£m	Nil	-	-	-	-	
	£/customer bill	Nil	-	-	-	-	
<b>Social Obligations</b>	<b>Social Obligations</b>		<b>Actual 2021-22</b>	<b>Target 2021-22<sup>2</sup></b>	<b>Status</b>	<b>Trend<sup>3</sup></b>	
	Individual Stakeholder Engagement and Consumer Vulnerability (SECV) score out of ten (rank out of six)		3.70 (6th)	-	-	▼	
	<b>Incentive reward</b>	£m	£0.0m	-	-	-	▼
£/customer bill		£0.00	-	-	-	-	
<b>Innovation</b>	We spent £1.7m across 25 dedicated innovation projects (37% of our Network Innovation Allowance). In the ED1 period to date, our innovative solutions have now delivered benefits to customers in excess of £47m.						
<b>Safety</b>	Our long-term safety performance is strong and places us in the leading pack among our peers. We achieved our annual headline safety target for Northern Powergrid as a whole in 2021-22, measured by the Occupational Safety and Health Administration (OSHA) rate – 0.25 against a target of 0.27 – representing six reportable incidents in a workforce of around 2,450.						
<b>Environment</b>	We achieved our oil leakage and business carbon footprint targets for 2021/22 and we are on track to exceed our commitment in removing overhead lines from areas of natural beauty.						
<b>Financials</b>	<b>Financials</b>		<b>Northeast</b>	<b>Yorkshire</b>	<b>Combined</b>		
	Unrestricted domestic tariff charge		£76.57	£66.40	£69.45		
	<b>Total expenditure</b>	£m	161.0	219.0	380.0		
		% of cost allowances	112.6%	112.4%	112.5%		
		% of cost allowances (ED1 to date)	103%	98%	100%		
		% of allowed revenue	61%	66%	64%		
	<b>Dividends paid<sup>9</sup></b>		£20.44	£27.05	£47.49		
	<b>Gearing<sup>10</sup></b>		52%	47%	61%		
<b>Credit rating<sup>11</sup></b>		A3/A/A-	A3/A/A-	Baa1/A/BBB+			
<b>RORE<sup>12</sup></b>		9.5%	8.9%	8.8%			

1 All financial figures in 2012-13 prices. The performance of each licensee is shown in the Annex to this report.  
 2 Ofgem target (see sections in the main body of the report for performance against our own targets).  
 3 Trend ▲ getting better ▼ getting worse since 2020-21.  
 4 Unplanned & unweighted figures. Indicative figures as at July 2021, figures still to be confirmed by Ofgem.  
 5 Excluding Guaranteed Standards payments.

6 Broad Measure of Customer Satisfaction (BMCS) rank indicative only based on monthly data. Final ranking to be confirmed by Ofgem.  
 7 Does not include SECV reward.  
 8 LVSSA (single minor connections).  
 9 Dividends paid figures for Northeast, Yorkshire and Overall relate to dividends from the licensee companies in the year.  
 10 Gearing figures for Northeast and Yorkshire relate to gearing of the licensee companies. Overall gearing relates to the Northern Powergrid group and includes debt over and above the licensee companies that was utilised to fund the distribution business.

11 Credit ratings for Northeast and Yorkshire relate to scores for three credit rating agencies (Moody's/Standard and Poor's/Fitch) for the licensee companies. Overall relates to Northern Powergrid Holdings Company.  
 12 RORE forecast for the ED1 period based on notional gearing and including holding company debt.

# What's inside

Back in 2014, we published our Business Plan for 2015-2023. This plan set out what we aim to achieve in this eight year period for which our regulator, Ofgem, has set what we are allowed to earn.

As we enter the final year of the eight year period covered by our plan we can reflect positively having made very good progress across the range of commitments we set out. In this report, we provide an update on how we're doing against our Business Plan commitments that run through to March 2023.

You can access more information on environment and innovation; connections engagement; stakeholder engagement and consumer vulnerability; and our financial performance and returns by visiting: [www.northernpowergrid.com/yourpowergrid](http://www.northernpowergrid.com/yourpowergrid)



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# A word from our CEO



2021–22 was a challenging year that will be remembered for the impact of Storm Arwen, the largest storm to hit our region in decades – but it was only one of a series of severe weather events that dominated the winter. I'm extremely proud of our team – their dedication and hard work throughout Storm Arwen and all that followed was exceptional. In terms of delivering our ongoing Business Plan, we've made more progress on our promise to deliver more for less and our customers are already seeing the benefits of output improvement in day-to-day service levels.

As we enter the final year of the 2015–23 period we're on course to achieve, and in many places exceed, the commitments we made in our ED1 Business Plan.

## Still on track to deliver on our Business Plan promise – 'more for less'

I'm pleased to report that we are on track to deliver the 'more for less' promise we made back in 2013. We will deliver our output targets and all other commitments we made; in fact we are set to exceed many of our targets. I am very proud that our team has found a way to stay on course for those commitments despite the unprecedented disruption we have had to deal with in the shape of a pandemic and what was probably the worst storm season we've ever faced.

As we enter the final year of the price control our expenditure forecast is in line with the £3.2bn allowances Ofgem set in 2014, and our expenditure to date matches almost exactly the phased profile for the period. In addition to that we are also progressing well with the £53m green investment programme that we agreed with our regulator in 2021 that will help accelerate progress to Net Zero and provide vital regional economic stimulus.

We know that keeping bills as low as possible always matters to our customers. And it matters even more in the current climate where the economic outlook is challenging. As we plan for the future, we have this thought clearly at the front of our minds. We are committed to providing the best possible service to all our customers, including playing our part in supporting vulnerable customers in our region.

## Responding to the challenges of Storm Arwen

Storm Arwen was one of the most challenging incidents that we and our customers have had to face and was quickly followed by several other major storms. We are sorry for the difficulty and disruption this caused our customers. We appreciate the patience that they showed as well as the dedication of our teams who worked through some of the most challenging conditions we have ever faced.

The extreme nature of Storm Arwen meant we learned some difficult lessons. It highlighted some limitations in our systems and showed us things we can do to be able to provide a stronger response to extreme storms. We are committed to doing those things to make the communities that we serve more resilient to extreme weather events and we have worked closely with both BEIS and Ofgem to ensure the energy sector better supports customers in major power cuts and severe weather events.

## Preparing for the future with our ED2 Business Plan

2021/22 was also a key year in setting out our plans for the next five years; we published our 2023–28 plan on 1 December 2021 which set out how we will facilitate decarbonisation and drive towards Net Zero, our investment in digitalisation of our network, and the delivery of significant upgrades for our customers in key areas such as reliability and customer service.

Working with our stakeholders is always a big part of our planning and decision-making. 2020/21 has been a big year in that regard as we have developed our plan for 2023–2028. With the help of scrutiny from our Customer Engagement Group, the feedback we have received is helping us do the best job we can in planning to meet the needs of our customers as we go forward into a low-carbon future.



**£53 million**  
Green investment programme



**£19.4 million**  
Invested in cyber security



## Our output performance continues to improve

We continue to drive improvements in output performance and expect to exceed our targets across most areas. Relative to our Business Plan baselines, our customers experience 28% shorter and 26% fewer power cuts, customer satisfaction has improved by six percentage points and we're still on track to more than halve our OSHA accident rate by the end of the period.

Our strategic investments in resilience continue to feature prominently in our plans and we are also nearing completion of our stakeholder-led flood defence programme that will see 271 of our sites made more resilient to flooding. Our £19.4m investment in cyber security also means we're well positioned to deliver against the requirements of both the regulations and industry best practice.

## Facilitating the decarbonisation transition in our region

Our network will play a crucial role in the decarbonisation of our region and stakeholders have made it clear that this is their top priority. We are making good progress in facilitating and preparing for greater use of low-carbon technologies, such as electric vehicles, and we have already started to see demand from customers increase.

Our smart grid enablers programme was impacted by the pandemic but is now in full scale rollout, upgrading our telecoms network to support deployment of smart grid solutions and installing 2,700 LV monitors across our network. We're routinely examining flexibility as an alternative to reinforcement, offering tenders to the market for flexibility services and building four fully Active Network Management zones, which provide 433MW of contracted flexibility.

This is just the beginning; we expect it to increase significantly. The plan we published for the 2023-28 period makes it clear that we intend to make sure that we keep all credible decarbonisation pathways open and that we do so in a way that is transparent and earns your trust.

And our momentum continues to build as we begin the transition into the next regulatory period. Working with Ofgem, local authorities, developers and other parties we are delivering a £53m package of additional Green Recovery investment as an additional benefit in the current price control period. The investment will accelerate decarbonisation and support regional economic growth. I'm pleased to report that the projects are progressing well and are already being delivered, providing increased network capacity in strategic locations and supporting low-carbon technologies central to the Net Zero transition.

## Encouraging sustainable and long-term investment

The long-term outlook of our investor gives us the financial stability that our stakeholders deserve. Now is a critical time to encourage investment and facilitate decarbonisation across our region, this relies on a workable price control for 2023–28 that enables the drive towards Net Zero.

I am delighted that we are on track to deliver our commitments for 2015–23. This will not only reinforce our track record but position us well to begin delivering on the ambitious plan that we have put forward for 2023–28.

**Phil Jones**  
Chief Executive

# Who we are

Northern Powergrid is responsible for the electricity network that keeps the lights on for 8 million customers across the North East, Yorkshire and northern Lincolnshire.

Our dedicated team of around 2,450 employees operates 24 hours a day, 365 days a year – no matter what the circumstances – to maintain a safe, reliable and efficient electricity supply.

Our customers pay their energy supplier for the electricity they use. A proportion of the money they pay as part of their electricity bill (around £85 per year in today's prices) comes to us to cover the cost of keeping the network running safely, reliably and efficiently.

### Our customers

We're committed to looking after our customers and you'll read in this report about what we're doing to improve customer service, support our local communities, and look after vulnerable customers when they need us the most.

### Our region

We are proud of the vital role that Northern Powergrid plays in the infrastructure of the North of England, including enabling national schemes such as the High Speed 2 and Trans Pennine upgrades.

We play an active role in supporting the development of the regional growth agenda through our support of Business North, our sponsorship of the Northern Energy Taskforce, and through our Infrastructure North utility partnership with Northern Gas Networks, Yorkshire Water and Northumbrian Water.



## Ensuring our region can decarbonise is a key priority...

As we move to a low-carbon economy, new technology and digitisation are driving unprecedented change in the way energy is created and used. As an electricity infrastructure provider, we need to make sure that our network is able to safely and securely support these changes whilst maintaining high standards of reliability for our customers.

### What it means now

Here at Northern Powergrid, we have embarked on a transition to expand our capabilities and become a local optimiser of the energy system. We have a key role to play in facilitating regional decarbonisation by fulfilling the functions of Distribution System Operation (DSO).

In 2021 we published our ED2 Business Plan DSO strategy that builds upon the 2019 publication of our DSO Development Plan v1.1.

### What it means for the future

We have been building our plan for the next five year period (April 2023 to March 2028) through an extensive engagement programme over the past three years.

Our stakeholders have been clear that ensuring our region can decarbonise is key and we're responding with a 36% step-up in investment – providing further digitalisation and smart grid solutions and providing significant amounts of new capacity to cater for growth in low-carbon technologies (LCTs). Our plan can be found at [here](#).

## Northern Powergrid at a glance



**8 million**  
customers



**2,450**  
employees



**25,000 km<sup>2</sup>**  
of network



**6**  
operating regions



**96,000 km**  
of cables

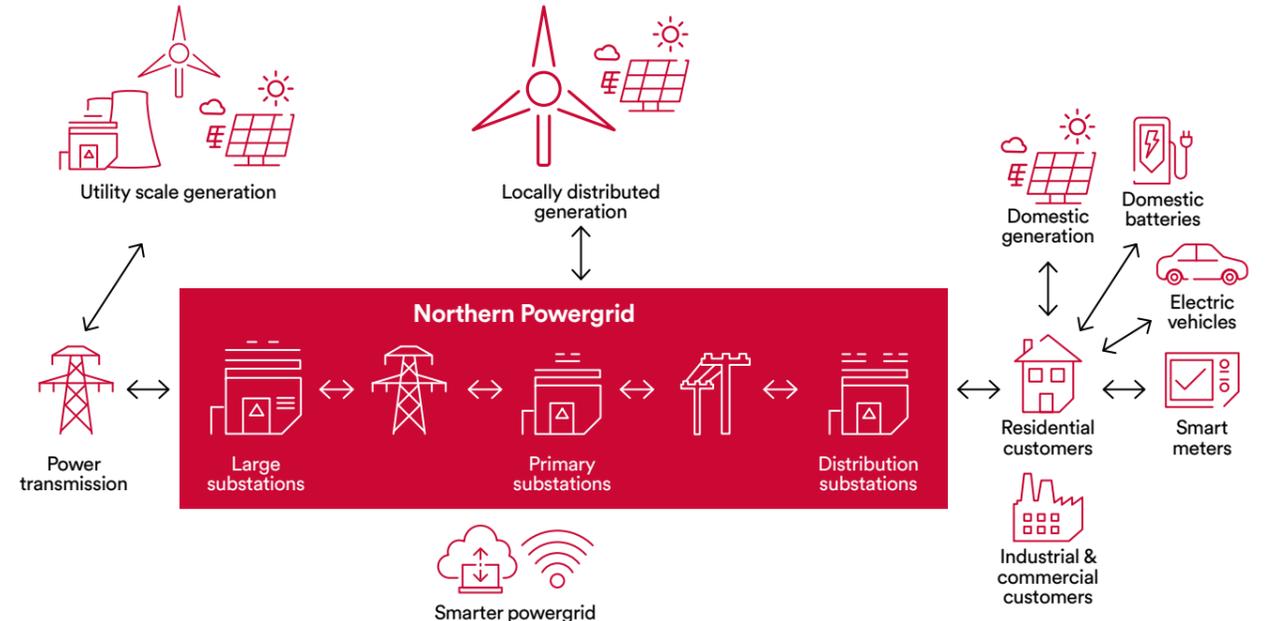


**3.9 million**  
homes and businesses  
powered



**63,000**  
substations

## Where we fit in the electricity industry



# Our engagement programme

Stakeholder engagement is key to how we plan and run our business. Stakeholder and customer views and priorities underpin our business direction, choices, and how we support our customers and communities now and as we prepare for the decarbonised future. We carry out our engagement in accordance with our stakeholder charter. This sets out our engagement principles which underpin interactions and the positive outcomes we target for our stakeholders and customers. Strong engagement with our stakeholders helps us make better decisions and ensures we meet the needs and aspirations of those we serve across our regions.

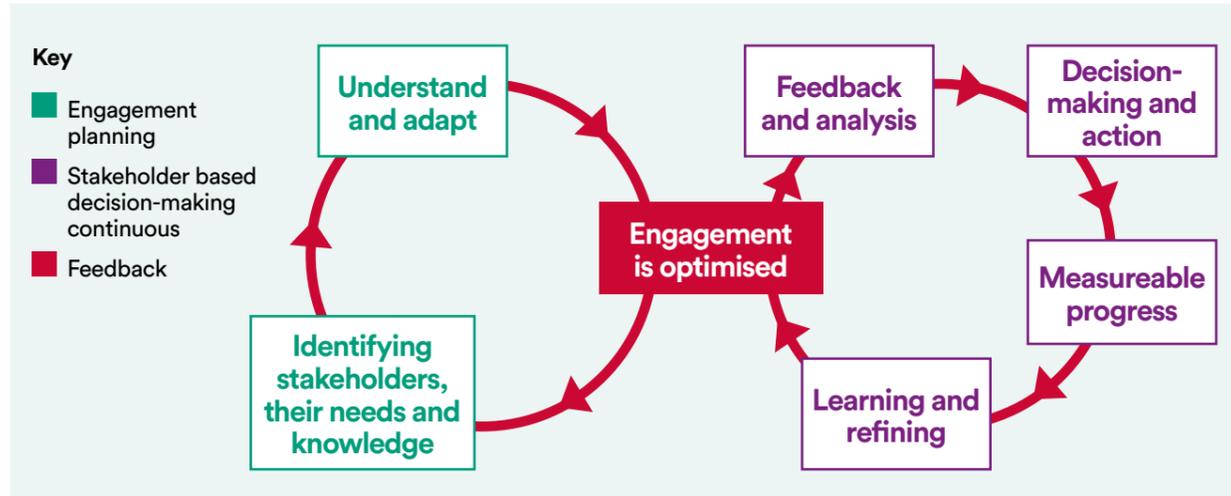
### Oversight

We established our **Customer Engagement Group (CEG)** in September 2019. The CEG is a group of 10 independent experts led by Chair, Justin McCracken, charged with scrutinising our Business Plan and the quality of engagement undertaken to inform it.

The CEG meets monthly with Northern Powergrid and helps to ensure that customers' needs and views are reflected in our plans – particularly important in the rapidly evolving low-carbon energy landscape.

The CEG has pushed Northern Powergrid to think strategically about our engagement and, as a result of its feedback, we have introduced several new initiatives, such as an SME Panel dedicated to engaging small and micro business owners and a Rural Panel dedicated to engaging rural customers in remote locations, which are essential for Northern Powergrid to adhere to as the electricity evolves over the next 10 to 20 years.

The CEG operates in an open and transparent manner, publishing updates about its work on [ceg.northernpowergrid.com](http://ceg.northernpowergrid.com)



### Our engagement approach

#### Identifying stakeholders, their needs and knowledge

Our stakeholder database maps over 6k stakeholders against our segmentation model with an annual database audit to ensure diversity of representation.

#### Step 1 Understand and adapt

We engage with vulnerable, hard-to-reach, and time-poor individuals, adapting our approach accordingly to meet their needs. Our Future Fairness Panel gives further advice and guidance to help us engage with these groups.

#### Step 2 Feedback and analysis

We record and review all feedback in an accurate and timely manner, tracking feedback, satisfaction and actions.

#### Step 3 Decision-making and action

Our stakeholder Business Plan Engagement Group (BPEG)

and subgroups review feedback and develop action plans. These are reviewed by the executive, Customer Engagement Group (CEG) and stakeholder panels.

#### Step 4 Measurable progress

Through robust project management, we report and measure progress, including social return on investment (SROI), benefits and satisfaction, and report back outcomes to our stakeholders.

#### Step 5 Learning and refining

We operate a cycle of continuous improvement for all engagement and continually refine our processes.

#### Step 6 Engagement is optimised

The ongoing feedback is fundamental to our decision-making processes and our success as a business, keeping us accountable for delivery.

## Our engagement principles

Our strategy is underpinned by our core engagement principles, introduced this year and validated by our Stakeholder Panel, Social Issues Expert Group (SIEG) and Customer Engagement Group.



**1 Inclusive**  
Ensuring our engagement reaches and includes a diverse range of individuals, groups, experts, and locations that represent the communities we serve.



**3 Relevant**  
Providing additional ways to discuss complex topics and tailor communication approaches so that we deliver engagement that promotes an understanding of priority topics such as decarbonisation and an inclusive energy transition.



**2 Accessible**  
Increasing the use of new communications channels, removing engagement barriers, and increasing cooperation with a wide range of local organisations so innovative thinkers and future customers access and contribute to our engagement.



**4 Continuously improving**  
Developing the skills, processes, infrastructure, and capacity of customers, communities, and our own teams to ensure engagement is two-way, measurable, and transparent.

### Governance, accountability, and ownership

To deliver the scale of ambition our stakeholders expect, and implement improvements based on lessons from the storms, we have strengthened our existing strategic governance model, the Business Plan Engagement Group, with four subgroups, each led by members of the executive and aligned to areas of significant future change and stakeholders' priorities.

Each subgroup meets at least monthly to identify and prioritise their area's key change initiatives – which may be improvement initiatives or commitments supporting our business plans. They ensure that consumer voice is embedded in projects and commitments and identify opportunities to use consumer feedback to test ideas, shape potential solutions, and assess whether benefits have been delivered.

The groups' governance framework ensures consistency and standardisation of meetings and reporting – including monthly reports to the BPEG and board. Membership is multi-disciplinary and identifies opportunities for collaborative working and sharing best practices. And together, all groups have responsibility for cross-cutting themes of data and digitalisation, innovation, vulnerable customers, and creating a fair and just energy transition.

### The group priorities include:

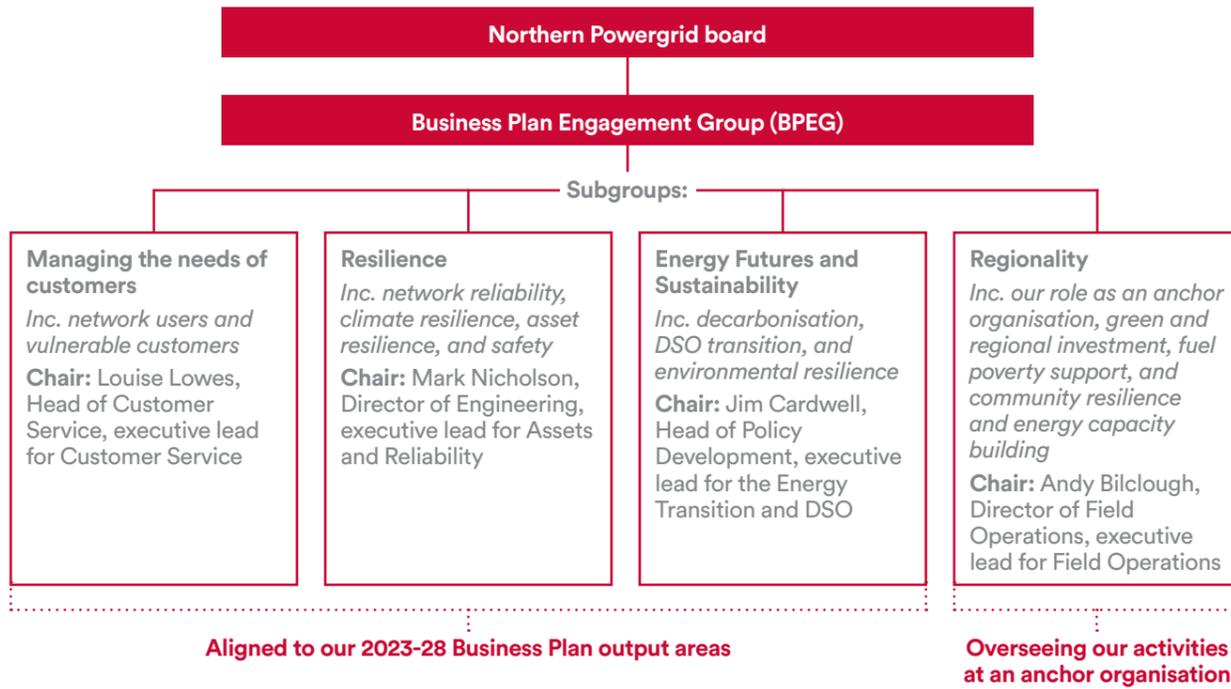
- Ensuring that customer and stakeholder voice is firmly embedded within priorities and projects in each area.
- Ensuring opportunities to engage hard-to-reach and digitally excluded customers and stakeholders are fully explored.
- Developing and identifying opportunities to further underpin these priorities with stakeholder voices (e.g., new engagement, triangulation of existing engagement, operational data, satisfaction scores).
- Developing stretch targets and measures of success.
- Monthly reporting on progress and escalating barriers and achievements to the board.
- Monthly reporting to our CEG for additional scrutiny and accountability.

### Assurance

We renew our accreditation annually against the stakeholder engagement standard, AA1000SES, which we have held continuously since 2012. Doing the right thing for stakeholders means continually monitoring our progress, and we're proud to have achieved measurable growth this year, through these awards and assessments:

- Annual audit against the AA1000 standard
- ISO55000 accreditation, including assessment of our stakeholder engagement strategy
- BSI assessment of our approach to consumer vulnerability, including an extra audit to ensure our services are fully embedded across the business.

# Our engagement programme continued



“Listening to our stakeholders and enabling them to play an active part in transforming the energy sector in a way that brings lasting positive social impact is of the utmost importance to us. We will continue to focus on delivering an excellent service to our current and future customers in a way that builds trust in how we operate, making a real and sustainable difference to the communities we serve.”

**Phil Jones,**  
Chief Executive

# Our 2021-2022 engagement

## Delivering on stakeholder priorities in 2021-22

Our stakeholder feedback shapes our strategy. To garner that feedback we have a comprehensive and multi-faceted engagement strategy, reflecting the needs of our customers – who have all had a challenging year.

Our customers are living through both the formative stages of the energy transition, and an era of dramatic economic, societal and political change (see page 2). These changes increase the importance of engagement to drive our business in response to need.

Insights gleaned from our engagement directly impact our operations and decision-making; it is our duty to provide trusted advice to our stakeholders on different, and often complex, topics.

In our 2020-21 SECV submission we highlighted 17 key stakeholder priorities for delivery this year, we are delighted to report that we have achieved all of them and many are detailed in this submission.

This report shows where and how we have engaged to inform our strategic focus areas, ensuring these are aligned to stakeholder priorities.

Our engagement principles are sound, but in 2021-22 we reconfigured our practices based on stakeholder advice: introducing more pre-engagement knowledge-sharing discussions to help stakeholders make informed decisions; working with intergenerational groups to expose conflicts and areas of agreement; and bringing together more groups with differing experiences.

Stakeholders also told us that digital engagement improves accessibility, but asked us to recognise that for some people, remote sessions can be a challenge.

In response, we have offered hybrid engagement sessions and introduced hybrid models with many of our established panels, combining remote and in-person sessions.

This year, we increased levels of engagement with dedicated planning surgeries for local authorities and systemised support using multi-disciplinary teams, a new approach that forms the basis for our Green Recovery work that supports the levelling-up agenda. We recognised our role in supporting fuel-poor customers and scaled up support. Working with network users, we put an overhead line detection tool into development with partners, while our new IVR communications system improved customer experience and accessibility. Expanding our open data model has increased our transparency and helped to tailor our approach.

Through partnerships with our Energy Champions, we have broadened accessibility, improving our ability to explain complex topics to customers, and we have introduced direct channels for civic leaders, formalised working with industry experts to channel engagement, and brought in specialist colleagues to engage with community energy groups, champion their needs, and deliver faster and better change.

We haven't always got it right. We know we let many of our customers down in Storm Arwen and its aftermath. But we have listened to everything our customers and partners have told us and, through our reviews, we have begun to learn lessons and implement changes on responsiveness, adaptiveness, resilience and communications, and we have fast-tracked our new strategies to quickly embed them into business as usual, with practices put to the test in Storms Malik, Corrie, Dudley and Eunice.

## 2021/22 engagement activity

 <b>44,000</b> stakeholders engaged	 <b>+23%</b> increase in direct PSM sign-ups	 <b>8,000</b> vulnerable customers directly supported	 <b>£150,000</b> given to grassroots community projects
 <b>New</b> Citizens Panel	 <b>100%</b> of our region covered by the fuel poverty programme	 <b>New</b> intergenerational research as a pillar of our engagement strategy	 <b>144</b> outcomes delivered for our stakeholders

# Engagement highlights: how we engaged with our stakeholders in 2021-22

Through more than 205 engagements, we reached more than 44k stakeholders. Here are just a few highlights...



Engagement mechanism	Example stakeholders and events	Outcomes included	Northern Powergrid engagement leads
<b>Stakeholder Panel</b>	<ul style="list-style-type: none"> <li>21 expert stakeholders</li> <li>Quarterly meetings</li> <li>Input and challenge to strategic plans</li> </ul>	<ul style="list-style-type: none"> <li>Supporting access to data for third parties through our Energy Data Request Tool</li> </ul>	<p><b>“This group is essential to shaping our plans and challenging our thinking.”</b> Paul Glendinning, Policy and Markets Director</p>
<b>Social Issues Expert Group</b>	<ul style="list-style-type: none"> <li>Bi-monthly meetings</li> <li>12 experts</li> <li>Vulnerable customer service oversight</li> </ul>	<ul style="list-style-type: none"> <li>Decarbonisation advice app to support customers</li> <li>Expanded fuel poverty programme</li> </ul>	<p><b>“These experts challenge us and offer innovative insights to social issues.”</b> Jo Lawson-Green, Customer Service Programme Manager</p>
<b>Cross-utility forum</b>	<ul style="list-style-type: none"> <li>Senior colleagues from Northern Gas Network, Yorkshire and Northumbrian Water collaborating to benefit our shared customers</li> </ul>	<ul style="list-style-type: none"> <li>Joint work to improve customer experience on hydrogen village trial</li> <li>Heat pump enablement</li> </ul>	<p><b>“Relationships with our colleagues in gas and water utilities grow in importance as we develop whole-system thinking.”</b> Mark Nicholson, Director of Engineering</p>
<b>Local authority (LA) meetings and forums</b>	<ul style="list-style-type: none"> <li>Regular meetings with LA officers to enable local projects, share data and understand their needs to shape our support</li> </ul>	<ul style="list-style-type: none"> <li>Supporting access to data</li> <li>Jointly with EON and Newcastle City Council to install 250 domestic heat pumps (HPs)</li> <li>Membership of local Climate Coalitions and Commissions</li> </ul>	<p><b>“North East England and Yorkshire and Humber Climate Commissions provide an important opportunity for local leaders to support a just transition to Net Zero.”</b> Jim Cardwell, Head of Policy Development</p>
<b>National Farmers Union meetings</b>	<ul style="list-style-type: none"> <li>Understanding big issues driven by Brexit, Net Zero and wider challenges for this key sector</li> </ul>	<ul style="list-style-type: none"> <li>Innovation to explore decarbonising farming</li> <li>Farm power line safety campaign seen 4m times</li> </ul>	<p><b>“Engagement makes it possible to find solutions that benefit the farming community and the network.”</b> Iain Miller, Head of Innovation</p>

Social Issues Expert Group



**“These experts challenge us and offer innovative insights to social issues.”**

Jo Lawson-Green, Customer Service Programme Manager

National Farmers Union meetings



**“Engagement makes it possible to find solutions that benefit the farming community and the network.”**

Iain Miller, Head of Innovation

## Introduction

Engagement mechanism	Example stakeholders and events	Outcomes included	Northern Powergrid engagement leads
<b>SME panel</b>	<ul style="list-style-type: none"> <li>20 SMEs</li> <li>Help us understand their priorities, our impact and our impact and the support we should offer</li> </ul>	<ul style="list-style-type: none"> <li>Established new oversight board</li> <li>17 new major trade partners</li> <li>Net Zero Portal accessed by SMEs nationally and promoted by high street banks to their members</li> </ul>	<p><b>“It is crucial we support SMEs – 99% of UK business – to reduce their carbon footprint.”</b> Helen Priestley, Stakeholder Engagement Manager</p>
<b>Community Energy Stakeholder Panel</b>	<ul style="list-style-type: none"> <li>20 community energy experts</li> <li>Insight into their needs to shape our plans to build their capacity</li> </ul>	<ul style="list-style-type: none"> <li>£50k Community Energy Fund</li> <li>120 community energy stakeholders trained to deliver advice</li> </ul>	<p><b>“These discussions help us to shape and deliver the right support and services for this key group.”</b> Anda Baumerte, Sustainability Manager</p>
<b>Citizens Panels</b>	<ul style="list-style-type: none"> <li>50 customers from rural, consumer and SME panels</li> <li>Meet quarterly to discuss complex issues</li> </ul>	<ul style="list-style-type: none"> <li>Removing barriers to LCTs</li> <li>Refreshed easy-to-navigate website</li> <li>Offering out-of-hours customer appointments</li> </ul>	<p><b>“This group gives us deliberative discussions on key issues and helps us to identify ideas to be further tested.”</b> Siobhan Barton, Head of Stakeholder Relations</p>
<b>Arwen MP and customer meetings</b>	<ul style="list-style-type: none"> <li>Meetings with councillors and MPs of impacted constituencies</li> <li>Roundtables with regional leaders, constituents and peers</li> <li>Letters and bilaterals</li> </ul>	<ul style="list-style-type: none"> <li>Direct line of communication for MPs to escalate cases and gather information to share with constituents via a new emergency contact database and new MP hotline</li> </ul>	<p><b>“This was an important first step in understanding Arwen’s impact on customers and learning for the future.”</b> Louise Lowes, Head of Customer Service</p>
<b>Barriers to decarbonisation research</b>	<ul style="list-style-type: none"> <li>In-depth, 60-minute interviews with 10 vulnerable customers</li> <li>Helping to shape how we communicate decarbonisation advice and support</li> </ul>	<ul style="list-style-type: none"> <li>Introducing a dedicated online portal with decarbonisation advice and support materials tailored to customers’ needs</li> </ul>	<p><b>“Nobody Left Behind is key to our plans. This research has helped us understand barriers and shape our services to overcome them.”</b> Catherine Harris, Consumer Vulnerability Manager</p>
<b>Future Customers surveys and focus groups</b>	<ul style="list-style-type: none"> <li>Focus group of 15 and online research with 150+ future customers</li> <li>Understand their priorities and how we communicate</li> </ul>	<ul style="list-style-type: none"> <li>Targeted recruitment campaigns to encourage diversity of applications</li> <li>Founding member of West Yorkshire’s Green Jobs Taskforce</li> </ul>	<p><b>“Having this insight has helped us to shape our recruitment campaign and reach young people who might not have considered energy as a career.”</b> Andy Bilclough, Director of Field Operations</p>
<b>Online focus group on reliability</b>	<ul style="list-style-type: none"> <li>Online research with 44 customers who had experienced a recent power cut</li> </ul>	<ul style="list-style-type: none"> <li>Set 2022 targets to reflect customer priorities inc. further reductions in power cuts, and increasing portable generation</li> </ul>	<p><b>“Customer needs are complex. It’s important that we test the services we’re developing with customers.”</b> Chris Morris, Head of Customer Services Operations</p>



**“It is crucial we support SMEs – 99% of UK business – to reduce their carbon footprint.”**

Helen Priestley,  
Stakeholder Engagement  
Manager

## Introduction

# Key 2021-22 outcomes

Here, we highlight some 2021-22 initiatives.

Focus area	Stakeholders told us to...	So we...	Stakeholder outcomes
<b>Data &amp; Digitalisation</b>	Increase our use of digital tools and support customers through the digital transition.	Invested in a telephony system and site upgrades to increase our call-handling capacity.	<ul style="list-style-type: none"> <li>&lt; 3 seconds average call answer times</li> <li>50% reduction in repeat callers through proactive SMS capabilities</li> </ul>
<b>Total outcomes 11</b>	Make our data more available to support them in making Net Zero planning decisions.	Partnered to publish our DFES 2021 with accompanying open data sets and new search tools.	<ul style="list-style-type: none"> <li>43 modelling data sets</li> <li>Friendlier interfaces for LAs</li> <li>39 LAs given local forecasts</li> </ul>
<b>Supporting our Communities</b>	Target social funding schemes and partnerships locally, aiming for significant impact.	Allocated £150k of funding to local orgs. including those working on food poverty.	<ul style="list-style-type: none"> <li>12 local orgs. supported via the Community Partnering Fund</li> <li>£50k to food poverty groups</li> </ul>
<b>Total outcomes 16</b>	Include ‘at-risk’ off-grid customers in rural areas in our energy transition planning.	Partnered with local stakeholders to develop plans to connect remote areas.	<ul style="list-style-type: none"> <li>Identified 50 customers who can be brought onto the grid. £300k savings p.a.</li> <li>114,736kg CO<sub>2</sub> savings p.a.</li> </ul>
<b>Reliability &amp; Resilience</b>	Educate on safety and take any opportunity to reduce the risk of contact with our equipment.	Partnered with Energy Innovation Centre and SP Energy Networks to identify a solution to reduce incidents.	<ul style="list-style-type: none"> <li>4m views of our safety campaign</li> <li>3 innovators shortlisted to create an accident-prevention solution</li> </ul>
<b>Total outcomes 42</b>	Use multiple comms. channels to raise awareness of the Accelerated Loss of Mains Change Programme (ALoMCP).	Partnered with Greenhouse Communications to lead a national awareness campaign.	<ul style="list-style-type: none"> <li>5.2m impressions for our ALoMCP content</li> <li>33k website tool visits</li> </ul>
<b>Enabling Net Zero</b>	Find novel solutions for a resilient future network that maximise benefits and minimise costs.	Designed a bespoke resilience programme to pilot on different areas of our network.	<ul style="list-style-type: none"> <li>Innovative localised pilots</li> <li>Created a clear action plan to deliver 12 hours’ additional power</li> </ul>
<b>Total outcomes 35</b>	Target investment to support economic recovery, create green jobs and skills development.	Targeted £53m of green growth-boosting investment through Green Recovery.	<ul style="list-style-type: none"> <li>Increasing capacity to reduce disparity gaps in EV charging</li> <li>Children supported to access green spaces</li> </ul>
<b>Vulnerable Customers</b>	Continue to review and improve services and partnerships to meet current and evolving needs.	Shared learnings from our Priority Services Members rebrand and created new data sharing guidelines.	<ul style="list-style-type: none"> <li>23% increase in direct sign-ups to the PSM</li> <li>117% increase in outbound contacts</li> </ul>
<b>Total outcomes 40</b>	Increase scale of fuel poverty projects through partnerships and expand ‘train the trainer’.	Enhanced our partnerships with Citizens Advice, Green Doctor and Barnardo’s.	<ul style="list-style-type: none"> <li>100% of our region now covered by fuel poverty support</li> <li>6 new Citizens Advice advisors</li> </ul>

**“By engaging 44k stakeholders, we delivered 144 outcomes, creating £32.26m of net benefits over five years for communities and customers.”**



## Working in partnership



**46**  
delivery partners



**50+**  
industry partners



**355**  
referral partners

## Improving comms accessibility



**74**  
videos updated  
with transcripts



**5 languages**  
Critical information easily  
accessible in five  
languages highly  
prevalent in our region  
(English, Arabic,  
Bengali, Punjabi Urdu  
and BSL)



**PSM**  
information made easily  
accessible for five key  
vulnerability groups  
(hard of hearing, sight  
difficulties, medically  
dependent on electricity,  
English as a second  
language, mental  
health issues)

## 2021-2022 Vulnerability Strategy Progress

### New

- Published long-term vulnerability strategy
- Centre for Sustainable Energy social ecosystem audit
- Boxclever and Energy Saving Trust partnership on Net Zero support for vulnerable customers
- Improved accessibility of our YouTube videos
- IVR telephony platform improves capacity for 100% human contact.

### Embedded

- Future Fairness panel, ensuring all customers' voices are heard
- Model for a socially inclusive DSO developed and supported by expert stakeholders
- Partnered with Barnardo's, Energy Savings Trust and Infrastructure North to deliver energy saving advice to ensure regional coverage and a range of communication channels.

### Scaled

- Expanded Green Doctor partnerships to cover 100% of the region
- Progressed six decarb. initiatives
- Funded six new Citizens Advice energy advisors to reach areas of highest vulnerability in our region
- Expanded fuel poverty support to cover 100% of fuel-poor homes we serve.

# Storm Arwen



## Upgrading our storm response after Storm Arwen

In November 2021, Storm Arwen resulted in more than 1,100 reported incidents and 280,000 customers off supply. This made the storm the largest in 15 years to impact Northern Powergrid's network. Storm Arwen was one of the most challenging situations that we and our customers have had to face and we are sorry for the significant difficulty and disruption that some of our customers experienced.

The wind speeds in the north east were exceptional for the area, exceeding 92 mph for several hours in exposed locations and peaking at 98 mph, the strongest in this area since 1984.

The storm also resulted in very low temperatures and some significant snow accumulations, particularly in parts of the Pennines. Depths of up to 12 cm were recorded in County Durham. Damage to the network was significant and widespread across the region.

The majority of customers were restored within 24 hours; however 2,500 customers were off supply for more than 7 days despite the best efforts of our staff and support from other DNOs through the NEWSAC mutual aid arrangements. We greatly appreciate the patience that our customers showed and the dedication of our teams who worked through some of the most challenging conditions we have ever faced.

The extreme nature of Storm Arwen meant we learned some difficult lessons. It highlighted some limitations in our systems and showed us things we can do to be able to provide a stronger response in situations like this. We are committed to making the communities that we serve more resilient to extreme weather events, including setting up the Northern Powergrid Foundation. We are continuing to work closely with both BEIS and Ofgem to ensure the energy sector provides even better support to customers in major power cuts and severe weather events.

### Key facts

Wind speed	98 mph
Storm duration	2 days
Last restoration	11 days
Customers interrupted	280,867
Number of calls to contact centre	64,337
Poles replaced	709

We have been working hard since Storm Arwen to improve our capabilities during a storm, as well as taking some of the lessons learned into normal operations.

Some of the changes we have made so far are:

- **An increase in our capacity to deploy generators** – we have completed the procurement of 100 additional wheelbarrow generators and developed a bespoke process for their deployment. This will allow us to restore supply to single premises (those which would usually be restored in the “comet’s tail” of the incidents.) This will allow us to significantly reduce the number of worst affected customers during a major incident.
- **Increased telephony capacity** – the new cloud-based telephony system has been tested for resilience up to 3,000 concurrent calls at a rate of 14 calls per second (the maximum number received during Storm Arwen was 500 at a rate of 4.4 calls per second.) This is a significant improvement on the previous telephony system which could handle only 240 concurrent calls. It also significantly increases the capabilities of our contact centre and call overflow support (in combination with the new power cut logger).
- **Increased website capacity including new power cut logger** – the new power cut logging tool is a scalable cloud-based system which has been tested with up to 30,000 concurrent users processing 12,000 transactions per minute (this is roughly 4x what we experienced at the peak of Storm Arwen). The website also provides improved outbound communication capability through easier content management and an improved power cut logging user interface.
- **Increased contact centre resources** – we are still in the process of training our teams to support the contact centre during a major incident (utilising the technology upgrades from the telephony and website implementations), we currently have 386 colleagues who are able to provide support.

Following Storm Arwen in November last year both BEIS and Ofgem undertook reviews into how network operators responded to the event. The Ofgem and BEIS Storm Arwen Reviews identified a total of 67 improvement actions to be delivered by government organisations (primarily BEIS and Ofgem), the industry as a whole and DNOs.

We have completed all of the 59 report deliverables which were due for closure before 31 October and the remaining eight actions are on track for completion by their deadlines.

We have significantly improved our storm response capability through the internal lessons learned as well as the reviews from BEIS and Ofgem – major upgrades have been delivered ahead of winter 2022-23, in particular across the key areas of operations and customer communications. However, there is still work to be completed, in further enhancing our response capability ahead of the 2022-23 storm season and beyond, and with the launch of the Northern Powergrid Foundation in helping our local communities become more resilient.

**Revised communications framework**



**“We have significantly improved our communications framework to deliver scheduled, high quality information to our customers and other stakeholders, particularly around estimated time of restoration as well as welfare support and compensation entitlement, both of which featured heavily in our customer feedback.”**

**An increase in the number of overhead linesmen available**



**“We have already increased our operational capacity with over 300 overhead line operatives now available to restore power during a major incident.”**

**Additional resources for connecting wheelbarrow generators**



**“We have also increased the resource available to connect generators through the use of additional internal resources and contractors.”**

**1. Safety**



**40%**

reduction in our accident rate



**£19.4m**

invested in ED1 to date upgrading our cyber defences

**Our engagement...**

We have maintained the working group with our trade union representatives that we established during the COVID-19 pandemic.

**What our stakeholders said...**

Representatives wanted to be kept up-to-date with our management and handling of safety related matters and have a forum to raise any issues, including COVID-19.

**What have we done...**

Via our weekly Health and Safety Committee meeting, regular discussions took place with open dialogue.

**We shared updates on:**

- case rates and absence information
- office occupancy levels and re-occupation plan
- live plans in light of guidance changes
- action management from previous issues raised.

# We remain on track to achieve all of our safety commitments

## Our commitments

- Safety is our number one priority and our industry leading safety performance is something we are very proud of.
- We have continued to engage on key safety and security matters, such as agricultural safety and metal theft, in collaboration with our key partners including the National Farmers Union (NFU), and National Infrastructure Crime Reduction Partnership.

## How we've done in 2021-22

### Operational safety

- Our headline safety target is measured using the Occupational Safety and Health Administration (OSHA) rate. We also measure our performance against the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR).
- This year, we had six OSHA accidents in a workforce of around 2,450, none of which were electrical in nature, although one colleague suffered serious leg injuries after a fall on a work site. This translates into an OSHA rate of 0.25, a 40% reduction compared to our ED1 Business Plan baseline. Of the six OSHA accidents, three were RIDDOR reportable incidents.

### COVID-19

- As a provider of essential services for our customers, it was vital for us to continue to offer a reliable service throughout the pandemic whilst keeping our colleagues safe at work.
- We maintained a robust set of social distancing policies, continued to enable home working and maintained single occupancy in our fleet vehicles.
- As government guidelines evolved through the year we adjusted our practices to remain in line with the guidelines, enabling our colleagues to progressively and cautiously return to the workplace.

### Mental health and wellbeing

- The importance of mental health and wellbeing were amplified by the COVID-19 pandemic and it was another year of positive progress on this front.
- We maintained our targeted internal programme focused on mental health, called 'Wellbeing Wednesdays'. This monthly engagement programme for all colleagues covers areas such as exercise and healthy eating, encouraging colleagues to practise good habits to look after their mental health.

### Driver safety

- Safety on the road is a key part of our safety strategy and in 2021-22 we continued to improve.
- Our fleet that drove close to 15 million miles in the year was involved in only 36 incidents.

- We continued our safe driving programme for our apprentices and younger driving population to provide increased awareness advanced driving skills.

### Awareness

- In our Business Plan, we committed to increasing awareness in our communities of the dangers of electricity. In the year, we were once again unable to meet our target to engage 40,000 school age children given school closures and social distancing constraints of the COVID-19 pandemic.
- We continued to provide more online resources to enable remote learning. With the re-opening of schools and easing of restrictions, we are confident we'll return to delivering engagement levels in excess of the ED1 Business Plan target of 40,000.
- We continue to see a disappointing number of overhead line (OHL) contacts. With that in mind, we are targeting a 10% reduction in third party strikes to our overhead lines, specifically from farm machinery and road haulage vehicles by the end of ED1.
- To achieve this, we will further develop our engagement with the National Farmers Union (NFU) and build on our collaboration via the national 'Look up – it's live' programme.

### Cyber and physical security

- The integrity of our operational sites is vital and we have continued our investment at Critical National Infrastructure (CNI) sites. We invested £5.9m in increasing security levels at higher risk sites during ED1 and established our Alarm Receiving Centre.
- We have experienced another year of reductions in metal theft as a result of the National Infrastructure Crime Reduction Partnership, where we receive crime hot spot analysis and other intelligence from across a range of stakeholders and sectors.
- As our information technology and the associated risks evolve, we continue to respond by enhancing our cyber security defences. We have accommodated £19.4m of investment so far on cyber defences that was not envisaged in ED1, enabled by driving efficiencies in our cost base.

## Looking ahead

- As we look to close out the ED1 period, safety will remain our top priority. We aim to maintain our strong track record and ensure our staff go home safe at the end of each day.
- To further enhance our physical and cyber security we will be further extending the role of our Alarm Receiving Centre.
- We will collaborate with the Energy Networks Association (ENA) and utilise the National Farmers Union mailshot to promote 'Look up – it's live' to raise awareness of the risk of overhead line strikes.

## Our Business Plan commitments

Commitments	Status	Forecast completion
1.1 Remain a leading safety performer, meeting all requirements and halving our accident rate by 2023.	On Track	2022-23
1.2 Increase awareness in our communities of the dangers of electricity if not handled properly.	On Track	2022-23
1.3 Keep safety as a central driver of investment decisions and appraisals.	Delivered	2018-19
1.4 Promptly resolve any network safety issues arising from the smart meter rollout.	On Track	2022-23
1.5 Reduce the impact of metal theft, including improving substation security.	On Track	2022-23

## Going beyond our plan

### Mental health



**New mental health awareness training for our employees**



**65 mental health first aiders trained**



**Over 200 managers received awareness training**



**Launched a wellbeing programme to support colleagues throughout the COVID-19 pandemic**

Our performance measures <sup>1</sup>	2020-21 actual	2021-22 actual	2021-22 target	Annual status	ED1 target <sup>1</sup>	ED1 status
HSE compliance	✓	✓	✓	Achieved	✓	On Track
OSHA rate	0.18	0.25	0.27	Achieved	0.22	On Track
RIDDOR rate	0.08	0.12	0.10	Achieved	0.10	On Track
Children reached through school safety education programme	18,947	33,890	40,000	Missed <sup>3</sup>	43,385 <sup>2</sup>	On Track
Overhead line contacts	46	37	35	Missed	35	On Track

<sup>1</sup>Targets reflect ED1 Business Plan target unless otherwise stated.

<sup>2</sup>Reflects a stretch target.

<sup>3</sup> Impacted by COVID-19 restrictions. We adapted our approach and outreach to facilitate more online support. While our engagement this year was lower than expected, we expect to continue to deliver levels of engagement ahead of our ED1 target in the remainder of the period.



### Recognition of our “outstanding” apprenticeship scheme

We are proud of our apprenticeship programme which is critical to the future of the business and develops local talent in the north east and Yorkshire.

Ofgem completed their first full inspection of our apprenticeship programme, reviewing our programme in key areas:

- quality of education,
- behaviours and attitudes,
- personal development,
- leadership and management, and
- our overall apprenticeship provision.

We were judged as outstanding in all five areas, the highest judgement that can be achieved with exacting standards; this then led to us being judged as Outstanding in Overall Effectiveness.

Only a small number of providers have achieved this high standard, and still fewer on first attempt. In the remainder of ED1 and on into ED2 we will continue to improve our apprenticeship programme and develop new skills within our workforce which will be key to the transition to distribution system operation and facilitation of Net Zero in the region.

## 2. Reliability & Availability



**669,451**

customers restored within 3 minutes as a result of our Automated Power Restoration System (APRS)



**CI (-26%)**

A 26% reduction in the number of unplanned power cuts

relative to our ED1 business plan baseline



**CML (-28%)**

A 28% reduction in the duration of unplanned power cuts

relative to our ED1 business plan baseline

### Our engagement...

We commissioned focus groups to better understand customers' experience of power cuts and the impact that a power cut has on them, their families and their businesses.

We further corroborated this with the analysis from customer satisfaction information we receive each month.

### What our stakeholders said...

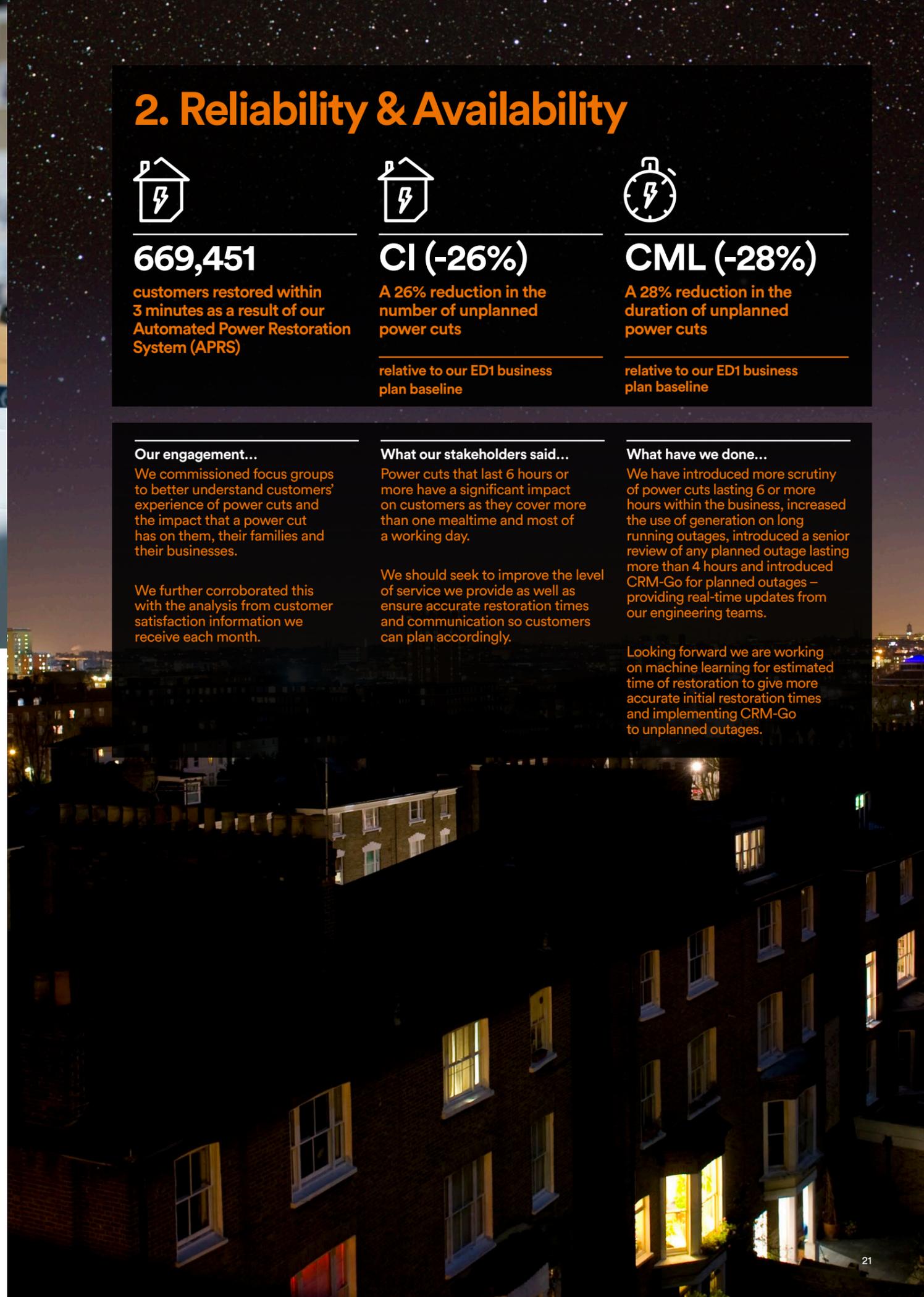
Power cuts that last 6 hours or more have a significant impact on customers as they cover more than one mealtime and most of a working day.

We should seek to improve the level of service we provide as well as ensure accurate restoration times and communication so customers can plan accordingly.

### What have we done...

We have introduced more scrutiny of power cuts lasting 6 or more hours within the business, increased the use of generation on long running outages, introduced a senior review of any planned outage lasting more than 4 hours and introduced CRM-Go for planned outages – providing real-time updates from our engineering teams.

Looking forward we are working on machine learning for estimated time of restoration to give more accurate initial restoration times and implementing CRM-Go to unplanned outages.



## Our customers' number one priority is the reliability of the network and we are well positioned to outperform the commitments we made in our ED1 Business Plan

### Our commitments

- In our ED1 Business Plan, we committed to reducing the number of unplanned power cuts by 8% and their duration by 20%.
- We've continued to consistently outperform our targets since the start of the period enabled by the deployment of new technology and targeted innovation on the network.
- We know that the reliability of the network is becoming even more important as customers transition to electricity for heating and transport. We are working to ensure that our network is prepared for the connection of more renewable generation and low-carbon technologies such as electric vehicles.

- We have maintained the senior review process for planned outages of more than four hours that we introduced during the pandemic to reduce the impact on customers.
- We also continue to operate our policy whereby planned works in the winter months do not leave customers without power for more than 4.5 hours.

### Improving network health

- Our investment plans target ageing and highly loaded assets in order to reduce the risk of failure.
- We remain on track to deliver our ED1 Business Plan output targets, tracking ahead of Ofgem's Asset Health and Criticality measure for the period to date (by 3.2 percentage points). We are ahead in our Northeast licensee and slightly behind a straight-line profile in Yorkshire. We expect to deliver to our output targets by the end of the period.

### Enhancing the resilience of the network to flooding

- In 2021-22 we upgraded flood defences at another 8 sites, taking our total in ED1 to 207 which already surpasses our original commitment of 156 for the period as a whole. We are now forecasting to complete 212 physical flood defence upgrades in total on our network in ED1. We had previously planned to upgrade a further 60 sites, however following site surveys and some minor works these have proven to be resilient to flooding in line with national standards (ETR138).

### Ensuring sufficient network capacity for connections

- One of our key ED1 commitments was to ensure adequate capacity on our network to enable our customers to connect generation and low-carbon technologies.
- As we stand today >98.2% of our primary substations are less than 95% utilised. These levels reflect the same risk that we had at the start of ED1 and this position has been maintained through careful management of demand on our primary substations and targeted interventions through load transfers and reinforcement.
- Our voltage reduction programme continues to free up capacity on our network. In 2021-22, we freed up an additional 45MVA of capacity, across 5 sites. We've released a total of 4.5GVA in ED1 to date across 497 sites.

### Looking ahead

- We will continue to strive for improved network performance – working hard to leave as few customers off power for the shortest possible time. We will do this by continuing our remote control programme and APRS installations.
- In the short to medium term, delays were experienced to some investment programmes due to the COVID-19 pandemic, through 2021-22 though we have worked to recover our plan; we remain confident in delivering our commitments by the end of ED1.

### How we've done in 2021-22

#### Reducing the impact of unplanned power cuts

- Our performance in 2021-22 represented a 26% reduction in the number of unplanned power cuts and a 28% reduction in their duration compared to our ED1 Business Plan baseline.
- In 2021-22, performance deteriorated compared to the previous year as our operational response was impacted by the recovery from Storm Arwen and Malik.
- We have continued our deployment of Automatic Power Restoration System (APRS) technology which enables us to restore power supplies by automatically switching to alternative circuits on our network. As a result, 669,451 customers have had their power restored within 3 minutes in ED1 to date.
- Additionally, our Foresight fault prediction project has made hundreds of thousands of pre-fault identifications prior to them becoming permanent faults. This exciting innovation is a key part of our plans for the future and formed part of our Business Plan for 2023-28.
- We continue to target underperforming parts of our network for our worst-served customers. In 2021-22, our system planning and investment targeted improvements on 25 underperforming circuits.
- Benefit realisation from smart meter data has been lower than we planned in the ED1 period so far due to delays in the national smart meter rollout and technical issues with the national system in the North. Our internal preparations to use the data continue with key projects mobilised to upgrade our trading and customer service systems.

#### Ensuring seamless services for planned power cuts

- Where essential maintenance and repairs to the network are required, planned power cuts are sometimes necessary.
- In our plan we committed to reducing the length of these planned works; in 2021-22 these reduced by 14% (29 minutes) to an average of 166 minutes.

Our Business Plan commitments		
Commitments	Status	Forecast completion
2.1 Achieve 8% fewer unplanned power cuts by 2023.	Ahead	2022-23
2.2 Reduce the average length of unplanned power cuts by 20% by 2023.	Ahead	2022-23
2.3 Restore electricity within 12 hours – and if we don't, make enhanced and automatic payments to all customers (with extra for our vulnerable customers).	Delivered	2015-16
2.4 Planned power cuts to leave customers without power for less time, particularly during winter.	Delivered	2019-20
2.5 Maintain the underlying health of the asset base and report on it annually.	On Track	2022-23
2.6 Target network improvements for our worst-served customers.	On Track	2022-23
2.7 Ensure adequate network capacity for customers wanting to connect.	On Track	2022-23
2.8 Increase the resilience of the network to flooding.	Delivered	2019-20
2.9 Use smart meter alarm information to improve network performance and the information we provide to customers.	Behind (external factors)	2022-23

### Going beyond our plan



**40% fewer**

**CML – Customer Minutes Lost**  
We are forecasting to deliver 40% shorter power cuts by the end of the period (relative to our ED1 baseline)



**30% fewer**

**CI – Customer interruptions**  
We are forecasting to deliver 30% fewer power cuts by the end of the period (relative to our ED1 baseline)



**115 more**

**Flood defences**  
We have invested £33.2m in delivering enhanced flood resilience across 207 sites in ED1 to date (compared to our original commitment of 156 sites)

Our performance measure(s) <sup>1</sup>	2020-21 actual	2021-22 actual	2021-22 target	Annual status	ED1 target	ED1 status
Unplanned CML (Northeast)	34.1	43.6	47.9	Achieved	32.0 <sup>2</sup>	Ahead
Unplanned CML (Yorkshire)	38.4	41.9	50.0	Achieved	35.4 <sup>2</sup>	Ahead
Unplanned CI (Northeast)	44.1	48.7	57.1	Achieved	43.6 <sup>2</sup>	Ahead
Unplanned CI (Yorkshire)	51.3	50.2	60.0	Achieved	50.0 <sup>2</sup>	Ahead
Planned CML (Northeast)	2.7	3.0	3.97	Achieved	3.7	Ahead
Planned CML (Yorkshire)	1.6	2.1	2.52	Achieved	3.3	Ahead
Planned CI (Northeast)	1.2	1.5	1.81	Achieved	1.7	Ahead
Planned CI (Yorkshire)	1.1	1.1	1.11	Achieved	1.5	On Track
Flood defence upgrades	199	207	141	Achieved	212 <sup>2</sup>	Ahead
Health indices (% of Monetised Risk value)	79.1%	90.7%	87.5%	Achieved	100.0%	On Track

<sup>1</sup> Targets reflect ED1 Business Plan target unless otherwise stated.

<sup>2</sup> Reflects a stretch forecast that will go beyond our ED1 Business Plan target.



**Taking to the skies to protect the network...**

Every year our specially trained engineers take to the skies to patrol our power network, enabling us to detect any potential problems before they happen. Our power lines are often located in isolated areas and have to stand up to some severe weather conditions including heavy rain, snow, ice and high winds, particularly over the winter months.

Using our helicopters to check our equipment from the air is an effective way of making sure we spot any remedial work needed and keep our overhead network in good working order. They also carry specialist thermal cameras which can be used to help us find early signs of damage that may not be visible to the human eye.

Patrolling our power lines means that we can quickly carry out inspections, allowing us to implement any remedial works and repairs to ensure we continue to provide a safe, secure and reliable power supply to our customers.

**3. Customer Service**



**88.2%**

customer satisfaction in 2021-22



**Over 42 million**

outbound communications in the year



**93.5%**

of complaints resolved within 31 days of being received in 2021-22, with no repeat complaints

**Our engagement...**

We have conducted engagement with our Consumer Panel, Citizens Panel, SMEs and rural customers to understand how we could further enhance our service.

Our engagement plans are backed up by executive-led sub-groups to ensure engagement is central to our thinking as we identify, develop and implement new initiatives.

**What our stakeholders said...**

Our customers told us it was important we offered a human contact model but highlighted that choice was important, whether that is choice of communication method, choice of time for appointments or choice in the way a service can be delivered (such as self-service).

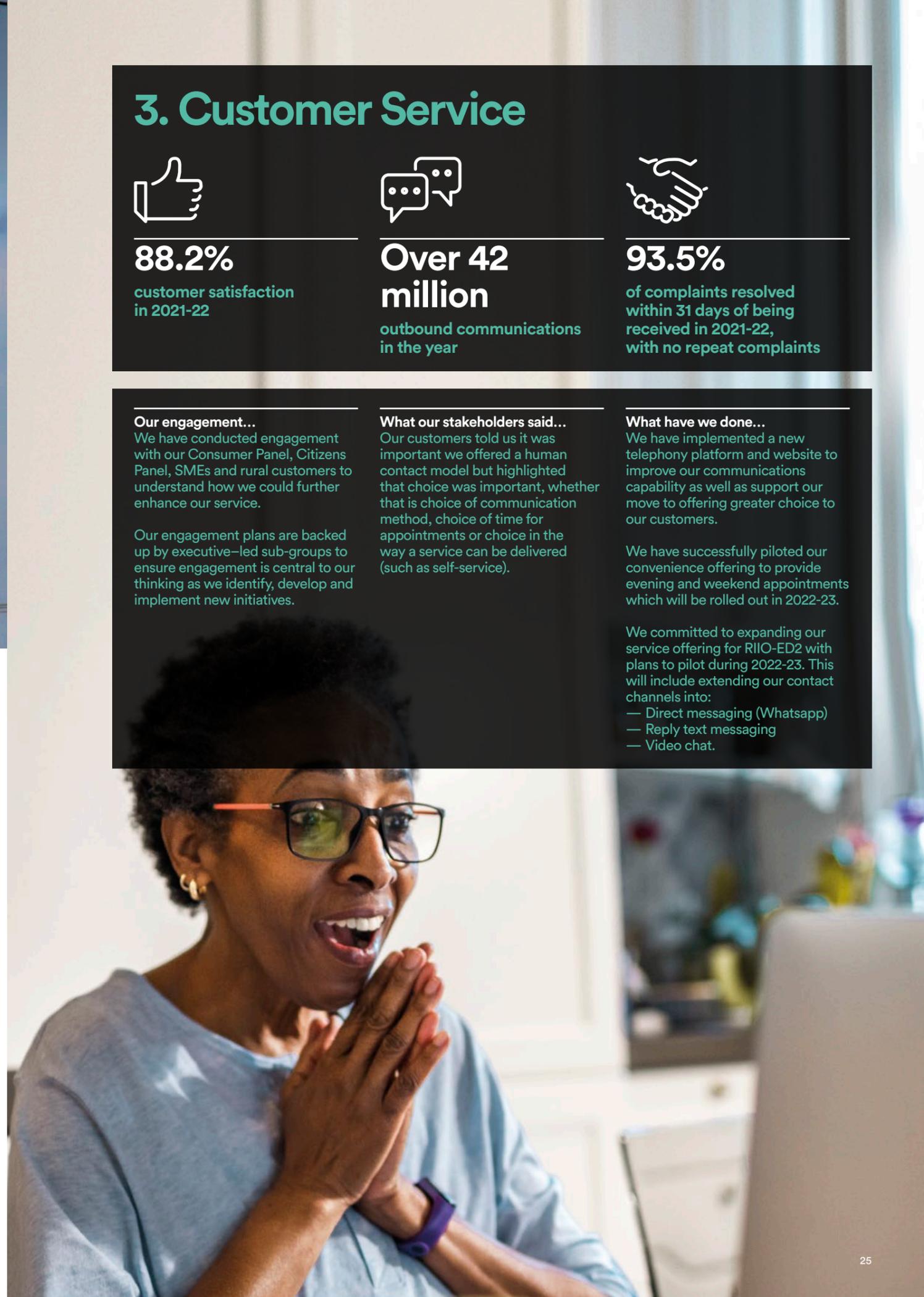
**What have we done...**

We have implemented a new telephony platform and website to improve our communications capability as well as support our move to offering greater choice to our customers.

We have successfully piloted our convenience offering to provide evening and weekend appointments which will be rolled out in 2022-23.

We committed to expanding our service offering for RIIO-ED2 with plans to pilot during 2022-23. This will include extending our contact channels into:

- Direct messaging (Whatsapp)
- Reply text messaging
- Video chat.



# We have continued to focus on delivering the best levels of customer service during 2021-22

## Our commitments

- Our aim remains unchanged, to be the best at serving our customers. We've made significant progress in ED1 to date – improving our services through responding to customer feedback.
- Our objectives continue to be to provide accurate and timely information; to offer customers more ways to communicate with us; to keep our promises; and to always work to give customers great service in our interactions across all of our service offerings.

live web chat and CRM Knowledge Base to assist customers in finding the information they need.

- We want to ensure that customers who are registered on our Priority Service Membership (PSM) are given the care they need. PSM calls are routed directly to a dedicated team as opposed to our Interactive Voice Response (IVR) system. PSM customers who are medically dependent also receive proactive contact when they experience a power cut.
- We are continuing to look at how we can enhance service for those most vulnerable and are focused on developing and implementing our on-site support service when power cuts are expected to exceed six hours.

You can find out more about what we are doing to assist the most vulnerable in our region on pages 33–36

## Supporting our teams to provide a great service

- Our comprehensive induction programme provides all new colleagues with the toolkit to deliver the levels of service our customers expect.
- Our Regional Customer Service Managers are responsible for embedding a customer-first culture and supporting our operational teams to develop and deliver tailored customer service plans.

## Helping our customers get connected

- Our improvement plan for small works connections customers has seen us focus on developing a simplified, self-service small works quotation system developed on the back of customer feedback.
- This builds upon our optimised processes and newly onboarded and trained resource to deliver improved quality service focused on face-to-face on-site support.

You can find out more about our connections improvements and performance on pages 37–40

## Swiftly handling complaints

- We work hard to avoid receiving complaints, but when we do get them, we want to resolve them swiftly delivering the right outcome for our customers.
- During 2021-22 we have seen an increase in complaints on the back of a difficult storm season which has impacted our Day+1 and D+31 resolution performance.
- We have also continued to enhance our processes, devolving resolution to our regional customer service teams to give a quicker and more effective resolution.

## Looking ahead

- In 2022-23, we will further enhance our CRM system for unplanned power cuts and general enquiries service lines to provide real-time updates for customers.
- We will deploy our connections self-serve functionality.
- We will also implement a more flexible and convenient service with evening and weekend appointments for certain connections and general enquiries service lines which we piloted in 2021-22.

## How we've done in 2021-22

### Driving customer satisfaction

- Overall customer satisfaction with our services has improved by 5.9 percentage points since the start of the ED1 period. This is down from our best-ever performance in 2020-21.
- We have seen the impact of Storm Arwen, as well as the increase in connections volumes as the uptake of LCTs increases, and changing customer expectations – such as self-service capability and choice over the delivery of the services, both of which we will deliver in ED1.
- We're continuing on a path of improvement to deliver for our customers which compares well with best-in-class customer service organisations in other sectors.

### Using technology to provide better services

- Our Customer Relationship Management (CRM) system is enabling our teams to deliver great customer service.
- Introduced in 2017, CRM covers a range of our customer-facing operations, including general enquiries, online services, planned power cuts, service alterations and disconnections.
- By the end of 2022 we will also serve our small works connections customers through this self-service platform.
- Our CRM-Go app technology provides us with the capability to issue real-time updates to our customers who are impacted by a power cut or have requested a service from us.
- Since we've embedded this development, we've seen a one percentage point increase in planned power cut satisfaction scores.

### Expanding proactive communication

- We continue to refresh our customer contact information to enable proactive contact whilst complying with data protection regulations. At present, we currently hold 69% of households' mobile phone numbers and 71% of email addresses, positioning us well to keep our customers informed across our range of services, in particular power cuts.
- We continue to listen to our stakeholders and customers to improve our services. We're making it easier for customers to get in touch with us and access the information they need. Our suite of online tools includes

Our Business Plan commitments		
Commitments	Status	Forecast completion
3.1 Make customer service more reliable, better communicated and backed by slicker processes. Be faster, at no extra cost.	Delivered	2019-20
3.2 Use web-based technology to upgrade our process for general enquiries and minor engineering works.	Delivered	2015-16
3.3 Continue to improve the quality and speed of our complaint resolution.	On Track	2022-23
3.4 Provide better information to customers experiencing power cuts through voice or digital communications channels.	On Track	2022-23
3.5 Use technology to enable our contact centre to move from being largely reactive to mostly proactive.	Delivered	2020-21
3.6 Make it easier for our customers to keep in touch – via internet, mobile, meetings, phone, email, social media or text.	Delivered	2019-20

## Going beyond our plan

### Customer satisfaction



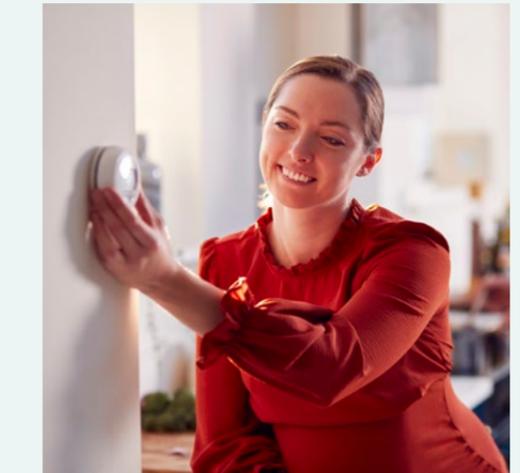
3.2 percentage points

Exceeding our ED1 target for customer satisfaction.



£12.5m additional investment

to drive customer service improvements including web, telephony and data interfaces.



Our performance measure(s)	2020-21 actual	2021-22 actual	ED1 target	Annual status	ED1 stretch target	ED1 status
BMCS Overall	90.5%	88.2%	85.0%	Achieved	89.0%	On Track
BMCS: Power cuts	90.7%	87.9%	85.0%	Achieved	89.7%	On Track
BMCS: Connections	88.9%	86.3%	85.0%	Achieved	86.2%	On Track
BMCS: General enquiries	94.0%	93.4%	85.0%	Achieved	95.0%	On Track
% of unplanned power cut calls answered	97.2%	83.9%	99.0%	Missed	-	Off Track
% of unplanned power cut calls answered within 20 seconds	84.1%	69.6%	90.0%	Missed	-	Off Track
Complaints Day+1	83.3%	66.8%	80.0%	Missed	-	Off Track
Complaints Day+31	96.4%	93.5%	95.0%	Missed	-	Off Track



### New telephony platform able to scale to meet the needs of customers

In early 2022 we implemented our new cloud-based telephony system which will improve our ability to communicate with our customers. The improved functionality includes bypass for vulnerable and worst-served customers, the ability to request a call-back when you don't want to wait in the queue, and the use of other communication methods such as live webchat, WhatsApp and video chat.

It has also significantly upgraded the resilience of our communication network, we have tested the resilience with up to 30,000 concurrent calls which compares to the maximum number during Storm Arwen of 500 concurrent calls.

In addition to improved customer functionality, scalability and resilience, the platform also enables more of our people to be used for answering incoming calls during peaks using just their computer. This will allow us to surge our contact centre team by over 400 trained employees during major incidents.

## 4. Innovation

### Our engagement...

We worked with local authorities and IT partners to develop a more effective solution to providing budget estimates.

As part of our routine engagement we met a stakeholder and discussed the benefits of using smart meter data.

We met with customers in the wake of the winter storms to understand what concerns they had from those events.

### What our stakeholders said...

Potential users made numerous suggestions to tailor the self-service design tool to their needs.

There was an opportunity to change voltages at customers' homes, by monitoring and optimising this, to reduce electricity usage.

We were asked why rooftop solar could not support a house during a power cut.

We were repeatedly told that if customers could not depend on electricity, then they would not move from higher carbon heat and transport choices to low-carbon ones.

### What have we done...

We incorporated these improvements as we developed the tool and continued to seek feedback on the usability and usefulness of the tool throughout the development process.

As a result, we initiated an innovation project using smart meter data to improve voltage control and reduce unnecessary energy use.

We have given advice on combining battery and solar installations which can support premises during power cuts.

We are pushing forward with our smart solutions to resilience, developing higher functionality versions of SilentPower, progressing the build of MicroResilience and mobilising the rollout of the ResilientHomes project.



"In the aftermath of the worst storm season for many years, we have heard and understood the need for a dependable energy supply to customers. Without that, customers are left vulnerable. Without that, customers will not support decarbonisation. The need for innovation to promote that dependable energy supply is fundamental to decarbonisation, for a low-carbon energy system, and assisting the vulnerable, via an affordable and fair energy system."

Iain Miller  
Head of Innovation

# Innovation is helping us create a smarter and more flexible energy system

## Our priorities

- Innovation is a fundamental part of continually improving the quality and value of our services for our customers as well as being a vital part of responding to external changes and emerging risks.
- The energy landscape continues to place increased emphasis on the energy system transition and the tools that will enable it. As a result, our mid-period refresh of our innovation strategy re-prioritised innovation towards decarbonisation, reliability, digitalised solutions and value for money.
- As we look forward we are increasingly focusing on solutions that facilitate a “just transition” towards Net Zero. Our strategy focuses on:
  1. charting the best course to Net Zero;
  2. achieving next-level energy system dependability;
  3. collaboratively unlocking the value of open data and an increasingly digitalised network; and
  4. ensuring all customers benefit.

## How we've done in 2021-22

- Our innovation takes place as part of our day-to-day operations and through projects with specific regulatory funding. Because this model embeds innovation in the business, wider issues such as the tail end of the pandemic and the prolonged storm season hindered our progress on new innovation in 2021-22.
- We spent £1.7m across 25 dedicated innovation projects (37% of our Network Innovation Allowance), lower than in recent years. However, the benefits of innovation to customers rose notably. In the ED1 period to date, our innovative solutions have now delivered benefits to customers in excess of £47m.
- We work closely with our sister companies in the Berkshire Hathaway Energy group to share our ideas, and collaborate to develop innovative solutions, sharing international best practice.

## Supporting the decarbonisation transition

- The focus of our innovation priorities has shifted since the start of ED1 to techniques to support reliable low-carbon Distribution System Operation (DSO).
- In 2021-22, we invested a further £23.7m as part of our Smart Grid Enablers programme. This programme is upgrading our capabilities to control and monitor our network in real time for our customers – saving money for customers on their bills.
- We continue to develop our understanding around the potential applications of smart metering data. Our Boston Spa Energy Efficiency Trial (BEET) was authorised in 2019/20 and has since been exploring how data flows from smart meters can be used to improve voltage control and reduce low voltage energy use – assisting decarbonisation and saving customers money. Following the desktop network design and benefits studies in 2020/21, the project entered its field trial phase in 2021/22 and we built the required algorithms and procedures to be rolled out in a test environment in 2022/23. We have included plans for widespread rollout in our 2023-28 Business Plan.

- Our Distributed Storage and Solar Study (DS3) project demonstrated how clusters of home batteries can increase capacity on the electricity network and enable more homes to install solar panels without the need for costly network upgrades.
- ResilientHomes is demonstrating how supplies to medically dependent customers can be maintained in a power cut. Learning is being combined for customers who may wish to pursue their own solar and battery systems to save on energy bills and avoid power cuts.

## Digitalising our network for our customers

- We've expanded our open data offerings for our customers, including access to our asset systems for Independent Distribution Network Operators (IDNOs) and more granular information on our heat maps. We've also been exploring the use of enhanced data analytics in our services through work with the Open Data Institute.
- We continued to expand our award-winning AutoDesign self-service tool, providing customers looking to connect electric vehicle chargers access to high-quality designs, in real time, at lower cost. Over 2,000 budget estimates have been produced by the system in the year.
- We have continued to upgrade the quality of our customer service by rolling out further channels, including live web chat, and enhancing our CRM system to provide live updates from our field engineers directly to customers during power outages.

## Supporting our vulnerable customers

- A key priority for our stakeholders and continues to rank highly in our consumer research.
- In 2021/22 we were able to show that the SilentPower low-carbon solution was cheaper than mobile diesel generators for restoring supplies.
- We are continuing to pursue upgraded SilentPower style restoration units, both via BAU innovation and NIA innovation, concentrating on size and functionality respectively.

## Looking ahead

- Our innovation programme will be focused on exploring the following six transformational capabilities that we believe are central to a just transition to Net Zero:
  1. Identifying the opportunities to accelerate the benefits of flexibility.
  2. Developing sophisticated data management and analytics to inform energy system forecasting, planning and real-time decision-making.
  3. Enhancing the connections process to facilitate higher volumes and different types of connection, including the addition of loads via existing connection points.
  4. Increasing the dependability of our customers' electricity supply.
  5. Removing the barriers preventing access to the energy market for all customers, including access to energy data, particularly those not currently engaged or informed, vulnerable or less advantaged.
  6. Creating capabilities to deliver a next-generation local energy network that links up whole-system energy sources and vectors, balancing in real time.

# An overview of some of our innovation projects



Safety

## Extended Reality Training

We undertook training and assessment of staff behaviour using extended reality systems which simulated parking a vehicle at substations and then setting off again after working on the substation. The tools provided useful information on the safety issues around working in the field and where we need to improve our practice.

## Other projects

**Vehicle Telematics** Using driving data to improve safety.

**Centrallock** Increasing security at our substations.

**Lightning prediction tool** Improving lightning-related safety and reducing potential asset damage.



Social Obligations

## Customer-Led Distribution System

Our Customer-Led Distribution System (CLDS) innovation project is delivering whole-system insights into the interaction between network services and wider energy markets, in particular where the value in flexibility lies between the electricity retail and networks sectors. We are pursuing other projects that underpin various aspects of technical functionality (such as MicroResilience, ResilientHomes and SilentPower) which have a wider societal impact.

## Other projects

**ResilientHomes** Exploring domestic battery solutions for ensuring that medically electrically dependent customers remain on supply.

**ACE** Our mobile gaming application that actively engaged communities to make changes to how and when they use electricity.



Reliability &amp; Availability

## SilentPower

Our electric response vehicle equipped with an on-board energy storage system (ESS) is operational and can help to power homes while their electricity supply is being restored. This is a quieter, cleaner alternative to diesel-powered generators that can absorb power as well as generate. It has been mobilised numerous times since 2020, supporting local businesses and communities. It is now firmly in BAU, cheaper than using diesel generation, and being further developed both in capacity and functionality.

## Other projects

**Drones** Carrying out inspections of our overhead line assets to drive cost efficiencies.

**MicroResilience** Aiming to allow us to keep customers on supply even after faults have taken out higher voltage circuits.



Connections

## AutoDesign

A web-based, self-service design tool providing customers looking to connect EV chargers with access to high-quality designs, in real time, at lower cost. We continue to see an increase in budget estimate volumes, which the system is able to facilitate in a more timely and efficient manner than in the past. We've also started to enhance the system with a view to transitioning all LV budget estimates via the system, which we expect to be in place by the end of ED1.

## Other projects

**Boston Spa Energy Efficiency Trial** uses smart meter data in (near) real time to optimise the voltage at the customer's meter and thereby decrease energy consumption.



Customer Satisfaction

## Machine Learning for Estimated Time to Restoration

Our Estimated Time to Restoration (ETR) project is combining historical power cut data with weather, traffic, time, location and resourcing information via a machine-learning tool to forecast more accurate ETRs for customers. Consideration is being given as to whether contextual data (e.g. traffic reports or weather reports) could be worked into the next generation of this tool to further refine the ETRs.

## Other projects

**Customer Relationship Management (CRM)** Transforming our customer interactions across a range of integrated communication channels.



Environment

## Infra-Red SF<sub>6</sub> Leak Camera

We routinely use our forward looking infra-red (FLIR) camera that is able to detect SF<sub>6</sub> leaks within its spectrum range. This has enabled us to reduce our gas loss by nearly half in the period, saving over 1,000 tCO<sub>2</sub>e of greenhouse gas emissions being released to atmosphere.

## Other projects

**Self-healing cables** Reducing cable fluid leakage.

**PFT tracers** Speeding up cable oil leak detection.

**Distributed storage & solar study** Exploring commercial and financial benefits of behind the meter storage.



### Our Boston Spa Energy Efficiency Trial (BEET) is exploring domestic energy efficiency

The aim of the project, which started in June 2019, is to use smart meter data in (near) real-time to optimise the voltage at the customer's meter and thereby decrease energy consumption – an evolution of a technique known as voltage conservation.

The reduction in energy that customers use will save them money and reduce carbon emissions. The project layers intelligent use of data on top of existing investment in smart meters, metering data flows and voltage control improvements to benefit the customer. The energy bill savings were originally expected to be around £20 per household per year (circa £75m per annum for our customer base), and the annual saving expected being ten times our capital and operational expenditure estimates, given that other programmes such as the national smart meter rollout already require the bulk of the investment needed. Any increase in energy costs will of course increase the household saving – the price at October 2022 effectively doubles the estimated saving – and as increases are expected we are redoubling efforts to push this project forward.

The project consists of three phases and we are currently in phase two. Subject to successful trials, our plan is to move to rollout of the solution in the ED2 period as part of dynamic voltage optimisation plans. More information can be found [here](#).



**Phase one**  
Now completed, proved that existing methods of voltage control available to us are not suitable for voltage optimisation and therefore a new approach was required.



**Phase two**  
We are integrating smart grid and smart meter systems to develop capability to undertake and implement a new voltage optimisation technique within a trial area in Boston Spa.



**Phase three**  
We will explore whether this new technique can be used to provide other services, such as frequency response.

## 5. Social Obligations



**820,609**

Priority Service Members



**12**

projects awarded funding in 2021-22 as part of our £100k Community Partnering Fund



**88.7%**

satisfaction for our power cuts service in 2021-22 from our Priority Service Members

### Our engagement...

We engaged with customers across the region with varying demographics and vulnerabilities to identify barriers to engaging with the Priority Services Register and associated services.

We tested our current offering of fuel poverty services via an online workshop with stakeholder experts.

We explored the barriers to accessing services and stakeholders gave us insights to help us better understand the complexity of customers' needs.

### What our stakeholders said...

Customers didn't like to be identified as vulnerable. They felt the word 'register' had negative connotations associated with it.

They wanted to better understand the benefits of being a member and how it would help them.

— Stakeholders wanted support needs to be targeted and tailored based on an understanding of needs.

— Fuel poverty is not a stand-alone issue. It is often interdependent with other vulnerabilities or circumstances and needs to be addressed holistically.

— Northern Powergrid has a clear role in prevention, not just addressing those with acute needs.

— Our local knowledge and partnerships are key to successful engagement, interventions and support.

### What have we done...

We committed to rebranding the Priority Services Register as our **Priority Services Membership (PSM)**.

We revised all supporting materials, including information booklets, and reset our PSM as an 'enabler' – one less thing for a customer to worry about during a power cut.

We introduced revised fuel poverty guiding principles:

— Our work targets those most in need through data and intelligence.

— We partner with local trusted experts.

— We address the individual and their issues holistically.

— We tailor services to meet individual needs at multiple entry points.

We've partnered with the Money Adviser Network to support customers who may have money worries. This gives our customers access to free independent and impartial money and debt advice over the phone or online.

Customers can also access the Money Navigator Tool that helps them find guidance if they have been impacted by the COVID-19 pandemic.

## We continue to support the most vulnerable in our region – Our ‘Powergrid cares’ programme has delivered financial benefits of £2.9m to over 20,000 customers in ED1 so far

### Our commitments

- Our regions have some of the highest levels of vulnerability across the UK. Our ED1 Business Plan commitments set out to deliver the best possible support to our vulnerable customers through the use of effective partnerships, tailored services and meaningful engagement in our communities.
- We have made strong progress in delivering our ED1 commitments so far with all but one already delivered or firmly on track. Our ED1 programme upgrading electrical connections in high-rise tower blocks was significantly impacted by COVID-19 with restrictions on access due to social distancing and safe working measures. Our programme will still see upgrades (£4.5m investment) by the end of the ED1 period.

### How we’ve done in 2021-22

- Every year our regulator Ofgem runs a Stakeholder Engagement and Customer Vulnerability (SECV) Incentive where it ranks the six distribution network operators according to their progress in these areas. In 2020-21 we were placed fifth.
- As a key infrastructure provider in our region we played a key part in supporting those impacted by COVID-19 in partnership with local government, NHS, Local Resilience Forums and agency partners.

### Promoting our Priority Services Membership

- To best help our vulnerable customers, we need to know who they are and what their needs are. We do this through our Priority Services Membership (PSM) which enables us to engage with customers in the right way and offer tailored services that best suit their needs.
- Following targeted research into the barriers and challenges of engaging with our Priority Services Register, we ran a campaign in the winter of 2020 to re-launch it as a membership club. Our stakeholders told us they did not want to be added to the register as it carried negative associations. As a membership club, customers do not need to identify as vulnerable to engage and joining is intended to offer peace of mind to members.
- We continued to refresh our PSM data in the year to ensure our records are accurate. We had around 820,600 members at the close of the 2021-22 period.
- We have also co-created new Priority Services packs with the future fairness panel designed with a new targeted digital and social media campaign targeting underrepresented groups on the PSM resulting in an increase of 23% in direct sign-ups.
- We use data analytics to inform recruitment of new members, specifically those categories of vulnerability that are underrepresented – one category being customers that speak English as a second language. We developed a tailored engagement video which received over 40,000 views in the year.

### Partnerships

- We continue to build on our partnerships and establish new ones as part of our consumer vulnerability strategy. Throughout the challenges of COVID-19 and its legacy it has never been more important that we work together to reach and support our most vulnerable customers and communities.
- We work closely with local authorities with working arrangements such as our welfare provision with Gateshead Council, where we offer collaborative support to customers during escalated events such as severe weather and prolonged power cuts.
- In 2021-22, we have reviewed our partner mapping to better understand gaps and underrepresented groups, identifying 800 potential partners who are supporting customers with communication needs, such as English as a second language and British Sign Language users. As a result we developed 500 new partnerships, taking our total to 800.

### Supporting our most vulnerable during a power cut

- A key component of our strategy is to offer support services to our most vulnerable customers during a power cut. Whenever a PSM customer calls they bypass our interactive voice recognition system and get straight through to an agent.
- In 2021-22, the average satisfaction score from PSM customers was 88.7%.

### Affordability and fuel poverty

- Affordability of our services continues to be a key priority for our stakeholders. We re-assessed our provisions for customers in fuel poverty via in-depth research to better target our engagement in communities that experience high instances of fuel poverty.
- Our fuel poverty programmes continue to deliver benefits, supporting customers in our region with schemes such as the installation of energy saving services in customers’ homes which will result in £2.3m of net benefits over five years. Our current estimate is that we will have supported over 179,000 customers, including piloting the delivery of energy saving packs to 500 hard-to-reach households and directly supporting 7,800 individuals through our partnership with Citizens Advice.

### Looking ahead

- We continue to improve the support we offer vulnerable customers and improve the accessibility of the services we provide.
- We will continue to strengthen our existing partnerships and seek to build new ones as we move forward. We will utilise our newly formed partnership with MIND to tailor our contact centre induction training to ensure our colleagues offer the best support and advice for those dealing with mental health issues.
- Our draft Business Plan for ED2 contains a further £13.3m of investment to upgrade electrical connections in high-rise tower blocks as a continuation of our programme.

Our Business Plan commitments		
Commitments	Status	Forecast completion
5.1 Route calls from Priority Service Members directly to contact centre advisors, bypassing automated messaging.	Delivered	2015-16
5.2 Build partnerships with organisations to help us deliver our social programme.	On Track	2022-23
5.3 Promote and raise awareness of our Priority Services Membership to and with other partner organisations.	On Track	2022-23
5.4 Enhance our training for front-line staff providing additional support for Priority Service Members.	Delivered	2018-19
5.5 In conjunction with local authorities, identify socially-deprived areas and prioritise our support towards them during a power cut.	On Track	2022-23
5.6 With others, explore the feasibility of community-level aggregated-demand response in return for a community rebate.	Delivered	2018-19
5.7 Introduce friends and family register and 'good neighbour' scheme to support vulnerable customers.	Delivered	2018-19
5.8 Explore the possibility, with Northern Gas Networks, of upgrading to electrical connections in high-rise tower blocks for safety reasons.	Behind (external factors)	2022-23
5.9 Explore solutions to connect rural communities to the network.	On Track	2022-23
5.10 Provide more customer support vehicles along with more services in them.	Delivered	2018-19

### Going beyond our plan



£100k

of funding now available for community groups through our Community Partnering Fund, supporting grassroots organisations and communities



£1.7m

benefits delivered from our fuel poverty programme



Our performance measure(s) <sup>1</sup>	2020-21 actual	2021-22 actual	2021-22 target	Annual Status	ED1 target	ED1 status
Stakeholder Engagement and Consumer Vulnerability score (and ranking)	5.01 (5th)	3.7 (6th)	8.00	Missed	8.00	-
Power cuts: Customer satisfaction (PSM)	91.4%	88.7%	85.0%	Achieved	93.0% <sup>2</sup>	Ahead
Power cuts: Restoration within 6 hours	95.6%	91.7%	95.0%	Missed	95.0%	On Track
Power cuts: Restoration within 9 hours	98.0%	94.8%	95.0%	Missed	98.0%	On Track

<sup>1</sup> Targets reflect ED1 Business Plan target unless otherwise stated.

<sup>2</sup> Reflects a forecast that exceeds our ED1 Business Plan target.



### Helping our local communities with the cost-of-living crisis

**Our agile approach to our long-term Community Partnering Fund meant we could pivot our funding approach to support communities as the food price crisis began to hit in 2021. Our stakeholders told us to be a force for good and support community action.**

So we continued with our Community Partnering Fund and supported 12 local grassroots organisations with the help of funding administrator the Leeds Community Foundation, including:

- Deaf Awareness: supporting 60 members with energy literacy.
- Harrogate and District Community Action: delivering energy saving information to 200 older people.

— International Community Organisation of Sunderland: raising awareness of STEM careers to 35 Black and ethnic minority women.

After our initial round of £100k funding, we awarded an additional £50k to projects directly seeking to alleviate the impacts of the food price crisis on our local community, supporting a further seven community groups.

One such project was That Friday Feeling (TFF), which offers support and meals to people living in poverty, suffering COVID-19-induced difficulties, or living with extra mental health needs – 200 people benefited directly.



**£100k**

of funding for grassroots organisations



**19**

community groups supported

**“We recognise there is a growing need for support in this area, which we will be expanding in the coming year following these pilots.”**

**Michelle Cummings**  
Social Responsibility Manager

## 6. Connections



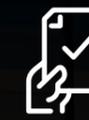
**18%**

reduction in small works lead times on average in ED1 to date (compared to our ED1 Business Plan baseline).



**98.2%**

guaranteed standard success rate for quotations issued to our major works connections customers – there were 23 failures in the year out of 1,301 quotes issued.



**88.9%**

connections customer satisfaction achieved in 2020-21 – a 10.2 percentage point improvement since the start of the period.

#### Our engagement...

Recognising the important role that community energy projects will play in driving forward the low-carbon transition, we hosted dedicated Community Energy forums in the year and sought feedback from stakeholders taking part on the support they needed from us when seeking a connection to our network.

#### What our stakeholders said...

The feedback we received was that detailed information and engagement on connections is vitally important for community energy groups as they seek to bring new renewable generation online for the benefit of local communities.

Our stakeholders prioritised free technical advice, better visibility of the network's capacity to connect new projects and help to identify the most cost effective solutions.

#### What have we done...

We have utilised our suite of online tools to enable stakeholders to access more information faster such as our AutoDesign tool and network availability heat maps.

We engaged with community energy stakeholders to offer more technical advice and information including:

- 120 community energy stakeholders trained to deliver advice;
- Delivered tailored connections surgeries;
- Continued the Community Energy Stakeholder Panel so that the views of these stakeholders are considered in our future planning.

# We continue to outperform our ED1 targets in connections customer satisfaction

## Our commitments

- Our overall objectives for connections in ED1 were to improve customer service; connect small works customers 30% faster; and make better use of digital channels and technology to provide personal and tailored services.
- For our small works customers, this meant significant improvements to our services and we've seen best-ever satisfaction levels facilitated by on-site face-to-face services and new systems such as our award-winning AutoDesign budget estimate tool.
- For our medium/large works customers, we have delivered all of the actions from within our ICE plan in the ED1 period to date and implemented an account management framework that provides a single point of contact for customers.
- So far in ED1 we have already delivered on five of our six connections commitments, and we expect to deliver our final commitment in 2022-23.

## Delivering improvements for major works customers

- We successfully delivered all 12 actions in our 2021-22 ICE plan.
- For 2022-23 we have set a further 11 actions, including stakeholder sessions to inform and discuss developing DSO functions and flexibility services; and updating our unmetered connections guide.

## Providing our customers with open data

- We continue to develop our customer-led smart grid. An integral part of this is ensuring that our customers have access to data that enables effective planning and cost-efficient interactions with us.
- Our AutoDesign tool offers customers a self-serve option to look at network capacity for LCTs which will evolve into a solution for all LV connections.
- In December 2021, we published our Distribution Future Energy Scenarios (DFES) and worked closely with the Open Data Institute to develop a DFES visualisation, which provides a heat map of our network that further enriches information that our stakeholders have access to.

## Maximising network capacity

- Another key element of our customer-led smart grid is enabling our customers to assess the capacity of our network.
- We publish generation and demand availability through our heat maps to make sure that customers know where they can potentially connect LCTs, such as solar panels and electric vehicles, at as low a cost as possible.
- We have extended our heat maps, so now they can also obtain a view of known constraints on the transmission network.
- In addition, Active Network Management areas are enabling us to maximise network capacity in a real-time environment and reduce costs. We currently have 433MW of contracted flexibility, operational across four sites, with another 104MW expected to be connected by the end of the period.

## Facilitating competition in connections

- We remain committed to supporting competition in connections. Our connection input services team are constantly looking for ways to streamline our input services, allowing Independent Connections Providers (ICPs) and IDNOs to compete more freely.

## Looking ahead

- We will continue to work on reducing our connections lead times in order to hit our 30% commitment – balancing this objective with the needs of our customers.
- In 2022-23 we will be launching our self-service quotation capability through our AutoDesign solution and Oracle CRM to enable customers to self-quote as well as access details of their application online and track progress.
- Our engagement with local authorities will continue to focus on the decarbonisation agenda, specifically around EVs and their strategies for rollout across public car parks and shared/residential parking spaces.

## How we've done in 2021-22

### Improving customer satisfaction

- This year, with a score of 86.3%, our small works connections customer satisfaction outperformed our target of 85% – a 7.6 percentage point improvement since the start of the ED1 period.
- Our innovative AutoDesign tool continues to deliver for customers, in particular as demand for low-carbon technology (LCT) connections including heat pumps and EVs increases. AutoDesign is a web-based, self-service design tool that provides customers with a budget estimate within 10 minutes (compared to up to 10 days previously). In 2021-22, over 1,800 estimates were created in the system.

### Reducing connections lead times

- Despite our improved levels of service and enhanced systems, we have seen an increase in our lead times in the year. Performance was impacted by high volumes due to the increase in LCT uptake as well as businesses making applications now that COVID-19 restrictions have been removed.
- We have seen a significant increase in connections volumes for LCTs along with the regional telecoms fibre rollout. We have scaled our resources to respond to these increasing demands and significantly increased our regional connections delivery team in July 2022.
- For quotations, high volumes of customers continue to take us up on the offer of a face-to-face site visit to discuss their works. This provides higher levels of service but results in increased lead times.
- In delivery, lead time metrics include customers who request a delay to their connections date. Where customers are in a position to go ahead with their connection we have implemented a new fast track process to accelerate the work.

Our Business Plan commitments		
Commitments	Status	Forecast completion
6.1 Reduce end-to-end connection timescales for small works by more than 30%.	Behind	2022-23
6.2 Better payment terms – customers will not need to pay as far in advance.	Delivered	2015-16
6.3 Provide more flexible quotations, including online self-service and faster quotes.	Delivered	2019-20
6.4 Introduce a web-based system to help customers understand the capacity on our network and the likely cost of connection.	Delivered	2016-17
6.5 Implement a tailored service for large projects, including 'account management' where needed or requested.	Delivered	2019-20
6.6 Provide a better service for non-contestable elements of work – regularly publishing key indicators.	Delivered	2015-16

## Going beyond our plan



**7.6 percentage points**

Improvement on connections customer satisfaction during ED1.



**Quote-on-site**

We provide our customers with the option to receive a quote-on-site.



**AutoDesign**

Our award-winning budget estimate tool was implemented in January 2020, enabling a better service for our customers. Phase 2 of the system will see it become a solution for all LV connections.

Our performance measures <sup>1</sup>	2020-21 actual	2021-22 actual	2021-22 target	Annual status	ED1 target	ED1 status
Connections (BMCS) – Overall	88.9%	86.3%	85.0%	Achieved	86.2% <sup>2</sup>	On Track
Connections (BMCS) – Quotations	89.4%	86.6%	85.0%	Achieved	86.2% <sup>2</sup>	On Track
Connections (BMCS) – Delivery	87.1%	85.4%	85.0%	Achieved	86.2% <sup>2</sup>	On Track
Average time to quote (LVSSA)	6.7	8.1	4.8	Missed	3.4	Behind
Average time to quote (LVSSB)	14.2	15.8	7.8	Missed	5.5	Behind
Average time to deliver (LVSSA)	48.7	46.2	39.3	Missed	27.5	Behind
Average time to deliver (LVSSB)	78.5	54.6	47.9	Missed	33.6	Behind

<sup>1</sup>Targets reflect ED1 Business Plan target unless otherwise stated.

<sup>2</sup> Reflects a stretch forecast that will go beyond our ED1 Business Plan target.



### Facilitating electrification of transport through our free AutoDesign tool

The electrification of transport is a vital part of the decarbonisation process and our national award-winning AutoDesign tool is an enabler to the transition to electric vehicles, helping to shape future business plans and priorities and drive the transition to a Net Zero future across our region.

We are working to enable the electrification of transport more generally (not just electric vehicles) to ensure it is for the benefit of all of our customers. We believe the rollout of EVs and their charging infrastructure can be, and should be, for the benefit of all electricity customers.

Our free to use AutoDesign tool facilitates users to identify the best new charging point connection locations. The innovative tool uses network data to provide an indicative connection cost and personalised budget estimate in minutes, instead of the previous

10-day turnaround. It provides our customers greater transparency around network capacity and clear indicators of possible, and the most cost-effective, locations to install EV chargers across our region.

With more people mapping a 'road to zero', Northern Powergrid has launched the tool to put more accurate real-world information in customers' hands and improve the experience for those looking to connect to our network.

Our plan for 2022-23 is to develop AutoDesign into a 'one stop shop' automated low voltage design tool, incorporating load and generation network data which will enable customers to self-serve their quotation.

More information can be found [here](#).

## 7. Smart Energy



£65.0m

investment in ED1 to date on our Smart Grid Enablers programme



433 MW

of Active Network Management contracted and operational in ED1 to date

### Our engagement...

As part of a joint initiative between National Grid ESO, the ENA, other DNOs and the IDNOs, we provided numerous engagement opportunities in supporting customers through the Accelerated Loss of Mains Change Programme (ALoMCP).

The ALoMCP incentivises owners of non-domestic generation to make changes to their equipment's hardware to ensure compliance with new Distribution Code requirements.

### What our stakeholders said...

Funding is available for those who make changes to their equipment (before September 2022), however many of our stakeholders were looking for clarification about the scheme and the funding available.

It was felt that there was a general lack of awareness and that DNOs could be doing more to promote and lend credibility to the scheme.

### What have we done...

We have established a local working group that gave those affected a channel to seek clarity on the process, and gave us the ability to feed back the views of local stakeholders to National Grid.

We also worked with our stakeholders and Greenhouse communications to deliver a national awareness campaign. We were able to develop a suite of communications materials that were used by us, National Grid and other DNOs to raise awareness about the programme. These included;

- an online tool that has been used 33,000 times;
- a suite of targeted mailers aimed at the diverse range of generation owners impacted including the farming community, schools and colleges and NHS health care trusts,
- case studies, press releases and social media content to promote the scheme,
- routine engagement with generators connected to our network on the ALoMCP requirements and available funding windows.

## We're continuing to deliver our smart grid enablers programme and have made positive steps in developing flexibility options on our network

### Our commitments

- Our smart energy commitments are enabling us to lay the foundations needed for decarbonising the energy system in the coming years through increasing network flexibility, opportunities for customer flexibility, and the visibility of power flows on our network.
- Our flagship smart grid enablers programme is central to our plan to unlock a low-carbon future and ensure a smooth transition to Distribution System Operation (DSO).

### How we've done in 2021-22

#### Delivering smart grid enablers

- In the year we invested a further £23.7m in smart grid enablers, taking our total spend in ED1 to £65.0m.
- In the early years of our programme we encountered more technical challenges than anticipated, coupled with a requirement for substantial recruitment and training of engineering staff. The impact of COVID-19 and safe working restrictions to counter the close proximity of staff also slowed delivery compared to our original plan. However, we are now in full scale rollout across all workstreams and expect to deliver our commitments, with some workstreams spilling just beyond ED1.
- Our Business Plan envisaged £52m of additional smart grid reinforcement would be required on the network. To date we have invested a total of £25.3m – the forecast levels of investment have not yet been required as we have seen a lower uptake in low-carbon technologies (LCTs). We are however continuing to get our network ready for future rapid uptake. We're in the process of replacing looped-service cables (the cable used when two properties share a single electricity supply) to enable the installation of LCTs such as heat pumps and EV chargers. In the period to date, we have replaced over 16,000 of these at a cost of over £13m. We're also freeing up capacity on our network through voltage reduction at our major substations. This has released 4.4GW of capacity in the ED1 period to date.

#### Transitioning to Distribution System Operation (DSO)

- We continue to collaborate with other energy industry parties – including National Grid ESO, flexibility providers and other DNOs through Open Networks projects – to prepare our systems, skills and data for distribution system operation.
- Further information is included in the DSO section (see pages 45–50).

#### Increasing flexibility on our network

- During 2021-22 we continued to look for opportunities to utilise flexibility as an efficient network investment option for managing load.
- We conducted expressions of interest in flexibility services in 19 regions where we are forecasting possible network constraints in the future. This exercise provided valuable feedback from the market to guide our planning and optioneering for efficient future investment

in our network, and useful insights into the nascent flexibility market.

- We are now progressing a tender for services to enable reinforcements deferral at 12 of these 19 regions through 2022.
- We published our latest flexibility procurement statement in March 2022. This set out our contracted flexibility needs and proposed tendering process and pricing strategy for the year ahead, giving stakeholders the visibility and opportunity to comment on our plans.
- We continue to collaborate with our peers via the ENA Open Networks projects on standardised approaches to flexibility as the market develops.

#### Rolling out Active Network Management

- Active Network Management (ANM) is another important part of harnessing flexibility in our smart grid plans. We are installing technology on our network that provides real-time information on the levels of electricity demand and generation so we can see how close the distribution network is to its capacity limits.
- Alongside this, we've agreed contracts with customers who generate electricity, allowing us to limit the amount of electricity they can generate when required. In return we offer them more cost-effective connections. This means we can avoid the cost and disruption of reinforcing the network through the traditional method of installing new cables and substations.
- We currently have 433MW of contracted flexibility operational across four sites with another 104MW expected to be connected by the end of the period.

#### Preparing our systems for smart meter data

- At a national level, the smart meter rollout programme continued to face technical issues and delays – this was also impacted by the pandemic. As a result, we are still experiencing lower than forecast connection of meters and a lack of the data we see from these as a result of technical issues with the national system in the north of the country. This has had an adverse impact on our planned activities to use the data in order to deliver benefits for our customers.
- That said, we are doing all we can with our internal readiness. In 2020-21 our Data Privacy Plan was approved by Ofgem and we have made good progress on a number of key projects to upgrade our trading and customer service systems; including integrating it with our telephony platform, online power cut and asset maps and outbound messaging to customers.

### Looking ahead

- We'll continue to deliver our smart grid investment in the remainder of the ED1 period, mitigating as far as possible the impact of COVID-19 on delivery of the programme.
- In addition, we will continue to develop initiatives that help us to manage the network in real time including Active Network Management and high voltage regulation.
- We will work to minimise the impact of the lower than anticipated volume of fully functioning smart meters in our region, focusing on the data that we can access and ensuring our internal readiness to realise benefits for our customers.

Our Business Plan commitments		
Commitments	Status	Forecast completion
7.1 Invest £83m in smart grid enabling technology that, as a minimum, pays for itself by 2031 – the more likely result will be a much larger saving, possibly as high as £400m-£500m.	Behind (external factors)	2022-23
7.2 Invest £52m in smart grid network reinforcement that pays back by 2023 through avoiding £86m of traditional reinforcement – a net saving of £34m compared with traditional reinforcement methods.	Behind (external factors)	2022-23
7.3 Provide opportunities for customers to participate in demand-side response to reduce the cost of running the network.	On Track	2022-23
7.4 Modify our trading and customer service systems to realise benefits from the new smart meter data.	Behind (external factors)	2022-23
7.5 Use smart meter data to optimise network investment and reduce losses.	Behind (external factors)	2022-23
7.6 Trial the potential for combining smart grids and smart meter data to provide additional information services.	Behind (external factors)	2022-23
7.7 Establish a dedicated team of technical staff to perform timely modifications to our equipment when they are needed to enable the smart meter installation to proceed.	Delivered	2018-19

Our performance measure(s) <sup>1</sup>	2020-21 actual	2021-22 actual	2021-22 target	Annual status	ED1 target	ED1 status
Smart grid investment	35.3	53.9	75.2	Missed	81.7	Recoverable
Smart grid network reinforcement	19.2	25.3	42.8	Missed	51.9	Recoverable
Smart meter intervention rate – Cat A	87%	83%	90%	Missed	90%	On Track
Smart meter intervention rate – Cat B	91%	89%	90%	Missed	90%	On Track

Note: all costs in this table are cumulative and in 12/13 prices.

<sup>1</sup> Targets reflect ED1 Business Plan target unless otherwise stated.



### Enabling a smarter power grid for customers

**We have invested £11.4m to enhance our remote network management to deliver a smarter power grid for customers and enable a low-carbon future. It will upgrade our secondary Supervisory Control and Data Acquisition system to an Internet Protocol communications platform across 7,500 distribution substations.**

This project is a key part of our wider £83m smart grid enabler programme which forms the backbone to delivering a more actively managed electricity distribution system to support future energy need as it brings more clean, renewable generation online in the UK.

The investment will enable us to activate enhanced automation across thousands of substations, centralise control of our remote infrastructure and build a better understanding of customers' electricity consumption patterns across the grid to provide a responsive service that meets customers' needs.

As the region decarbonises and customers become increasingly dependent on electricity to power their lives and low-carbon technologies, such as electric vehicles and solar panels, this investment will provide a platform to roll out smart, cost-effective solutions and provide real-time network operation data to inform future management of the region's power network.

**“This project will enhance network flexibility and build more digital capability to meet our customers’ needs now and in the future. It will help facilitate our transition to a Distribution System Operator (DSO) that actively manages varying generation and demands across our grid as our customers become more dependent on electricity to power their lights, heating and transport.”**

**Mark Nicholson**  
Director of Engineering

## 8. Distribution System Operation

### Our engagement...

A comprehensive detailed plan for DSO implementation

### What our stakeholders said...

Stakeholders wanted to see detailed plans for implementing DSO functions.

### What have we done...

Published in July 2021 (draft) and December 2021 (final) our ED2 DSO strategy set out £92m of investment in 21 customer-orientated deliverables detailing how we would increase the scale and scope of DSO functions in the 2023-28 period.

Open and proactive data sharing underpins a successful energy transition

Stakeholders were eager to explore methods to share data more actively to facilitate the transition to DSO.

We published our latest Distribution Future Energy Scenarios (DFES) using 2021 data. The assumptions and results are again shared through an open data platform, which includes a view for local authorities, and are accessible to a broad range of stakeholders to use and comment on our assumptions.

We have a key role in developing local flexibility markets

Stakeholders were supportive of the development of a smart network if it reduces costs to customers and increases efficiency.

We conducted market tests for customer flexibility services that are progressing to a full tender for DNO-contracted flexibility in 2022/23.

A transparent flexibility first approach

Flexibility market participants wanted visibility of how flexibility could be used.

We produced a networks option assessment for two primary substations that proposed voltage regulation as the most cost effective solution. Stakeholders supported our decision.

Supporting regional decarbonisation action planning

Local authority leaders told us they want to develop Local Area Energy Plans (LAEPs) and they need assistance.

We strengthened ties between local authorities by delivering on a joint charter established with Northern Gas Networks. We encouraged the participation of community energy groups in the North Yorkshire LAEP process that should produce its plan later in 2022.



## Our DSO strategy, promoting customer and network flexibility, is at the heart of our plans to lead regional decarbonisation

### Our commitments

- Our existing duties as a DNO already require us to operate an efficient local electricity system – but for our region to meet the national commitment to Net Zero emissions by 2050, we need to facilitate efficient whole energy system decarbonisation. This requires a step change in how we operate and design our network.
- We have a key role to play in facilitating regional decarbonisation by fulfilling the functions of Distribution System Operation (DSO). This means investing in people, processes and systems to actively manage our network to optimise the use of our assets and generated energy in our region. By doing so we will be able to facilitate decarbonisation as cost-effectively as possible to meet our government's Net Zero targets.

Thinking and policy around how functions of Distribution System Operation should develop continue to evolve. We are preparing to meet the needs of the baseline expectations that Ofgem has set out for us in the 2023-28 period and we continue to actively participate in dialogue with other industry players, Ofgem and government on the ongoing development of these functions.

### How we've done in 2020-21

**Scoping the future – addressing the big open questions of market design, industry architecture and required solutions**

#### Scoping DSO

- In 2021 we published our ED2 Business Plan and DSO strategy that build upon the 2019 publication of our DSO Development Plan v1.1.
- We continue to work closely with external stakeholders and other industry parties like the Electricity System Operators through the Energy Networks Association Open Networks project to contribute to the development of DSO.

#### Refining our plans for operational effectiveness, transparency and accountability

- Our draft ED2 Business Plan was published in July 2021, including our DSO strategy, and was then updated in our final plan in December 2021. This set out a detailed set of initiatives to deliver DSO functions in 2023-28 and meet Ofgem's baseline expectations. It was extensively stakeholder tested.
- The DSO strategy lays the foundations for our flexibility first approach to decarbonisation investment planning. We will support customer and network flexibility to enable us to decarbonise the whole energy system at lowest cost, by maximising the value of our existing assets and efficiently utilising green energy when it's available.

#### Getting on with it – making progress with the transition

- We are committed to demonstrating an open and transparent approach to DSO, earning trust in how we go about our role in the energy system.
- We are committed to delivering DSO through an accountable DSO business unit that offers transparency for the progress being made. Set-up has commenced ahead of the ED2 period starting in April 2023.
- Our engagement with community energy groups was stepped up in the year. We reached over 1,600 stakeholders in over 30 events with an engagement campaign that included new forums and a new £50k Net Zero Community Energy Fund to support new groups with identifying and delivering projects.

#### Flexibility first

- We continue to do what we can to identify opportunities for using customer flexibility in managing our network today, choosing flexibility where it is the most cost-effective option.
- A stakeholder consultation exercise in the year around a Network Options Assessment validated our proposals for action to be taken at two rural major substations – Normanby by Stow and Burton Pidsea. We identified that flexibility services were uneconomic and we proposed using a relatively low cost voltage regulation smart solution. This was supported by our stakeholders following an open and transparent consultation.
- In the year we conducted two expressions of interest processes to signpost the 19 major substations where we may need to take action in the 2023-28 period due to the anticipated growth in demand for electricity. We engaged with 52 different organisations and established a firm foundation of market interest ahead of the tender that is taking place in 2022/23.
- We published our second Flexibility Procurement Statement in March 2022, setting out our expectations for flexibility requirements for the coming year and giving stakeholders the opportunity to comment on our plans.

#### Improving data sharing

- In 2022 we published our Distribution Future Energy Scenarios (DFES) updated with 2021 data. We took the Electricity System Operator's national future energy scenarios and applied a regional, granular lens to create a range of potential pathways to Net Zero that could unfold between now and 2050.
- We have been engaging with local authorities and other stakeholders on these scenarios through an open data platform, exploring how we can work together on Local Area Energy Plans (LAEPs) to optimise whole-system decarbonisation.

### Innovation

Many of our innovation projects are designed to support our DSO transition and ensure our network is fit for the future, including:

- **CLDS (Customer led distribution system)** – investigating how the distribution system can support a customer focused, decentralised and decarbonised energy system.
- **SilentPower** – electric vehicles with onboard energy storage systems (**Innovation, Page 31**).
- **Boston Spa Energy Efficiency Trial** – saving customers money on their energy bills through voltage optimisation (**Innovation, Page 32**).
- **MicroResilience** – A decentralised group of electricity sources and loads that operate in island mode or connected to the local grid – drastically improving resilience, particularly for remote customers.

#### Building new capabilities – laying the foundations

- Our £83m smart grid enablers investment was our flagship programme within our ED1 Business Plan – providing the base control and communications capability to deliver more active network control and customer solutions for different areas of our grid. So far we've invested £41.3m in ED1 to date on this programme and we remain in full-scale rollout.
- We are installing LV monitoring on our network (over 2,000 monitors to date) to improve visibility of power flows and enable us to target investment where it's needed most. We will continue to roll out further monitoring for the remainder of ED1, enhanced through the Green Recovery programme, and into ED2.

### Looking ahead

- We will be focusing on the delivery of our digitalisation strategy and action plan (DSAP) which underpins DSO functionality.
- We will continue to roll out LV monitoring – 2,700 monitors in total by the end of ED1. In parallel we are exploring uses of smart meter data to provide better network visibility for investment decision-making.
- We are expanding our workforce and skills to enhance our data and commercial capabilities and establishing a new DSO business unit to drive forward our DSO strategy.
- We expect to procure DNO-contracted flexibility for winter 2022-23 to defer the need for network reinforcement to accommodate growing electricity demand in the 2023-28 period.
- We are implementing new processes associated with Ofgem's Access Significant Code Review decision that is leading to new curtailment limits for flexible connections as well as a greater socialisation of connection costs.



“The energy industry is evolving at an unprecedented rate with increased renewable generation connections driving the need to change and increase network flexibility.”

Jim Cardwell  
Head of Policy Development

- Ofgem is expected to issue its final determination on the ED2 price control at the end of 2022 which will determine some of our approaches to implementing DSO in the 2023-28 period. These will include the outputs that we deliver, the view of efficient costs and the way in which we provide transparency and gain the input of our stakeholders.
- Finally, we will be publishing DFES 2022, our latest view on Distribution Future Energy Scenarios, later in the year. This will build on National Grid's annual update to their national future scenarios and the insights we have gained from stakeholder engagement as our region considers its approaches to decarbonisation. These views of the future will be used to inform our DSO planning for optimising the use of flexibility on our network.

## 8. Distribution System Operation

### Our five strategic objectives for DSO

- **Flexibility first**  
Develop and deploy agnostic flexible solutions as an alternative to network reinforcement where it is economic and efficient to do so, ranging from energy efficiency solutions to dispatchable generation and demand turn down. Promote and establish deep and liquid markets for flexibility alongside investment in systems and processes that enable growth in our use of flexibility as the markets mature.
- **Whole-system collaboration**  
Enable whole energy system solutions by engaging with the wider market on our network investment, system management, and flexibility requirements and capabilities.
- **Data & digitalisation**  
Facilitate fast, efficient and optimised decarbonisation through open data, insight capability and digital tools, without losing sight of data safety and security. Invest in software and hardware that allow us to closely monitor the network, capture more relevant data and execute solutions to constraints as they materialise.
- **Openness and transparency**  
Earn trust through open and transparent decision-making by publishing our investment decisions and flexibility needs and procurement results, and collaborating in joint planning with our local stakeholders.
- **Workplace and workforce fit for the future**  
Build in-house, regional and national skills and value through developing knowledge, transferrable skills and an innovative culture.

### Our future plan

In our planning and in the proposed execution of our next steps, we are guided by the belief that our transition to DSO is:

- led by customers' needs;
- provides a compelling value proposition for customers and stakeholders, that promotes sustainability and ethical values by being efficient, fair and inclusive, and better for the environment;
- managed by processes that are neutral and transparent;
- requires a right-sized regulated business that can support and enable deep and liquid competitive local markets for flexibility; and
- mindful of ongoing changes to duties that will optimise the system as the volume of distributed energy resources increases.

### Engagement to support specific parts of our DSO plan

- Feedback from the Open Networks project has informed our engagement strategy: that includes a mixture of high level reviews of progress and more technical sessions that focus on individual aspects of DSO.

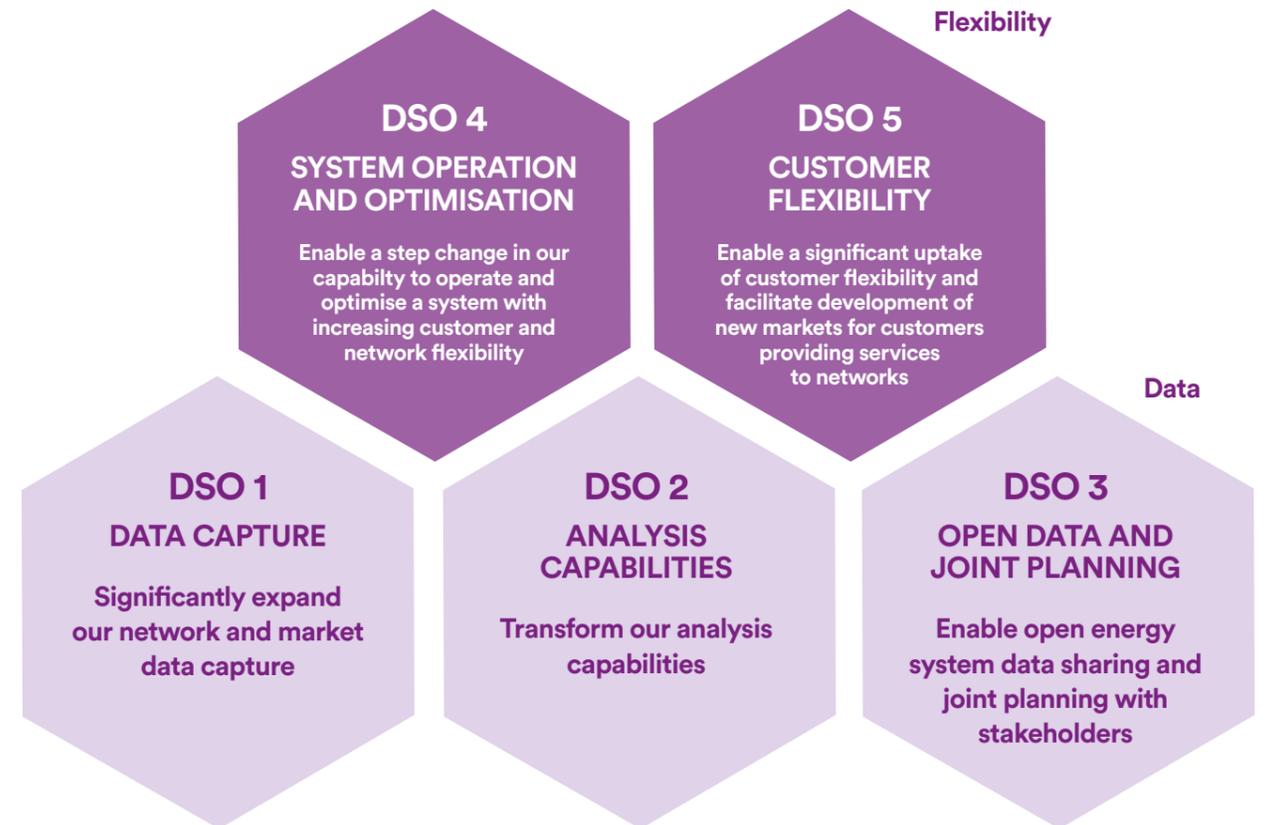
- We have focused our engagement activities on DSO on more specific key themes, including energy system data, innovation, retail market interface with DSO, climate change: the impact on regions and organisations, the challenges and interdependencies of decarbonising heat, and clean air zones and low emission vehicles.
- We have continued to engage with local authorities and other regional parties on our 2021 Distribution Future Energy Scenarios (DFES). This engagement will inform our updated annual DFES in 2022.
- These potential views of the future are helping us to plan what investment we need to make in the short term to prepare most efficiently for decarbonisation over the coming decades.

### Customer Engagement Group

- Established in September 2019, the Customer Engagement Group played a key part in scrutinising our draft ED2 Business Plan, published in December 2021. Following completion of our plan they have continued to help develop our plans and comment on our delivering of DSO which is intrinsically linked to data and digitalisation and workforce strategies.

## 8. Distribution System Operation

### Our DSO outcomes



You can access our ED2 DSO strategy along with other supporting information by visiting:  
[www.northernpowergrid.com/DSO](http://www.northernpowergrid.com/DSO)



### DSO – Enabling better planning through open data

We are sharing data to build a richer picture of the latest forecasts for low-carbon technology uptake and encouraging anyone with low-carbon plans in the region to get involved.

The new Energy Data Request Tool supports a more modern, digital energy system by providing greater transparency of electricity and gas networks' data, helping companies within and outside of the energy industry to make better investment decisions. It can support emerging markets, like electric vehicle charge points and green gas generators, and help new renewables sites connect to the network.

A single request form can be used by anyone to request any type of network data, apart from personal data, from all, some or just one of the 11 energy networks in Great Britain, including Northern Powergrid. Each energy network will continue to responsibly assess each request considering data privacy, security and confidentiality to ensure appropriate and proportional data-sharing.

Types of data that can be requested using the single form include:

- information about electric vehicle charge points in a certain area;
- how much flexibility is tendered in a particular location on the electricity network; and
- where there is capacity to build low-carbon infrastructure.

We have also worked in close collaboration with partners from Element Energy, the Open Data Institute (ODI) Leeds and Data Mill North to collect, analyse and visualise Distribution Future Energy Scenarios (DFES) data. It can be found on the ODI Leeds website (theodi.org) as a time-lapsed geospatial view and can be viewed at a local authority level, or by primary substations.

Working collaboratively and harnessing joint data will help to plot a path through uncertainty. It will enable us to consider multiple views of realistic scenarios in order to determine and model the range of future potential network impacts.

## 9. Environment



**44%**  
business carbon footprint reduction

against our ED1 business plan baseline



**47%**  
oil loss reduction

against our ED1 business plan baseline



**88.9km**  
of overhead lines undergrounded in National Parks and Areas of Outstanding Natural Beauty

in ED1 to date

### Our engagement...

We spoke to domestic customers, SMEs, rural groups, members of local government and even our own employees to help shape our future Business Plan.

### What our stakeholders said...

One consistent theme that was mentioned by all the groups was the subject of decarbonisation of our business and how we should be reducing our carbon emissions.

### What have we done...

We developed a comprehensive plan for decarbonising our operations that targets Net Zero emissions by 2040 [here](#).

We are capitalising on benefits of remote working from COVID-19 that resulted in a 40% reduction in our business mileage since 2019-20.

We are taking the opportunity to make use of technology to increase our online meetings and engagement to reduce our travel miles.

## Our environmental impact is reducing each year at a trajectory ahead of our ED1 Business Plan commitments and we have set a target to achieve Net Zero operations by 2040

### Our commitments

- We are committed to making a difference in our region through our environmental initiatives.
- 2021-22 was another solid year, all of our ED1 Business Plan commitments remain on track, and in most cases, ahead of schedule. We have set stretch targets for business carbon footprint (BCF), SF<sub>6</sub> losses, oil loss, cable replacement and undergrounding cables in Areas of Outstanding Natural Beauty (AONB).

### How we've done in 2021-22

#### Pursuing Net Zero operations

- In our plan for the 2023-28 price control we have set a target to achieve Net Zero operations by 2040<sup>1</sup>.
- We committed to reduce our BCF by 10% during ED1. We are well ahead of that in 2021-22 with emissions of 33,498tCO<sub>2</sub>e representing a 44% reduction against our ED1 Business Plan baseline.
- While the relaxation of COVID-19 restrictions has increased business travel, we have embedded the enduring benefits of hybrid working with 40% lower emissions than 2019-20. We expect 2022-23 to outturn marginally higher at an overall level as our colleagues return to office-based environments for a large proportion of the week, however our adoption of new ways of working will have a lasting impact on our carbon footprint.

#### Driving down sulphur hexafluoride (SF<sub>6</sub>) losses

- A key element of our BCF is managing the loss of sulphur hexafluoride (SF<sub>6</sub>) to the atmosphere.
- SF<sub>6</sub> is damaging to the environment if not managed correctly as it is 22,800 times more potent than CO<sub>2</sub> – this is why we made a specific commitment to reduce losses.
- Our 2021-22 performance of 101kg lost was ahead of the 112kg target we set in our ED1 Business Plan, however, was a step back on prior year performance. This was due to three units of switchgear that were leaking. To mitigate further losses we brought forward the replacement of these units which are forecast for replacement in Q1 2023.

#### Undergrounding in Areas of Outstanding Natural Beauty

- We care about the visual impact our network has, especially in AONBs. Our stakeholders also see this as a priority area and, following feedback, we set our sights on delivering 114km – an additional 14km and £2m investment.
- In the year, our programme saw the removal of a further 14km of overhead lines in AONBs, bringing our total to 88.9km in the period to date. The remainder are set to be completed in 2022-23.

#### Reducing oil loss

- We work hard to reduce the amount of oil and fluid that is lost into the ground. One way this loss happens is leaks from fluid-filled cables where fluid is used as an electrical insulator on some of our network.
- We committed to reduce oil and fluid loss by 15% in ED1. We continue to manage leaks effectively and in the year we lost 28,362 litres – that represented a 47% reduction compared to our ED1 baseline, well ahead of our original target. We have stretched our forecast further to achieve loss levels under 27,300 litres by the end of the period.
- We also committed to replacing 134km of fluid-filled cables by 2023 to reduce overall risk. We've already exceeded our original target, having removed 194.4km so far. We're forecasting an additional 29.8km by the end of ED1 period.

#### Optimising losses from the network

- Networks incur electrical losses when transferring power. We've delivered on our commitment to factor this into a wide range of investment decisions and we are busy with a range of activities to manage losses on our network as described in our losses strategy.
- Through our Boston Spa Energy Efficiency trial, we are seeking to understand smart meter data and customer behaviour in near real time to save money and hopefully reduce losses on the customer's side of the meter. (See page 32). More details can be found in our environment report [here](#) and our losses strategy [here](#).

### Looking ahead

- We will be continuing to deliver on our operational decarbonisation plans towards Net Zero by 2040. Our action plan includes increasing ultra low emission vehicles (ULEV) and zero emission vehicles (ZEV) on our fleet, adding renewable generation at our premises and implementing energy efficiency measures. Where we are unable to use ULEV/EVs we will procure vehicles with lower emissions.
- Further details of our environmental action plan can be found in our RIIO-ED2 Business Plan (<https://ed2plan.northernpowergrid.com>).
- We will continue to reduce business travel by utilising remote working tools and techniques adopted as a result of COVID-19 restrictions to have a positive impact on our emissions.
- On our AONB programme we will work closely with our service providers to deliver our ED1 programme.

<sup>1</sup> Controllable internal Business Carbon Footprint

Our Business Plan commitments		
Commitments	Status	Forecast completion
9.1 Reduce oil/fluid leakage to ground by 15% by 2023.	Ahead	2022-23
9.2 Reduce our business carbon footprint by 10% by 2023.	Ahead	2022-23
9.3 Underground around 100km of overhead line in AONBs.	On Track	2022-23
9.4 Replace 134km of fluid-filled cables and use perfluorocarbon tracers (PFTs) to quickly replace leaks.	Delivered	2019-20
9.5 Maintain SF <sub>6</sub> losses as the volume of gas in our switchgear assets increases.	Ahead	2022-23
9.6 Deliver faster and higher quality street works reinstatement when we dig up the street.	On Track	2022-23
9.7 Make sure reduction of electrical losses is explicitly factored into investment decisions for a wider range of assets.	Delivered	2018-19
9.8 Continue to operate a full revenue protection service.	Withdrawn	2015-16

### Going beyond our plan

Forecast for undergrounding in Areas of Outstanding Natural Beauty of 114km in ED1.



Forecast reduction in our business carbon footprint (against our original ED1 target of a 10%).



Forecast reduction in our oil loss (compared to our original ED1 commitment of 15%).



Stretch forecast for SF<sub>6</sub> loss – 13kg lower than our original ED1 Business Plan target of 112kg.



Stretch forecast of 224km of fluid-filled cable replacement – 68% more than our ED1 Business Plan commitment of 134km.



Our performance measure(s) <sup>2</sup>	2020-21 actual	2021-22 actual	2021-22 target	Annual status	ED1 target	ED1 status
Business carbon footprint (tCO <sub>2</sub> e)	31,241	33,498	55,081	Achieved	30,689 <sup>3</sup>	Ahead
Oil loss (Litres)	28,055	28,362	46,399	Achieved	26,700 <sup>3</sup>	Ahead
Overhead lines removed in AONBs (km, cumulative)	74.9	88.9	85.7	Achieved	114.0 <sup>3</sup>	On Track
FFC replacement (km, cumulative)	176.5	194.4	122.8	Achieved	224.4 <sup>3</sup>	Ahead
SF <sub>6</sub> lost to atmosphere (kg)	73	102	112	Achieved	90 <sup>3</sup>	Ahead
Environmental agency incidents (count)	6	4	5	Achieved	5 <sup>3</sup>	Ahead
Streetworks quality (%)	92%	91%	90%	Achieved	90%	Ahead

<sup>2</sup> Targets reflect ED1 Business Plan target unless otherwise stated.

<sup>3</sup> Reflects a forecast that exceeds our original ED1 Business Plan target.



### Supporting customers through our new energy saving app

With increasing energy supply costs we are playing our part in sharing important advice that can help customers be energy efficient, save money and reduce their carbon footprint.

We have launched a new energy saving app, in partnership with the Energy Saving Trust, packed with advice, guidance and top tips. It has been designed to help customers be energy efficient in every room of their house. The app, which is free to download, provides independent advice so people can make informed decisions for their household.

We are also running a digital advertising campaign to share a short animation with simple tips to help customers save money on their bills and highlight our range of partnerships which offer support services to customers as part of our work to go above and beyond our network which powers people's everyday lives.

They include access to:

- free Citizens Advice energy advisors funded by Northern Powergrid
- a free guide to make savings on all utility bills produced by Infrastructure North – a partnership between Northern Powergrid, Northern Gas Networks, Northumbrian Water and Yorkshire Water, and
- free, confidential and independent debt advice available through Northern Powergrid's partnership with the government sponsored MoneyHelper which can direct people to a debt adviser by telephone or online via: Money Adviser Network.

All the information is also being shared on Northern Powergrid's 'Force for good' page on its website. Including how customers can join the company's free Priority Services Membership which offers additional support and advice in everyday power cut situations to those who may be more vulnerable due to their medical or personal circumstances.

**“We hope that by widely sharing this energy saving advice now we can help people from across our operating area make changes and adopt behaviours that will help them save money and also reduce their carbon footprint now and in the future.”**

**Michelle Cummings**  
Social Responsibility Manager

## 10. Finance



**£1m+**

each day invested in our network



**999**

new job opportunities created in ED1 to date



**100%**

expenditure vs allowances – continuing our strong track record of spending closely in line with allowances



**£88/yr**

The average annual cost in 2021-22

### Our engagement...

Using a range of engagement activity, we have engaged with key stakeholders including:

- Trade unions
- Colleagues
- Students.

### What our stakeholders said...

We should look to increase the diversity of the workforce to be more representative of our region.

We should support our region's economic recovery from COVID-19 by providing more job opportunities.

### What have we done...

Developing a dedicated Diversity, Equity and Inclusion plan for 2022 to take actions across our recruitment and development to open up access to more career opportunities.

Bringing forward recruitment for new job opportunities from 2023, where we have committed to creating over 1,000 opportunities in the next regulatory period.



## We're delivering on our promise to deliver 'more for less' – controlling our costs in line with allowances whilst outperforming our Business Plan targets

### Our commitments

- Our customers continue to place 'keeping bills low' amongst their top priorities.
- At the start of the ED1 period, we cut the price that our customers pay for a safe and reliable electricity service by 14%, exceeding our original commitment of 10%. On average, a domestic customer in our region pays £88 (24p per day) for our 24/7 service.
- We also set out to create 1,000 job opportunities in our region between 2015 and 2023. As we close out 2021-22, 999 new employees have joined Northern Powergrid since 2015, many in apprentice roles. This has provided young people with skills that will set them up for life and provides us with the expertise to help ensure the resilience of our network, both now and in the future.

- We continue to leverage our partnership with Whole Energy Systems Research and Industry Network (Werin), a collaborative, interdisciplinary and cross-sector initiative that provides networking opportunities and professional support to women in the sector. We also work with schools, colleges and universities in our region to promote Science, Technology, Engineering and Mathematical (STEM) subjects.
- We have expanded our use of targeted recruitment campaigns to promote new job opportunities to under-represented groups as we seek to increase the diversity of our workforce. We are investing in new skills and unconscious bias training for our operational workforce, to support diversity and reflect the increased smart and digital technology on our network.

### Responsible tax approach

- It is important that we play our part in society by contributing through the tax we pay. Our tax policy is approved by our board of directors and published on our website. We work to maintain a low risk classification with HMRC by applying strict and transparent governance and showing respect for tax rules.

### Committed long-term investor

- Northern Powergrid is part of the Berkshire Hathaway Energy (BHE) group. Our strong and secure parent company contributes to our high credit rating, the strongest among electricity network operators.
- Our operating model follows BHE's approach – to reinvest in improving our network for our customers both now and in the future. Strong credit ratings allow us to achieve competitive rates on the financing that funds our £4bn investment programme for our customers.

### Looking ahead

- We will ensure efficient delivery of our planned investment programmes to deliver our output targets in line with cost allowances by the end of 2022-23.
- We will also deliver our Green Recovery Investment to accelerate decarbonisation and support regional economic growth.
- On the people agenda, we are stepping up our recruitment programmes to increase our delivery capacity in support of decarbonisation pathways including attracting new skills and building a more diverse workforce.

### How we've done in 2021-22

#### Strong track record on cost control

- Our Business Plan commitment to deliver 'more for less' meant we had to make significant performance improvements in the RIIO-ED1 period at new levels of cost efficiency. The cost reductions imposed by Ofgem in its price control settlement for ED1 increased the scale of that challenge. Our actual expenditure is in line with allowances (99.7% of phased allowances). Our ED1 cost forecasts continue to show that we expect to spend in line with Ofgem's allowances for the period as a whole. For more information on our cost and output performance see our [Regulatory Financial Performance Report](#).

#### Developing an increasingly diverse workforce

- As we deliver our plans for decarbonisation we know that one of our biggest challenges is scaling and developing our workforce to deliver a more active and flexible network that will support the transition to Net Zero.
- As one of the largest employers in our region, we took on 144 new recruits during 2021-22 including 46 apprentices and trainees as part of our Workforce Renewal programme, which is designed to oversee the training and development of the next generation of skilled engineers in our industry. We are now forecasting to create somewhere in the region of 1,200 job opportunities, exceeding our original target ED1 target by 20%.
- In March 2022, we published our latest annual gender pay gap report which showed a gender pay gap in hourly pay of 24.3% compared with 21.4% in 2020-21.
- We want to see more women in technical and professional roles and in 2021 we have been engaging to support the development of our long-term Diversity, Equity and Inclusion plan.

### Our Business Plan commitments

Commitments	Status	Forecast completion
10.1 We will deliver an immediate 10% price reduction at the start of the period.	Delivered	-
10.2 We expect to create 1,000 job opportunities in the organisation during the ED1 period.	Ahead	2022-23

### Going beyond our plan

#### £92.1m of additional investment in ED1

Our cost efficiencies have enabled us to accommodate additional investment to drive benefits for customers in the period and offset cost pressures.

#### Additional investments in 2015–23



**+£63.8m**

network resilience

- Including:
- 58 additional flood defences;
  - replacement of an additional 90km of EHV/132kV fluid-filled cables; and
  - investment to address safety risks on our network such as fire suppression blankets in link boxes.



**+£15.8m**

cyber resilience

- to significantly upgrade our cyber defences against the evolving threat of online and software attacks.



**+£12.5m**

customer service improvements

- Including:
- upgrading our contact centre telephone platform to latest technology;
  - modernisation of our web interfaces; and
  - enhancing our enterprise asset management (eAM) spatial asset system and underlying data.

### Our Return on Regulatory Equity (RORE)

The RORE measures how much a company has earned on its investment in regulatory assets funded by shareholders. Our overall RORE forecast for the ED1 period is 6.4% based on our actual gearing (including debt held by our holding company), which we believe is a fair and reasonable return for a company expecting to over-deliver on its Business Plan.

More detailed information about our returns can be found in our 2021-22 [Regulatory Financial Performance report](#).

Northern Powergrid RORE	Ofgem's Notional Gearing Assumption		Actual gearing	
	2021-22	ED1 forecast	2021-22	ED1 forecast
RORE (Including Holdco debt)	7.2%	8.8%	6.4%	7.5%
RORE (Excluding Holdco debt)	7.5%	9.2%	5.6%	6.3%
Northeast	7.5%	9.5%	5.6%	6.7%
Yorkshire	7.5%	8.9%	5.5%	6.0%



### Investing in the regional green recovery

We are leading a significant local investment push as part of the national £300m Green Recovery Scheme. The scheme is creating a greener North East, Yorkshire and northern Lincolnshire that creates Net Zero jobs of the future in the communities we serve. It is also delivering investment that will help with the response to the climate emergency by creating additional network capacity to enable decarbonisation,

regeneration and connection of large-scale renewable generation.

As part of the scheme, Northern Powergrid will invest around £60m in network capacity over the next two years. Fourteen locations across the North East, Yorkshire and northern Lincolnshire, including Newcastle city centre, York and Grimsby Docks, have been identified as candidates for investment in energy infrastructure to stimulate post

COVID-19 economic recovery and support the growth of green jobs.

The investment is designed to support green growth projects to come to fruition faster. The additional capacity could be used to bring forward electric vehicle charging, promote a switch to electric heating or simply increase the amount of power available to local businesses to allow for environmentally sensitive growth.

Following our call for evidence that saw stakeholders from across our region tell us what they needed to move forward with clean, green developments, we are now moving into the next phase of the Green Recovery Scheme – getting our teams on the ground to turn investment plans into real, new power grid capacity. Every exciting plan for our region’s future needs electricity. The new capacity we are creating is critical for the future economic prosperity of the area and, unique to this investment, it has been highly targeted to locations with green programmes that deliver green jobs and a cleaner future.

**Phil Jagger**  
Programme Manager

## Working near our assets

There are times when people need our help to work near or around our assets – we aim to do this in a safe and compliant manner, whilst offering the best levels of customer service.

### Our objective

- When giving help and advice for work taking place near our assets, we aim to meet all of our statutory duties and aim to deliver excellent customer service.

### What this involves

Typically these situations include requests:

- for physical covers for overhead lines (shrouding);
  - to physically move our assets (either temporarily or permanently);
  - to share one of our wooden poles (e.g. for a telephone line);
  - for safety advice about working near our assets, including where our underground cables are; or
  - to temporarily switch off the power while work is undertaken near our assets.
- Those who need to work near our assets rate us across four major service lines: cable plans; disconnections, shrouding and other safety requests.
  - Performance continues to be monitored against internal SLAs to ensure we continue to deliver strong performance.
  - We also measure a number of ‘Other Safety Requests’ which incorporates work such as Service Alterations, Quality of Supply, Vegetation Management, Overhead Line and Substation Maintenance. This also includes diversions due to the low volume that were surveyed.

### Our performance

- Our improvement plans are in line with the commitments we made in our ED1 Business Plan – to make our services quicker, easier and more convenient for our customers.
- In 2021-22, our satisfaction scores in all areas were higher than the Ofgem targets and saw results consistent with last year on each of the service lines.

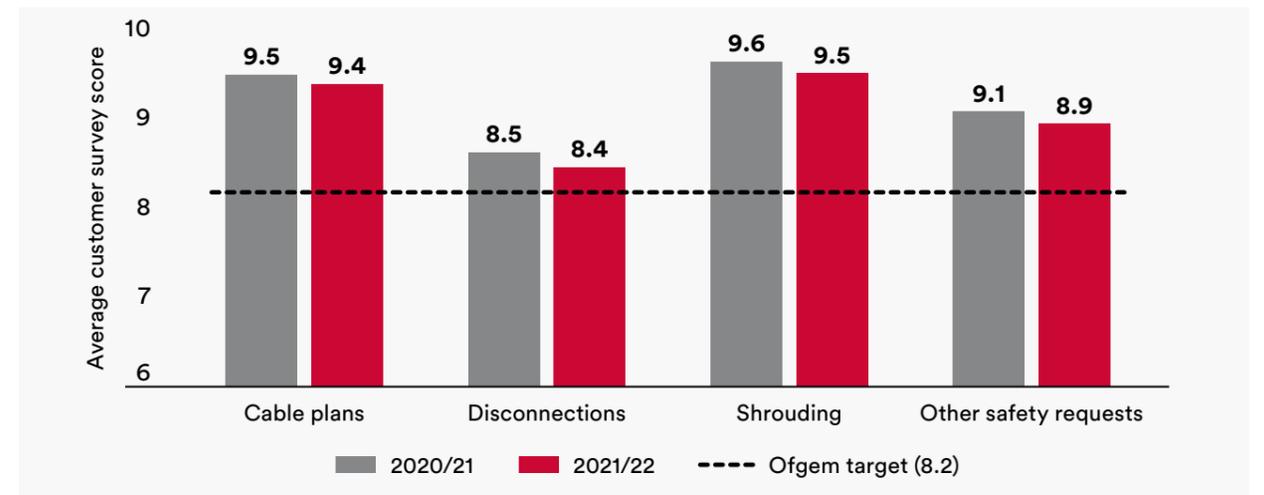
- For **cable plans**, performance has remained high after the increase of 0.8 percentage points last year due to the introduction of self-service capability in this area which high numbers of customers choose to use.
- For **disconnections**, we maintained similar levels of performance to last year.
- For **shrouding**, we maintained similar levels of satisfaction with our embedded online, self-service processes.
- For **other safety requests**, we had a small decrease on Safety Interruptions with the increased volumes of work but remained relatively consistent with 2020-21.

### Getting better at what we do

- We offer a variety of customer digital self-service options to make it easier for our customers to access the information they need.

### Looking ahead

- In the balance of the ED1 period our focus will remain on embedding the processes and technologies we have implemented to ensure that these are delivering the service levels our customers need.
- This will include rolling out ‘on the day’ communications across all general enquiries services to further improve our customer communication approach as well as increasing the availability of appointments out of normal hours such as on an evening or a weekend.
- We are also working with stakeholders to develop a unique ‘at your service’ initiative; aiming to provide a more flexible and convenient service at evenings and weekends for certain connections and general enquiries service lines.



# Glossary

Our performance snapshots on the inside front cover and on pages 62 and 63 set out one-page summaries of our key measures of performance in the year.

At the request of our stakeholders, we have continued to go further than the minimum requirements in our disclosure and presentation of information in the report, to rise to the challenge of greater transparency. For example, in addition to reporting our actual performance against targets, we have included our relative ranking position among the other distribution network operators, our performance

trends, the financial incentive rewards/penalties we have earned/incurred along with the impact of those incentives on an average domestic customer bill.

Below is a glossary explaining the meaning of each of the measures included in our performance snapshots.

<b>Number of customers</b>		Number of customers electricity is distributed to in Northern Powergrid's licensee areas: Northeast and Yorkshire.
<b>Total DNO network length</b>		The total kilometres of overhead lines, underground lines and subsea cables used to distribute electricity to Northern Powergrid customers in its two licensee areas: Northeast and Yorkshire.
<b>Customer interruptions</b>	Including exceptional events	The number of customers whose supplies have been interrupted per 100 customers per year over all incidents where an interruption of supply lasts for three minutes or longer, excluding reinterruptions to the supply of customers previously interrupted during the same incident, and including any interruptions caused by exceptional events. An exceptional event is an event which is beyond the reasonable control of the licensee but does not include weather conditions which are reasonably expected to occur.
	Excluding exceptional events	As above, but excluding any interruptions caused by exceptional events.
<b>Customer minutes lost</b>	Including exceptional events	The duration of interruptions to supply (or the average customer minutes lost per customer per year) where an interruption of supply lasts for three minutes or longer. It includes any interruptions caused by exceptional events.
	Excluding exceptional events	As above, but excluding any interruptions caused by exceptional events.
<b>IIS – Incentive performance reward/ (penalty)</b>	£	Electricity distribution companies are incentivised on the number and duration of network supply interruptions versus a target derived from benchmark industry performance. This figure represents the financial reward/(penalty) earned or measured on network interruptions in Ofgem's Interruption Incentive Scheme (IIS).
	£/domestic customer bill	How much the above incentive reward (or penalty) will add to (or take off) the bill for an average domestic consumer in 2022-23.
<b>Network Output Measure (NOMs)</b>		A regulatory mechanism that provides a means to monitor and assess the network asset management outcomes that network companies deliver. It represents the service delivery resulting from companies' asset interventions, and can be considered as a forward-looking indicator of network performance.
<b>Overall Broad Measure of Customer Satisfaction Score</b>		Northern Powergrid's Broad Measure of Customer Satisfaction (BMCS) score and rank on Ofgem's customer satisfaction measure. It is based on a customer satisfaction survey and is designed to drive improvements in the quality of the overall customer experience by capturing and measuring customers' experiences of contact with their electricity distribution company.
<b>BMCS – Incentive performance reward/ (penalty)</b>	£	Value of the Ofgem Broad Measure of Customer Satisfaction (BMCS) reward/ (penalty), a financial incentive on customer satisfaction, excluding stakeholder engagement rewards.
	£/domestic customer bill	How much the above incentive reward (or penalty) will add to (or take off) the bill for an average domestic consumer in 2022-23.

<b>Time-to-quote (days)</b>		The average number of days from a connection application being received to a connection quote being issued for single low-voltage minor connections (LVSSA).
<b>Time-to-connect (days)</b>		The average number of days from acceptance of a connection quote by a connectee to the completion of the necessary electrical works, to the point it would be possible to energise (subject to installation of an appropriate meter), for single low-voltage minor connections (LVSSA).
<b>Incentive performance reward/ (penalty) – connections lead time</b>	£	Value of the time to connect financial incentive for single low-voltage minor connections (LVSSA) and two to four minor connections (LVSSB).
	£/domestic customer bill	How much the above incentive reward (or penalty) will add to (or take off) the bill for an average domestic consumer in 2022-23.
<b>Incentive on Connections Engagement (ICE) penalty (if applicable)</b>	£	Value of the Ofgem ICE penalty: a connections engagement financial incentive for major connections customers (metered demand connections, metered distributed generation and unmetered connections).
	£/domestic customer bill	How much the above incentive penalty will take off the bill for an average domestic consumer in 2022-23.
<b>Stakeholder Engagement and Consumer Vulnerability (SECV)</b>		Northern Powergrid's Stakeholder Engagement and Consumer Vulnerability (SECV) score and rank as part of Ofgem's customer satisfaction measure.
<b>Incentive reward (SECV)</b>	£	Value of the Ofgem SECV reward, a stakeholder engagement financial incentive.
	£/domestic customer bill	How much the above incentive reward will add to the bill for an average domestic consumer in 2022-23.
<b>Unrestricted domestic tariff charge (for a typical domestic customer)</b>		The distribution element of the bill for an average domestic consumer in 2020-21, excluding the cost of a special rebate given by some electricity distribution companies in 2014 and 2015 (in accordance with the government's 2013 autumn statement) to help reduce energy bills. The average domestic consumer is assumed to use 2,900kWh per annum. The calculation assumes 365 days in a year.
<b>Total expenditure</b>	£	This is Ofgem's regulatory total expenditure (or 'Totex') measure, which includes many of the costs incurred by electricity distribution companies, but excludes costs over which companies have no control, and which also nets off proceeds from the sale of assets. This measure is used as the basis for calculating how much the company has spent on operating and investing in its distribution business, and companies are incentivised to minimise it while at the same time delivering all the required outputs.
	% of cost allowances	How much the company has spent of its Totex allowances for the year. If the percentage is lower, a company has either been successful in reducing how much it costs to deliver its outputs, or has not delivered some of its outputs (which would lead to a reduction in its future allowed revenues).
<b>Actual Return on Regulatory Equity – RORE (vs Ofgem assumption of 6%)</b>		The Return on Regulated Equity (RORE) measures how much a company has earned on previous investments in its regulatory assets (RAV) that have been funded by shareholders in the regulatory settlement. This starts with the base return which Ofgem allowed, to reflect the cost of equity in capital markets, and is adjusted for the value earned via any incentive schemes to reflect performance, and any difference between how much the company's debt finance cost compared to Ofgem's assumption. Ofgem's calculation of this figure assumes a notional gearing of 65% (which is above our actual gearing level). It is stated in real terms, i.e. before inflation is added.
<b>OSHA rate</b>		In the USA, the Occupational Safety and Health Administration (OSHA) accident rate records reportable work-related accidents including major incidents leading to absence from work and also less severe injuries where employees may experience restricted work duties or have prescription drugs issued as treatment or therapy. The OSHA rate is presented as reportable cases per 200,000 man hours. See <a href="https://www.osha.gov">osha.gov</a>
<b>RIDDOR rate</b>		A UK accident rate that measures the number of accidents that are reportable under the UK's Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR). These accidents are reportable to the HSE and include fatal, major injury and lost-time accidents resulting in over seven days absence from work. See <a href="https://www.hse.gov.uk/riddor">hse.gov.uk/riddor</a>

# Performance snapshot – Northeast<sup>1</sup>

Network		Actual 2021-22			
Number of customers		1.6m			
Total DNO network length		42,101km			
Reliability & Availability		Actual 2021-22	Target 2021-22 <sup>2</sup>	Status	Trend <sup>3</sup>
Customer interruptions (CI) <sup>4</sup>	Inc. exceptional events	66.6	-	-	▼
	Exc. exceptional events	50.2	59.2	Achieved	▼
	Customer minutes lost (CML) <sup>4</sup>	212.2	-	-	▼
	Exc. exceptional events	46.5	52.8	Achieved	▼
Incentive performance reward/(penalty) – IIS <sup>5</sup>	£m	£4.5m	-	-	▼
	£/customer bill	£1.07	-	-	-
Customer Satisfaction		Actual 2021-22	Target 2021-22 <sup>2</sup>	Status	Trend <sup>3</sup>
Overall Broad Measure of Customer Satisfaction score out of ten (rank out of 14) <sup>6</sup>		8.88 (10th)	8.2	Achieved	▼
Incentive performance reward/(penalty) – BMCS <sup>7</sup>	£m	£0.7m	-	-	▼
	£/customer bill	£0.17	-	-	-
Connections		Actual 2021-22	Target 2021-22 <sup>2</sup>	Status	Trend <sup>3</sup>
Time-to-quote (days) <sup>8</sup>		9.3	4.8	Missed	▼
Time-to-connect (days) <sup>8</sup>		50.1	39.3	Missed	▲
Incentive performance reward/(penalty) – connections lead time	£m	£0.0m	-	-	-
	£/customer bill	£0.00	-	-	-
Incentive on Connections Engagement penalty – ICE (if applicable)	£m	Nil	-	-	-
	£/customer bill	Nil	-	-	-
Social Obligations		Actual 2021-22	Target 2021-22 <sup>2</sup>	Status	Trend <sup>3</sup>
Individual Stakeholder Engagement and Consumer Vulnerability (SECV) score out of ten (rank out of six)		3.70 (6th)	-	-	▼
Incentive reward	£m	£0.0m	-	-	▼
	£/customer bill	£0.00	-	-	-

**Innovation**

We spent £0.7m across 25 dedicated innovation projects (37% of our Network Innovation Allowance). In the ED1 period to date, our innovative solutions have now delivered benefits to customers in excess of £19m.

**Safety**

Our long-term safety performance is strong and places us in the leading pack among our peers. We achieved our annual headline safety target for Northern Powergrid as a whole in 2021-22, measured by the Occupational Safety and Health Administration (OSHA) rate – 0.25 against a target of 0.27 – representing six reportable incidents in a workforce of around 2,450.

**Environment**

We achieved our oil leakage and business carbon footprint targets for 2021/22 and we are on track to exceed our commitment in removing overhead lines from areas of natural beauty.

Financials		Northeast	
Unrestricted domestic tariff charge		£76.57	
Total expenditure	£m	£161.0	
	% of cost allowances	113%	
	% of cost allowances (ED1 to date)	103%	
	% of allowed revenue	61%	
Dividends paid <sup>9</sup>	£20.44		
Gearing <sup>10</sup>	52.3%		
Credit rating <sup>11</sup>	A3/A/A-		
RORE <sup>12</sup>	9.5%		

1 All financial figures in 2012-13 prices. The performance of each licensee is shown in the Annex to this report.  
 2 Ofgem target (see sections in the main body of the report for performance against our own targets).  
 3 Trend ▲ getting better ▼ getting worse since 2020-21.  
 4 Unplanned & unweighted figures. Indicative figures as at July 2021, figures still to be confirmed by Ofgem.  
 5 Excluding Guaranteed Standards payments.

6 Broad Measure of Customer Satisfaction (BMCS) rank indicative only based on monthly data. Final ranking to be confirmed by Ofgem.  
 7 Does not include SECV reward.  
 8 LVSSA (single minor connections).  
 9 Dividends paid figure relates to dividends from the licensee companies in the year.  
 10 Gearing figures for Northeast relates to gearing of the licensee company.

11 Credit ratings for Northeast relates to scores for three credit rating agencies (Moody's/Standard and Poor's/Fitch) for the licensee company.  
 12 RORE forecast for the ED1 period based on notional gearing and including holding company debt.

# Performance snapshot – Yorkshire<sup>1</sup>

Network		Actual 2021-22			
Number of customers		2.3m			
Total DNO network length		55,092km			
Reliability & Availability		Actual 2021-22	Target 2021-22 <sup>2</sup>	Status	Trend <sup>3</sup>
Customer interruptions (CI) <sup>4</sup>	Inc. exceptional events	56.7	-	-	▼
	Exc. exceptional events	51.2	62.0	Achieved	▼
	Customer minutes lost (CML) <sup>4</sup>	62.1	-	-	▼
	Exc. exceptional events	43.9	53.5	Achieved	▼
Incentive performance reward/(penalty) – IIS <sup>5</sup>	£m	£8.2m	-	-	▼
	£/customer bill	£1.31	-	-	-
Customer Satisfaction		Actual 2021-22	Target 2021-22 <sup>2</sup>	Status	Trend <sup>3</sup>
Overall Broad Measure of Customer Satisfaction score out of ten (rank out of 14) <sup>6</sup>		8.77 (13th)	8.2	Achieved	▼
Incentive performance reward/(penalty) – BMCS <sup>7</sup>	£m	£0.9m	-	-	▼
	£/customer bill	£0.14	-	-	-
Connections		Actual 2021-22	Target 2021-22 <sup>2</sup>	Status	Trend <sup>3</sup>
Time-to-quote (days) <sup>8</sup>		7.2	4.8	Missed	▼
Time-to-connect (days) <sup>8</sup>		43.7	39.3	Missed	▲
Incentive performance reward/(penalty) – connections lead time	£m	£0.0m	-	-	-
	£/customer bill	£0.00	-	-	-
Incentive on Connections Engagement penalty – ICE (if applicable)	£m	Nil	-	-	-
	£/customer bill	Nil	-	-	-
Social Obligations		Actual 2021-22	Target 2021-22 <sup>2</sup>	Status	Trend <sup>3</sup>
Individual Stakeholder Engagement and Consumer Vulnerability (SECV) score out of ten (rank out of six)		3.70 (6th)	-	-	▼
Incentive reward	£m	£0.0m	-	-	▼
	£/customer bill	£0.00	-	-	-

**Innovation**

We spent £1.0m across 25 dedicated innovation projects (37% of our Network Innovation Allowance). In the ED1 period to date, our innovative solutions have now delivered benefits to customers in excess of £28m.

**Safety**

Our long-term safety performance is strong and places us in the leading pack among our peers. We achieved our annual headline safety target for Northern Powergrid as a whole in 2021-22, measured by the Occupational Safety and Health Administration (OSHA) rate – 0.25 against a target of 0.27 – representing six reportable incidents in a workforce of around 2,450.

**Environment**

We achieved our oil leakage and business carbon footprint targets for 2021/22 and we are on track to exceed our commitment in removing overhead lines from areas of natural beauty.

Financials		Yorkshire	
Unrestricted domestic tariff charge		£64.40	
Total expenditure	£m	£219.0	
	% of cost allowances	112%	
	% of cost allowances (ED1 to date)	98%	
	% of allowed revenue	66%	
Dividends paid <sup>9</sup>	£27.05		
Gearing <sup>10</sup>	47.1%		
Credit rating <sup>11</sup>	A3/A/A-		
RORE <sup>12</sup>	8.9%		

1 All financial figures in 2012-13 prices. The performance of each licensee is shown in the Annex to this report.  
 2 Ofgem target (see sections in the main body of the report for performance against our own targets).  
 3 Trend ▲ getting better ▼ getting worse since 2020-21.  
 4 Unplanned & unweighted figures. Indicative figures as at July 2021, figures still to be confirmed by Ofgem.  
 5 Excluding Guaranteed Standards payments.

6 Broad Measure of Customer Satisfaction (BMCS) rank indicative only based on monthly data. Final ranking to be confirmed by Ofgem.  
 7 Does not include SECV reward.  
 8 LVSSA (single minor connections).  
 9 Dividends paid figure relates to dividends from the licensee companies in the year.  
 10 Gearing figures for Yorkshire relates to gearing of the licensee company.

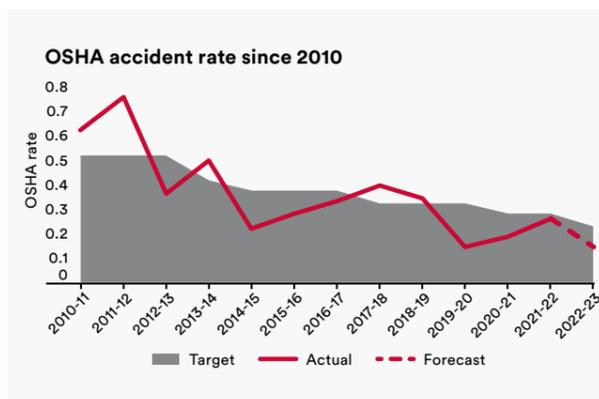
11 Credit ratings for Yorkshire relates to scores for three credit rating agencies (Moody's/Standard and Poor's/Fitch) for the licensee company.  
 12 RORE forecast for the ED1 period based on notional gearing and including holding company debt.

# Safety

Safety is our number one priority and we are on track to deliver our commitments for the ED1 period.

Commitment	Status	Forecast completion
<b>1.1 Remain a leading safety performer, meeting all requirements and halving our accident rate by 2023</b>	On track	2022-23

- Our long-term safety performance remains strong, consolidating our place as an industry leader and keeping us on track to achieve our headline commitment to halve our accident rate by 2023.
- Our accident rate in 2021-22 showed a consolidation of our safety performance compared to the prior year with an OSHA accident rate of 0.25, which keeps us on track to achieve our ED1 Business Plan target. That equated to six accidents in the year and none of those was electrical in nature.
- Our RIDDOR accident rate performance was 0.12 with three reportable incidents in 2021-22.
- We continue to focus on our safety culture, reinforcing safety standards through leadership engagement and our safety champions programme.
- We maintained strong driving performance in 2021-22, incurring only 36 vehicle accidents across a fleet covering ~15.0 million miles, assisted by our investment in fleet vehicle telematics as well as targeted driver training programmes.
- In 2021-22, we continued to operate effectively through the COVID-19 pandemic, keeping our colleagues safe by maintaining a robust set of social distancing policies, continuing to enable home working and maintaining single occupancy in our fleet vehicles. Our wellbeing programme aimed at supporting colleagues' mental health and wellbeing was maintained throughout the pandemic.
- Looking ahead, we're confident that our awareness and training programmes, paired with our proactive safety culture and annual Safety and Health Improvement Plan, will ensure we meet our commitment to halve our accident rate.



Commitment	Status	Forecast completion
<b>1.2 Increase awareness in our communities of the dangers of electricity if not handled properly.</b>	On track	2022-23

- Our programme to raise awareness of the dangers of electricity with school children was affected by the COVID-19 pandemic in 2021-22 with restrictions in accessing schools. Despite this, our programme reached around 33, 890 school-aged children in the year.
- We will work with schools to understand how we can re-engage and adapt the programme. This includes delivering a programme that provides the opportunity for in-person engagement and continued online engagement.
- Our engagement with young people is driven by our diverse school safety awareness programme for primary and secondary schools, including our 'Crucial Crew' programme in partnership with the Police, Fire Brigade and Drug Awareness teams. We have also partnered with the Scout Association to deliver the "Home Safety Badge" as well as offering educational talks on how to stay safe around our network.
- During the pandemic we continued to offer online interactive resources for children to access our safety messages.
- A key awareness priority is the risk that overhead power lines pose to farmers, road hauliers and contractors. We continue to engage with the regional executive of the National Farmers Union (NFU) to plan a combined approach to safety communications for the agricultural community. We've continued to use the 'Look up - it's live' material to raise awareness of the dangers of overhead lines which outlines what to do if a vehicle makes contact with our equipment. We have collaborated with ENA members to produce an educational DVD for the domestic sector to raise awareness of the dangers of underground cables and overhead lines.
- We have delivered electrical safety presentations at major agricultural training colleges during student induction days.
- Looking ahead, we will continue to monitor incidents involving overhead line contacts to review whether our awareness campaigns are having an impact and we will target our engagement to maximise our impact. We will be working through the NFU to raise awareness of our programme to supply warning notices to farming businesses so they can highlight the dangers of overhead lines on their land.

Commitment	Status	Forecast completion
<b>1.3 Keep safety as a central driver of investment decisions and appraisals.</b>	Delivered	2018-19

- Safety remains a central driver of our decision-making processes whether we are operating, extending, maintaining, repairing or replacing the network.
- In line with our commitment we work to an asset investment policy that underpins the principles of developing safe, efficient, coordinated and economical electricity systems that sustainably serve the needs of our stakeholders.
- As an example, since the start of the ED1 period, we have provided quarterly returns to the Health and Safety Executive relating to our service cut-out change programme. In 2021-22 we replaced more service cut-outs than the previous year due to the recovery from the COVID-19 pandemic. In the year, we replaced over 24,000 service cut-outs, removing 1518 units that did not comply with Electrical Safety, Quality and Continuity Regulation (ESQCR) safety standards.

Commitment	Status	Forecast completion
<b>1.4 Promptly resolve any network safety issues arising from the smart meter rollout.</b>	On track	2022-23

- The rollout of millions of smart meters to customers by energy suppliers in our region presents a safety risk if the installation is not done properly. To mitigate this risk, we only permit operatives to install smart meters on our network on behalf of energy suppliers if they have gone through a training and competency assessment.
- We have well established processes in place for responding to issues identified with meter installations and any problems identified to date have been investigated and resolved promptly where we are able to gain access to a customer's property. Our service level agreement (SLA) performance for defect resolution is 87% for Category A and 91% for Category B (both against targets of 90%), having resolved almost twice as many defects than forecast. We continue to participate in industry working groups to ensure that best practice shared through collaboration can be adopted in our own programme.
- In 2013, the HSE brought in a requirement for DNOs to replace all known 'fused neutral' cut-outs. These cut-outs are usually located beneath the meter and modern equivalents only have the 'live' connection protected by a fuse and the neutral connection is solid. This is primarily to ensure the neutral connection into the property is continuous (in order to ensure that any neutral earth connection to the DNO network remains unbroken as far as reasonably practicable), providing protection to our customers in the event of a fault. In 2019-20, we ran a data project where we developed a 'heat map' that showed the location of previous interventions and highlighted areas with a high potential to discover cut-outs of this type.
- In 2021-22, we maintained our response capability throughout and volumes are now returning to pre-COVID levels.
- Looking ahead, we'll continue to repair network defects in a timely manner and work with meter operators to minimise the delays, and inconvenience, caused to customers when a smart meter cannot be installed.

Commitment	Status	Forecast completion
<b>1.5 Reduce the impact of metal theft, including improving substation security.</b>	On track	2022-23

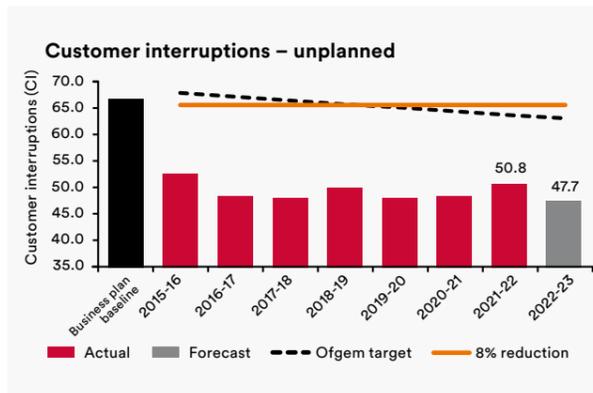
- The level of metal theft from our network continues to be low compared to national levels, which shows modest increases in some areas. To date in 2022 we have experienced 42 instances of metal theft across our network. This breaks down to ten thefts of overhead line, circa 10,000 meters of conductor, predominately in rural areas of north Lincolnshire (Operation Gunpowder) and thirty-two thefts of substations assets.
- We have continued to engage with the local and national police forces, preparing enhanced response plans, such as Operation Gunpowder, to improve the effectiveness of our joint incident response. We are active members of the NIRCPC (National Infrastructure Crime Reduction Partnership) with whom we share sanitised crime data receiving crime 'hot spot' information and intelligence updates based on cross-sector data in return. We have used this information to develop a proactive crime reduction strategy and will start intelligence driven proactive forensic making of assets in 2023.
- We continually review our approach and improve our ability to mitigate and respond to theft. We also have a team that focuses on reviewing and reinforcing substation sites that we consider vulnerable.
- In the period to date, we've invested £5.9m upgrading Critical National Infrastructure (CNI) sites and remain on course to have upgraded security at all our CNI sites by the end of the ED1 period. As part of our investment in this area, we've developed an Alarm Receiving Centre which we commissioned in the summer of 2021. Through investment in upgrading substation intruder alarms and management through the Alarm Receiving Centre we have improved the effectiveness of our response.
- Looking ahead towards ED2, we will improve the perimeter security of 155 substations through the use of CCTV integrated with perimeter intruder detection technologies linked to our Alarm Receiving Centre. We will also continue to invest in the upgrading of our operational alarm estate.

# Reliability & Availability

Our customers' number one priority is the reliability of the network and we remain on track to outperform the commitments we made in our ED1 Business Plan.

Commitment	Status	Forecast completion
<b>2.1 Achieve 8% fewer unplanned power cuts by 2023.</b>	<b>Ahead</b>	<b>2022-23</b>

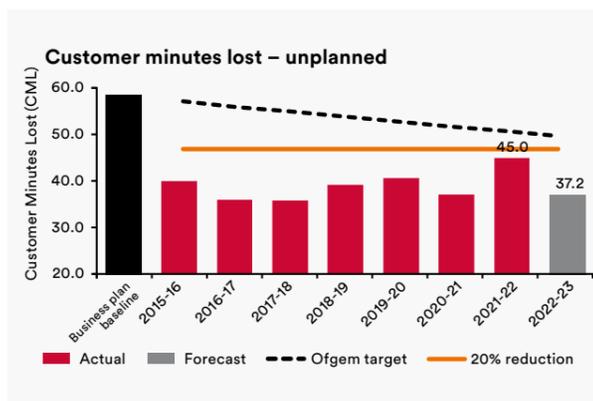
- We are outperforming the targets we set in our ED1 Business Plan on unplanned customer interruptions (CI) having achieved a 26% reduction relative to our Business Plan baseline in the period so far.
- Throughout 2021-22, we continued our investment in high voltage automatic fault restoration technology that automatically reconfigures the network in response to faults. We upgraded 73 additional primary substations in the year, taking the total number enabled with the technology to 307 in ED1 to date, covering 42% of substations on our network.
- Fault prediction technology will play an increasingly important role in our plans going forward. This innovative new technology is assessing our network in real time and identifying signs of faults before they develop. During 2021-22 we invested in 6,000 devices through our Net Zero Ready Substation initiative through the Green Recovery programme.



**Going beyond our plan:** We are forecasting to reduce the number of unplanned power cuts by 30%.

Commitment	Status	Forecast completion
<b>2.2 Reduce the average length of unplanned power cuts by 20% by 2023.</b>	<b>Ahead</b>	<b>2022-23</b>

- We are outperforming the targets we set in our ED1 Business Plan having achieved a 28% reduction so far in unplanned customer minutes lost (CML) relative to our Business Plan baseline.
- We can't always restore a fault straight away so we have continued to use mobile generators responsibly to restore power while we make repairs. We started works to further support our fleet of generators available to facilitate these types of restoration.
- Our investment in low voltage smart fuses and distance-to-fault technology is also reducing restoration times, allowing us to identify faults quicker for repair.
- We will continue to deliver our network performance investment programme and unplanned power cut restoration strategy, and we have set a stretch target to achieve a 40% reduction in the average length of unplanned power cuts by the end of the period.



**Going beyond our plan:** We are forecasting to reduce the average length of unplanned power cuts by 40%.

Commitment	Status	Forecast completion
<b>2.3 Restore electricity within 12 hours – and if we don't, make enhanced and automatic payments to all customers (with extra for our vulnerable customers).</b>	<b>Delivered</b>	<b>2015-16</b>

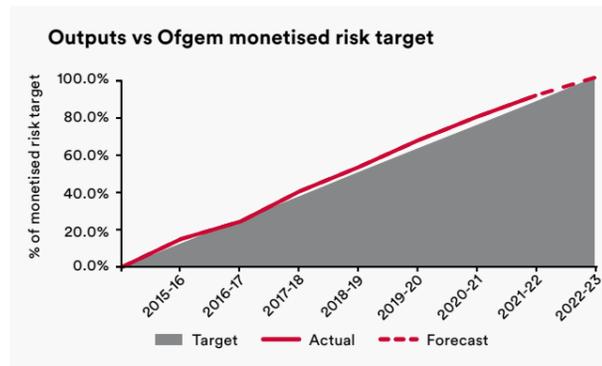
- We moved to the 12-hour power restoration guaranteed standard and implemented our automatic payment policy at the start of the RIIO-ED1 period. In the event of a failure against the guaranteed standard we make enhanced payments above the mandated amount (of £75), paying £100 (an additional £25) to our customers or £200 (an additional £125) for vulnerable customers.
- Prior to this year we had been continuously reducing the number of power cuts lasting more than 12 hours by 62% in line with Ofgem's measure (In normal weather conditions and including any clock stops).
- However, in 2021-22, driven by the impact of Storms Arwen and Malik, performance deteriorated threefold compared to the previous year. The enduring recovery from these events continued to affect our operational response during these periods.
- The deployment of additional generation, through our new mobile generator contract, alongside improved first response contributed to an improved base position out-with periods impacted by storms.
- We will continue to deliver network and operational response improvements in the remainder of the period to further drive down the number of outages that last longer than 12 hours. To this end we have established a dedicated group to review opportunities to improve performance, including making the best use of our fault locating equipment, with improved connectivity into our fault management system, along with implementation of a more robust process to identify the root cause of failures and identify learning points.
- During the year we engaged extensively with stakeholders as part of our RIIO-ED2 Business Plan process on the topic of long-duration power cuts. They noted that power cuts lasting 6 hours or more have a significant impact on customers due to the impact on two meals, heating, and food storage. We have introduced targets to reduce 6 hour interruptions through the use of generation and the introduction of shift work for parts of our workforce.

Commitment	Status	Forecast completion
<b>2.4 Planned power cuts to leave customers without power for less time, particularly during winter.</b>	<b>Delivered</b>	<b>2019-20</b>

- At the start of the ED1 period, we implemented a customer safeguarding policy which means planned power cuts are only scheduled for daylight hours and, during the worst winter months, planned to last for no longer than 4.5 hours.
- In 2021-22, 98.3% of planned power cuts lasted no longer than eight hours, an improvement of 0.4 percentage points from the previous year 2020-21. In the winter months we achieved our 4.5 hour target 91% of the time, an improvement on our 2020-21 performance by 1.2 percentage points.
- We have also reduced the length of planned power cuts and in 2021-22 the average length was 166 minutes, an improvement of 29 minutes from the prior year.
- During the pandemic we introduced a senior review of any planned figures that was planned to last more than 4 hours. This was focused on reducing the impact on customers who were required to isolate at home, with particular emphasis on vulnerable customers.
- We continued to use our enhanced communication of planned power cuts within our regional operating areas using our app based technology (CRM-Go) to provide live updates on progress.
- Customer satisfaction for our planned power cut service is high with our customers scoring us at 91.7% in 2021-22 (ranking second in the industry), an increase of 5.9 percentage points since the start of the period.
- Looking ahead, we will continue to reduce the length of planned power cuts as well as improving our services to our customers.

Commitment	Status	Forecast completion
<b>2.5 Maintain the underlying health of the asset base and report on it annually.</b>	<b>On Track</b>	<b>2022-23</b>

- Our investment plan targets ageing and highly-loaded assets in order to reduce the risk of failure. Every year we review the condition of the asset base, updating our understanding of risks and how asset condition or loading on assets has changed.
- We make an annual submission to our regulator on asset health and we have also developed a process that allows us to review major changes to asset health on a monthly basis.
- We remain on track to deliver our Business Plan output targets for the ED1 period, tracking ahead of a straight line profile of Ofgem’s asset health and criticality index measure for the period to date at an overall group level (3.2 percentage points ahead). We are 7.1 percentage points ahead of straight-line profile in the Northeast and 2.0 percentage points behind in Yorkshire. We have a healthy pipeline of work to deliver our targets in Yorkshire, including completion of significant EHV plant and cable schemes in the final years of the ED1 period.
- We forecast that we will slightly exceed our 100% targets for our ED1 asset health and criticality target by the end of the period whilst spending in line with Ofgem allowances.



Commitment	Status	Forecast completion
<b>2.6 Target network improvements for our worst-served customers.</b>	<b>On Track</b>	<b>2022-23</b>

- Ofgem defines a worst-served customer as any customer that experiences a total of 12 or more higher voltage interruptions over a three year period and a minimum of three higher voltage interruptions in each year during the period.
- We measure our performance against this regulatory definition and currently have no investment scheduled against this allowance, however we continue to focus our improvement plans on those customers who experience lower levels of service than others.
- Over the course of 2021-22 we have worked with Ofgem on the Safety, Resilience and Reliability Working Group to shape proposals and codes of practice for investment plans in the period 2023-28.
- Technology is a key tool that we can use to address customers that experience lower levels of service, including:
  - Installation of equipment that automatically reconfigures the network to isolate faults and quickly restore electricity supply to customer premises during outages.
  - Using the next generation of low voltage technology that allows restoration of supply following intermittent (and often frequent) interruptions without the need for fuse replacement.
- We continued our focus on our network automation programme on some of the worst performing circuits on our network, and in 2021-22 we addressed 25 of our high voltage circuits.
- Looking ahead, we are developing the capability to continuously monitor low voltage circuits and predict future faults whilst developing a microgrid solution for our rural communities. Our trial site for application of the microgrid commenced construction activities over the course of 2021-22.

Commitment	Status	Forecast completion
<b>2.7 Ensure adequate network capacity for customers wanting to connect.</b>	<b>On Track</b>	<b>2022-23</b>

- We routinely assess network capacity to ensure customers can connect to our network without incurring significant costs. This is more important than ever as we develop our customer-led smarter grid that facilitates the connection of more low-carbon technologies and signposts capacity availability.
- We have a number of supporting initiatives to facilitate this with the overarching benefits driving an economically coordinated and developed network with locational signals for our customers to assess for connection opportunities.

**Capacity availability**

- We continue to routinely assess Load Indices (LI) across our 612 sites. The overall firm capacity availability on our network is good:

Loading		Licence		
		Northeast	Yorkshire	
Number of sites		196 (196)	409 (409)	
Less than 95% utilised		98.5% (98.5%)	98.3% (98.5%)	
Lower bound	Upper bound	Ranking		
0%	<80%	LI1	179 (180)	376 (377)
80%	<95%	LI2	14 (13)	26 (24)
95%	<99%	LI3	1 (2)	2 (2)
99%	n/a	LI4	1 (0)	2 (3)
99%	n/a	LI5	1 (1)	3 (3)

\* (Values for 2020-2021 in brackets)

**Active Network Management (ANM)**

- Our first replicable ANM scheme went live at Driffield in March 2019, since then we have continued our ANM rollout. Our scheme is an economical way of gaining access to headroom on the network and deferring the need for traditional reinforcement.
- We have made good progress with Active Network Management (ANM) with four zones providing 433MW of contracted flexibility.
- We have developed an approach that can be rolled out to further areas and we have accepted customer connections for six further suitable areas, three of which are progressing through the engineering phase.

**Voltage reduction**

- Our voltage reduction programme commenced in 2013 with the aim of assessing a total of 551 substations to release capacity by reconfiguring voltages. We’ve released a total of 4.5GVA in ED1 to date across four sites.

**Capacity release**

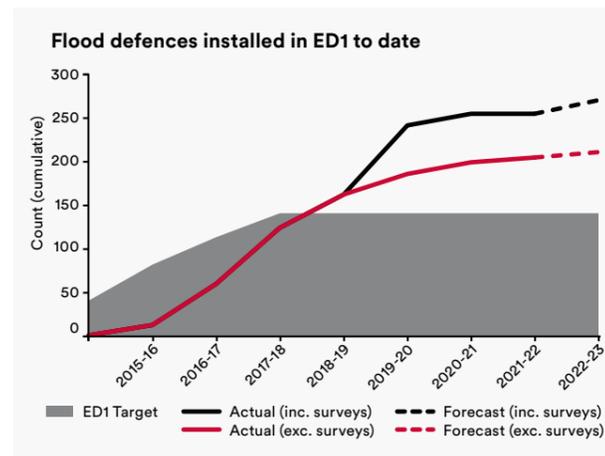
- We routinely evaluate customer usage to see whether connection agreements are still fit for purpose and whether we can release capacity back to other customers. To date in ED1, this released 32MVA of demand and 21MVA of generation capacity.
- In 2021-22, we continued to target a further 35 sites where customers were not using at least 75% of their demand or generation capacity. Unfortunately no customers agreed to reduce their capacity as part of this exercise.
- We will continue to run the programme for the remainder of the ED1 period.

**Heat maps**

- Our innovative AutoDesign tool provides a view of LV network utilisation once a customer has provided the demand they are seeking to connect. We continue to explore further enhancements to provide LV heat maps (similar to that for EHV and HV) whereby customers will be able to see available capacity before deciding on the size of their connection.

Commitment	Status	Forecast completion
<b>2.8 Increase the resilience of the network to flooding.</b>	Delivered	2019-20

- Our flood defence programme is an area of high priority for our stakeholders.
- Our original ED1 target was to upgrade defences at 141 sites in the period in addition to 15 carried forward from the previous period (DPCR5).
- We have expanded our ED1 programme from 156 sites to 274 sites in line with the national flood resilience standard (ETR 138). Of the 274 sites, by the end of the ED1 period, we expect 212 will be protected with additional flood defences and 60 have been assessed and will require only minor remedial actions to meet the required standard. The remaining 3 upgrades are larger, more complex schemes that we are completing in partnership with National Grid.
- The expanded programme is being delivered within our original cost allowances due to realising cost efficiencies in design and delivery.
- In 2021-22 we upgraded defences at a further 8 sites, taking our total flood defence upgrades to 207 sites in ED1 to-date at a cost £33.2m.



**Going beyond our plan:** Forecast out-turn 212 sites against our original target of 156 in our ED1 programme.

Commitment	Status	Forecast completion
<b>2.9 Use smart meter alarm information to improve network performance and the information we provide to customers.</b>	Behind (external factors)	2022-23

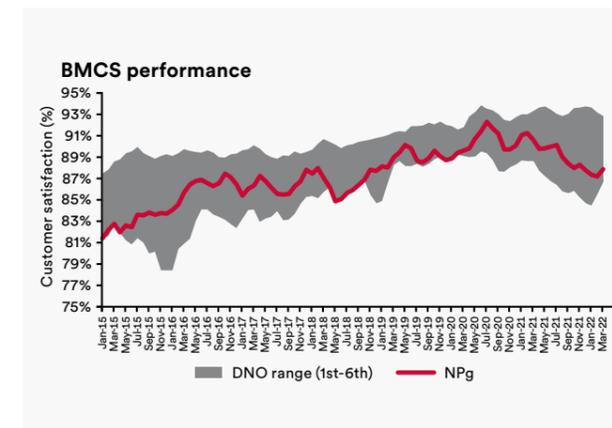
- It's well known that the UK Government's national smart meter programme has experienced significant delays due to technical issues and the specification of meters. The North has also been impacted by a variety of ongoing technical problems, for example, radio frequency noise issues between meters and telecoms network equipment.
- More latterly, COVID-19 has impacted the national rollout programme with volumes of installations significantly down in 2020 and 2021.
- Despite those delays, our systems have been ready on time and to plan. We have connected to the national data communications company (DCC). We have also maintained the security status of our Gateway in line with our obligations under the Smart Energy Code and have been preparing our systems to accept data from early generation smart meters as it becomes available.
- We estimate that approximately 2.5 million smart meters have been installed for customers in our region which is over 60% of our customer base of 3.9m. Of these, 850,000 are second generation meters (22% of our customer base), which provides an early opportunity to start using smart meter data, albeit on a small scale and well behind the original planned volumes.
- The enrolment of first generation meters into the national data communications company (DCC) commenced in October 2019, which provides us with partial access to data from an extra 700,000 meters.
- Our Boston Spa Energy Efficiency Trial (BEET) is using smart meter data in (near) real-time to optimise the voltage at the customer's meter and thereby decrease energy consumption. The project layers intelligent use of data on top of existing investment in smart meters, metering data flows and voltage control improvements to benefit customers. Energy bill savings are expected to far outweigh any capital and operational expenditure, given that other programmes such as the national smart meter rollout already require the bulk of the investment needed. We have included plans for rollout of the solution in our draft ED2 Business Plan.
- We continue to seek to ensure that our customers obtain the benefit in the rollout that was originally planned with representations to the central programme, energy suppliers and the UK Government. In the meantime we are adapting our systems and processes to make the most of the smart data available to us.
- We are also ensuring that any investment is not implemented significantly ahead of the ability of the national smart meter programme to provide the data, thereby striking a balance between efficient investment and delivery of the smart meter rollout benefits.

## Customer Service

Whilst we are on track to deliver our ED1 commitments having achieved a 5.9 percentage point improvement in customer satisfaction since the start of the period, we have more work to do to achieve our goal of giving our customers the best service in the industry.

Commitment	Status	Forecast completion
<b>3.1 Make customer service more reliable, better communicated and backed by slicker processes. Be faster, at no extra cost.</b>	Delivered	2019-20

- Since the start of the ED1 period, we have achieved a 5.9 percentage point improvement in customer satisfaction. This has in part been driven by continued improvement in the consistency of our communication across all our contact channels (including web, automated telephony system, social media and voice).
- To support more consistent communication, we continue to develop our Quality Framework, ensuring it meets the needs of our customers. This framework ensures we deliver high-quality customer conversations.
- In 2019-20, we launched a customer rescue service whereby we proactively contact customers via text after an interaction with us and confirm satisfaction with our service. If customers are not satisfied (score us 8 or below) we contact them to put things right. We have continued to operate this throughout 21-22.



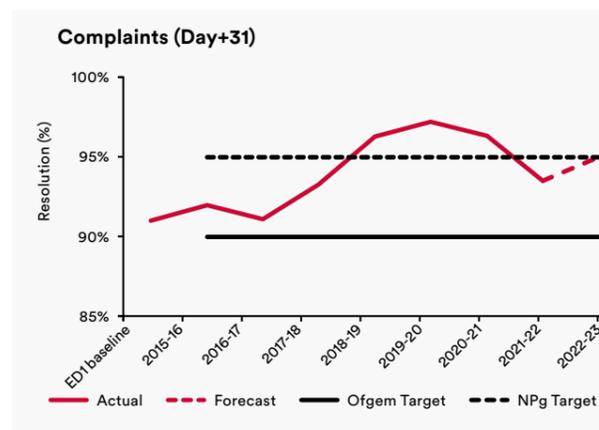
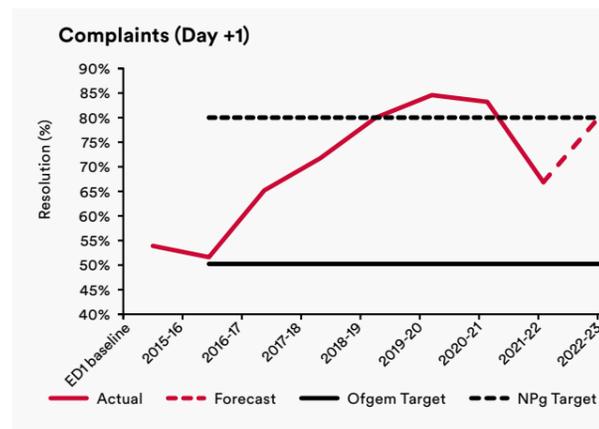
- Other key improvements implemented in the period so far include:
  - Continued expansion of our live web-chat services for our customers.
  - Continued development and upgrades of the Customer Relationship Management (CRM) system ensuring our team have all the information they need in one central portal.
  - Centralisation and consolidation of all of our customer data into one central repository to ensure that we have one accurate and up-to-date record of a customer's contact details.
  - New telephony platform implemented, providing enhanced service for our customers and greater opportunity to expand into other contact channels, requested by our customers.
  - Continued expansion of our live web-chat services.
- All of these initiatives have enhanced the effectiveness of our services while keeping costs down for customers – doing more for less.
- Looking ahead, we'll continue to utilise CRM to broaden the range of communication we have with our customers.
- We have recently implemented a new telephony platform and Interactive Voice Response (IVR) system. This delivers a modern cloud based solution that is scalable and can provide customers with the information they need even faster.

Commitment	Status	Forecast completion
<b>3.2 Use web-based technology to upgrade our process for general enquiries and minor engineering works.</b>	Delivered	2015-16

- Web-based technology has made it simpler and quicker for our customers to access our services.
- Our customer satisfaction levels for general enquiries have continued to be strong across our general enquiries services.
- We have invested in our systems to provide online self-service functionality for 33 general enquiries services. This includes functionality enabling booking of appointments online, paying for services directly on our website, accessing safety information and reporting problems either with equipment at customer properties or on our network, such as vandalism or trees near overhead lines.
- In 2020-21 we extended the reach of our CRM system to provide dynamic, on-the-day updates for disconnections customers. In the balance of the ED1 period, we will extend this to other general enquiries service lines.
- We are launching our Connections Solution in 2022 which will provide customers with even more ability to self-serve through our website and CRM.

Commitment	Status	Forecast completion
<b>3.3 Continue to improve the quality and speed of our complaint resolution.</b>	On Track	2022-23

- The speed that we deal with customer complaints has improved year-on-year since the start of the period up until 2021-22 which was heavily impacted by the storm season, in particular Storm Arwen.
- We measure our performance against Day+1 and Day+31 complaint resolution targets and were achieving our ED1 Business Plan targets on both measures until this year.
- 2021-22 saw us receive an increasing number of complaints (+52% YOY), this was predominantly driven by the several named storms experienced throughout the winter months. The increase in volume had a direct impact on our ability to resolve complaints in Day+1 with performance coming in at 66.8%; this still represents a 13.0 percentage point improvement since the start of the ED1 period. We also resolved 93.5% of complaints in Day+31 in 2021-22, falling marginally short of our ED1 Business Plan target of 95%.
- As a result of our ongoing activity to improve our overall customer experience and get things right first time we have seen a 43.7% reduction in the volume of complaints since the beginning of RIIO-ED1.
- We expect to continue our improvement and consistently achieve our ED1 Business Plan targets on these measures.
- We have had no repeat complaints since 2015-16 and no adverse ombudsman decisions during the RIIO-ED1 price control period to date.
- Where customers experience multiple interruptions this can lead to complaints. We have continued to proactively support and enhance our communication approach to reduce the number of complaints and ensure our customers understand the latest position and actions we are taking to resolve the poor service they are experiencing.
- We are further enhancing local accountability for customer service through the introduction of regional customer service support teams in 2022. Our frontline colleagues are empowered to put things right for our customers and are actively encouraged to work with our operational teams to resolve customer complaints quickly. In 2021-2022 we have aligned our Customer Care team with our regional structure to ensure a timely resolution for our customers.



Commitment	Status	Forecast completion
<b>3.4 Provide better information to customers experiencing power cuts through voice or digital communication channels.</b>	Delivered	2021-22

- Since the start of the ED1 period, we've expanded our digital communication channels to include live web chat, building on our existing suite of digital channels that includes email, text and social media (Facebook, Twitter and Instagram).
- We have invested in a new telephony platform to provide an enhanced service, ensuring we provide clear and simple navigation to incident updates by postcode area. This is designed to ensure our customers are given the most up-to-date and relevant information for their query as quickly as possible.
- We proactively text customers to inform them about disruption to their electricity supply and provide updates on restoration works, including estimated times of restoration.
- We maintain a live interactive power cut map that gives updates on where the power is off, whether it's planned or unplanned and also provides information for customers about when we aim to have the power back on.
- During 2020 we implemented improved communications for planned power cuts using our CRM system. Customers are now provided with better information about planned power cuts before they happen, including when they are happening and when they are finishing, with our field teams using a mobile app to provide real-time updates.
- In 2021-22, we extended this service to unplanned power cuts, using on-site information provided by our field teams to provide customers with real-time text updates alongside using our CRM platform for all customer communications. We will also be implementing an innovative machine-learning solution for improving our initial estimated restoration times in 2022-23.

Commitment	Status	Forecast completion
<b>3.5 Use technology to enable our contact centre to move from being largely reactive to mostly proactive.</b>	Delivered	2019-20

- Our ED1 Business Plan envisaged moving to a world where 90% of our customer contacts would be outbound with only 10% inbound.
- Whilst we continue to deploy technology and self-service solutions to provide customers with the information they require before they need to contact us, this means that while our aim to be proactive remains unchanged, we are unlikely to see the 90% to 10% ratio we envisaged in our ED1 plan as we continue to respond to the ways our customers want to get in touch with us. In 2021-22, we made over 42 million outbound communications.
- Earlier in the ED1 period we completed a major piece of work to centralise and consolidate all of our customer data into one central repository. This was a key step for us in making sure we have one accurate and up-to-date record of our customer contact details to enable proactive communications (where appropriate). We hold mobile numbers for 69% of our customers and email addresses for 71% enabling us to proactively contact customers (where appropriate).
- We want to ensure that customers who are registered on our Priority Service Membership (PSM) are given the care they need. PSM calls are routed directly to a dedicated team as opposed to our Interactive Voice Response (IVR) system. PSM customers also receive proactive contact when they experience a power cut.
- We are continuing to look at how we can enhance the service for those most vulnerable with 2022-23 focused on developing and implementing our on-site support service when power cuts are expected to exceed 6 hours.

Commitment	Status	Forecast completion
<b>3.6 Make it easier for our customers to keep in touch – via internet, mobile, meetings, phone, email, social media or text.</b>	Delivered	2019-20

- We know that people keep in touch with each other in many different ways and our aim is to make it as easy as we can for our customers to contact us in whatever way they prefer.
- In addition to our 24-hour telephone lines, we operate 24/7 social media channels, email and mobile phone texting services in addition to our live web chat services until 8pm. The launch of the national ('105') power cut number in 2016-17 made it even easier and quicker to get in touch with us – over 70% of inbound calls now come via that route.
- We offer a variety of customer digital self-service options to make it easier for our customers to access the information they need, including our online power cut map, online power cut logger, knowledgebase articles and dynamic FAQs on our website. In 2020-21, we extended our live web chat offering into connections, enabling more choice in the ways our customers can communicate with us.
- We have recently implemented a new telephony platform and Interactive Voice Response (IVR) system. This will deliver a modern cloud-based solution that is scalable and can provide customers with the information they need even faster.
- Looking ahead, we will extend live web chat across all service lines and progress our pilot for inbound reply text messaging with customers.

# Social Obligations

Our regions have some of the highest levels of vulnerability across the UK. Our aim is to deliver the best possible support to our vulnerable customers through the use of effective partnerships, tailored services and meaningful engagement in our communities.

Commitment	Status	Forecast completion
<b>5.1 Route calls from Priority Service Members directly to contact centre advisors, bypassing automated messaging.</b>	🟢 Delivered	2015-16

- Since the first year of ED1 all the calls we receive from customers who have Priority Services Membership (PSM) bypass our automated messaging service and go directly through to a member of our Contact Centre team so that we can respond to their specific needs as quickly as possible.
- Making it as easy as possible to communicate with us is essential; in 2017-18 we introduced a comprehensive suite of tools to support our vulnerable customers with specific communications needs including services such as Browse Aloud text-to-speech and ‘language line’ translation.
- We measure vulnerable customer satisfaction and gather feedback on our service through an independent survey which has been running since 2013. In January 2021 we completed the 11th phase of quantitative tracking research through 1,200 vulnerable customer telephone interviews. From this we know that one of the most important things we can do during a power cut is to keep our vulnerable customers proactively informed.
- As we engage with our vulnerable customers on current and emerging needs for the RIIO ED2 period we remain committed to making communication with us during a power cut as accessible and reassuring as possible, with an emphasis on being proactive and personalised.

Commitment	Status	Forecast completion
<b>5.2 Build partnerships with organisations to help us deliver our social programme.</b>	🟢 On Track	2022-23

- Trusted partners are key to delivering services that have a positive impact on our vulnerable customers and communities. Our “Stronger Together” partnership strategy guides our approach as we continue to expand our partnerships with charities, community groups and other third party organisations to deliver more support for our vulnerable customers.
- Our Partnering Communities Fund, established in 2017/18, which merged with Northern Gas Networks’ Community Promises Fund to create the Community Partnering Fund continues to offer £100,000 to community groups over a 12 month period with two rounds of applications per year. The fund makes grants for projects that tackle fuel poverty, promote energy efficiency, educate communities about the dangers of carbon monoxide and electrical safety, encourage interest in STEM (Science, Technology, Engineering and Maths) subjects or promote our Priority Services Membership (PSM). This year 14,000 people of all ages have benefitted from the projects funded, including local residents facing poverty and financial hardship, people with multiple disabilities, people who are homeless or living in temporary accommodation, families, users of community centres, young people aged 18-25 moving into their first tenancies and primary school children.
- Since we began our partnership with Citizens Advice Newcastle back in 2014 we have scaled up the services we offer to our customers experiencing fuel poverty and affordability issues. Our Powergrid Cares programme simplifies access to debt advice and wider provision through two direct points of contact with Citizens Advice Leeds and Newcastle and also through our partner Green Doctor. A dedicated number means our colleagues and partners can fast track customers who need extra support. The service responds to the personal needs identified by our customers and helps them receive relevant support.
- In 2020-21 we partnered with the Money Adviser Network to support any customers who may have money worries, recognising the need for multiple entry points and the extension of fuel poor services which can be accessed before crisis points. Our customers can access free independent and impartial money and debt advice over the phone or online. Customers can also access the Money Navigator Tool that helps customers find guidance if they have been impacted by the COVID-19 pandemic.
- We also supported our partners during the pandemic to deliver their advice to the most vulnerable through digital and telephone methods until face-to-face interventions resumed. This enabled more people to access the services and has continued as part of a hybrid delivery model.

- In addition to funding direct support for customers, we have a responsibility to use the resources available to us to support our partners to be sustainable within their communities. We have refreshed the resources and communications available on our website, continued to offer our partners access to our social data and delivered training to increase the support they can offer. The key outcomes were:
  - Organisational sustainability has been supported through the creation of 7 new jobs and 6 additional grants or donations that have been secured as a result of the Community Partnering Fund.
  - Around 250 people have been trained to support sustainability and extend the reach of those able to deliver energy efficiency advice to vulnerable customers in our region; including Level 2 Fuel Debt Advice in the Community certification, National Energy Action’s Level 3 Award in Energy Awareness, Green Doctors BPEC Energy Efficiency Training and Yorkshire Energy Doctor’s interactive online course.
- We have aligned our engagement and social programmes with our asset investment programmes to meet specific local needs. We profile the investment area to understand its vulnerability profile and set aside a budget based on the scale and impact of our works. Then, through an intensive period of community outreach and in partnership with local stakeholders, we design an engagement and social programme in a way to minimise the level of disruption for local people and maximise a project’s lasting social impact.
- Activities this year included investment in laptops in Scarborough to help unemployed individuals into work, investing in the woodland creation project in Dinnington with a view to extending this within other schemes in South Yorkshire, and additional funding to the No Child Cold project in Bradford providing small grants to families who cannot afford to pay higher fuel bills to keep their children warm while they are learning from home.
- Looking ahead, we are exploring partnerships with organisations in Humber and South Yorkshire to extend the Powergrid Cares model with more local hubs and greater reach.
- We have now extended our Citizens Advice partnership to include Northumberland, Sheffield and Hull and East Riding and partnered with Energy Saving Trust in north Lincolnshire giving us full regional coverage supporting customers in need of advice and support.
- Our Community Partnering Fund is now fully funded by Northern Powergrid as Northern Gas Networks have changed priorities and direction due to their GD2 commitments. However, we have maintained the overall funding level at £100k and have altered the criteria to include community resilience and Net Zero as new categories that can receive funding. We have also embedded PSM referrals and registrations as a standard requirement for all successful recipients.
- We have partnered with Barnardo’s as part of a pilot to support families with children under five to provide energy efficiency advice, measures and information as well as providing them with winter warmer packs and access to fuel debt advice and support where needed. This is targeted to reach 250 families most in need by the end of ED1 with the option to replicate this across the region in the future.

Commitment	Status	Forecast completion
<b>5.3 Promote and raise awareness of our Priority Services Membership to and with other partner organisations.</b>	🟢 On Track	2022-23

- The partnerships we have established and grown continue to help us to identify the most vulnerable communities in our region and tailor our PSM campaigns accordingly. We currently have 350+ local referral partners identifying individual needs and referring the people they support onto PSM and other wider support services we offer including Parish Councils, NHS Trusts, local authorities, charities, community organisations and other 3rd sector partners.
- Following research into barriers and challenges of engaging with the PSR, this year we launched our Priority Services Register as a membership club. From the engagement we have carried out with stakeholders, some customers did not want to be added to the register as it has negative associations. Repositioning our PSM as a membership club means it is one less thing for someone who is vulnerable to worry about as they do not need to identify as vulnerable to engage.
- We closed 2021-22 with 820,609 Priority Services Members and we have had a 23% increase in the number of direct Priority Service Member sign-ups following our targeted recruitment and partnership approach.
- Our analysis has shown that we still have vulnerable categories that are under-represented, so during 2021-22 our campaign has included specific targeting for customers that speak English as a second language.
- Two targeted email campaigns were completed to reach those most in need but not currently on our Priority Services Membership by using data from Experian. These campaigns focused on contacting over 218k fuel poverty households and 74k households in rural locations to promote the PSM and deliver energy saving advice and tips to those households.
- We have also purchased additional data which allowed us to analyse, at neighbourhood level, energy efficiency of homes alongside fuel poverty data. This information has informed the targeting of our Energy Saving campaign, trialling a new animation which offers short, simple tips and advice to help customers save money on their energy bills as well as promoting the PSM. It also aimed to support local people who may be trying to save money on their bills whilst at home more or who may be struggling with their annual energy costs. We targeted the nine geographic locations most in need, based on our data, using display ads on Google and video ads on YouTube. It was the most successful campaign of this type in terms of reach and efficiency that we have ever run.

## An update on our commitments – Social Obligations

Commitment	Status	Forecast completion
<b>5.4 Enhance our training for front-line staff providing additional support for Priority Service Members.</b>	Delivered	2018-19

- Understanding and responding to the needs of our customers, particularly those who may be more vulnerable, is everyone's responsibility in our company.
- In 2017-18 we designed bespoke face-to-face and online vulnerability training programmes for all Northern Powergrid employees. The training was developed in collaboration with experts from Money Advice Trust, who are regarded as best practice leaders in vulnerability within the financial services sector, and National Training Academy, experts in online training. We have been able to demonstrate the impact the training has had on our employees' knowledge and confidence in supporting customers in vulnerable situations.
- In 2018-19, we achieved our target to train all employees in the business. For new starters, we've introduced a 'best welcome' induction process that includes the training for all new employees.
- In 2019-20, over 700 frontline staff received 'Customer First' training. This course provides information about the behaviours and skills needed to consistently deliver high levels of service and an excellent customer experience.
- Making sure our colleagues have the right skills to identify this and are empowered to take action to deliver a service that best meets the needs of the customers they are supporting is key to providing vulnerable customers the support they need. In order to make sure that our culture reflects this, we have ensured:
  - 100% of new colleagues have received consumer vulnerability training.
  - 100% of colleagues have received Customer First training.
  - 200 colleagues completed safeguarding training which supports colleagues working with young people. We have fast tracked our mental health training through MIND to those most likely to interact with customers experiencing issues.
- In 2021-22, we have completely refreshed our vulnerability training programme, using a completely new training module designed with colleagues and key stakeholders which we rolled out in 2022.
- As well as training our employees to deliver high-quality services for our vulnerable customers, we have issued over 1,000 PSM toolkits to our frontline staff. The toolkits outline the support services available to our customers and make it quicker and easier to get customers the support they need.
- We will be fast tracking mental health training for frontline staff as part of our induction for all new starters. Through our attitudinal tracking throughout the pandemic and partner feedback we know that mental health issues and isolation increased significantly. We have developed the training in partnership with MIND to promote the support they provide through our customer communications as well as to help support themselves and their colleagues.

Commitment	Status	Forecast completion
<b>5.5 In conjunction with local authorities, identify socially-deprived areas and prioritise our support towards them during a power cut.</b>	On Track	2022-23

- Following the significant enhancements we made in 2016-17 to the data we hold on social deprivation, we have continued to evolve our approach to engaging with customers so that our services and interactions are better tailored to their specific needs.
- Over 120 users, including local authorities, the NHS, Citizens Advice and local housing authorities continue to use our mapping, which includes PSM customers affected by live planned and unplanned power cuts, allowing us to better coordinate incident response and giving our partners access to the information needed to support local communities.
- We have developed a local authority welfare provision which is an agreement with local authorities in our area to provide support for customers during escalated events. This activity has been delayed due to the pandemic but is a priority for the remainder of ED1. We're aiming to expand our local authority welfare provision – with the ultimate aim for this to be an agreement with all local authorities in our region.
- We have developed data sharing agreements with some local authorities, which supported local response to the impact of COVID-19 by enabling data sharing of our PSM information through Resilience Direct.
- In 2021-22, we ensured there were agreements in place with all local authorities and continued to share our Priority Services data through Resilience Direct with local authorities and had a 35% increase in customers supported by personalised PSM service during a power cut.
- During Storm Arwen we supplied 20,000 hot meals, made 1,300 hotel bookings prioritising the most vulnerable, distributed 2,000 winter-warmer packs and visited 260 locations with our customer service vehicles.

## An update on our commitments – Social Obligations

Commitment	Status	Forecast completion
<b>5.6 With others, explore the feasibility of community-level aggregated-demand response in return for a community rebate.</b>	Delivered	2018-19

- Activating Community Engagement (ACE), an innovation project, led by Northern Powergrid in partnership with a consortium including GenGame Ltd, Open Energy, Serious Games International and Newcastle University came to an end in 2017-18 after three years. The project, focused on residential demand side response (DSR), educated people about their energy usage and actively engaged communities to make small changes to how and when they use electricity in exchange for winning prizes for themselves or local groups.
- The close down report was published and learning dissemination events took place during 2018.
- We are using the learning developed during ACE on the GENDRIVE project to investigate the use of similar techniques to provide flexible electric vehicle charging. As a regulated network operator we are not driving the project but hold a consultative role in support of it.
- In October 2019 we published our update to our DSO strategy (DSO v1.1). This followed extensive engagement with our stakeholders on our initial proposals that were shared in December 2018, developed in close collaboration with the Energy Networks Association Open Networks project and flexibility providers. This has paved the way for some of our service level offerings in our draft ED2 Business Plan.

Commitment	Status	Forecast completion
<b>5.7 Introduce friends and family register and 'good neighbour' scheme to support vulnerable customers.</b>	Delivered	2018-19

- Our Priority Services Membership (PSM) is set up so that a named contact (e.g. a friend or a family member) can be added if a customer requests additional support. We recruit onto our PSM through targeted campaigns using multiple channels, community partners, friends, family and carers, allowing them to register vulnerable households.
- We consider our approach to have delivered the outcome of this commitment without the need for a separate scheme, keeping our PSM service simple and easy to navigate.
- In 2016-17, we improved our online and paper-based PSM application processes so that people who need to add a friend or relative can do so more easily. Our PSM welcome pack also includes referral postcards that can be given to family and friends.
- In 2017-18 we reviewed our approach to third party referrals to ensure it is in line with best practices in relation to data protection, maintaining our duty of care to known vulnerable customers by placing them on the PSM but awaiting contact with the customer before signing off consent to share their data with partners.
- Direct communication took place with those on the PSM during the pandemic, including referencing those who might know someone who would benefit from being on the PSM to ensure more people were made aware of the PSM and the services available.

Commitment	Status	Forecast completion
<b>5.8 Explore the possibility, with Northern Gas Networks, of upgrading to electrical connections in high-rise tower blocks for safety reasons.</b>	Behind (external factors)	2022-23

- We have a mobilised programme upgrading electrical connections in high-rise tower blocks (rising and lateral mains replacement).
- Our programme for ED1, however, was significantly impacted by COVID-19 with restrictions on access due to social distancing and safe working measures. We currently forecast that we will have invested £2.6m by the end of the ED1 period.
- Delivery of a package of work at high-rise blocks in Leeds is on hold due to COVID-19 – during 2021-22 we have re-mobilised contractors with increased focus on risk assessment and planned appointments to comply with COVID-19 policies.
- Low-rise inspections were also put on hold due to COVID-19, with works restricted to an essential only basis with individual risk assessments and booked appointments as short visits to multiple buildings with few customers were impractical.
- We are targeting a further £1.4m of investment in 2022-23 as restrictions are lifted and we can continue with our programme.
- Our RII0-ED2 Business Plan contains a further £13.3m of investment to upgrade electrical connections in high-rise tower blocks as a continuation of our programme.

Commitment	Status	Forecast completion
<b>5.9 Explore solutions to connect rural communities to the network.</b>	<b>On Track</b>	<b>2022-23</b>

- In 2018-19, we launched our £2.7m Network Innovation Allowance funded ‘MicroResilience’ project. The project is assessing the technical viability and comparative economics (including non-financial benefits) of resilience solutions enabled by smart technologies for:
  - critical customers on vulnerable connections
  - remote customers on vulnerable connections
  - opportunities for micro-grids (using already present DG)
  - simple storage options.
- The project intends to provide guidance for the appropriateness of the various solutions tested and their technical benefits and disadvantages.
- The level of resilience improvement will be assessed alongside the level desired by customers. For example, critical customers on a vulnerable connection may have different requirements to a microgrid implementation with a significant degree of embedded generation.
- The project has been delayed both by technical challenges and more recently the COVID-19 pandemic, however site works have now commenced.
- We have included plans for rollout of microgrid solutions in our draft Business Plan for ED2.
- As part of our ongoing support for off-grid customers in our region we are taking part in a taskforce set up by Community Action Northumberland which will look at innovative options for connecting those customers where possible. We are in regular contact with Northumberland County Council and Northumberland National Parks Association to ensure that we remain part of the conversation with off-grid households.

Commitment	Status	Forecast completion
<b>5.10 Provide more customer support vehicles along with more services in them.</b>	<b>Delivered</b>	<b>2018-19</b>

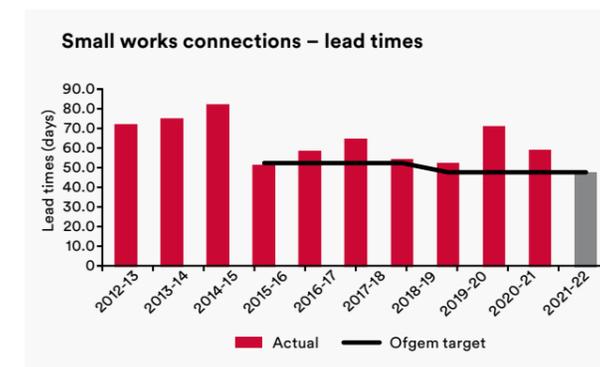
- Since we engaged on and wrote our ED1 Business Plan, our understanding of the needs of vulnerable customers and communities has increased exponentially. We know that proactive communication is key but when our customers are most impacted by loss of power, onsite support becomes increasingly important. We offer an extensive programme of onsite support from phone charging to hot meals, tailored to the needs of the individual and the situation.
- We have five customer support vehicles (CSVs) in our fleet and in 2020 we introduced our first three SilentPower vans as a pilot. After successful trials, the vans were released for regular use by our Operations teams and are now an embedded part of our power cut response for vulnerable customers and communities. They provide a clean alternative to generating power for customers during a power cut, replacing diesel generators and helping to reduce carbon emissions and reduce air and sound pollution.
- We provide various services from our CSVs, including hot water and microwave facilities, mobile phone charging points and refrigeration facilities for the storage of medication. In colder conditions, we offer customers winter warmer packs (hats, scarves, gloves, blankets etc.) to keep them warm, as well as face-to-face updates from Northern Powergrid employees on power cuts and more importantly, when the power is likely to be back on.
- Since 2018-19 we have implemented a new escalation process for enhanced service provision for vulnerable customers during power cuts which includes the deployment of CSVs to impacted communities. In the year we recruited six new Customer Service Managers who have responsibility for looking after vulnerable customers and communities on site, including the deployment of CSVs in their regions, leveraging the data we hold on social deprivation to best utilise these in power cut situations.
- We will continue to measure, record and report deployment of our services for vulnerable customers and conduct engagement and research to understand customer satisfaction levels, areas for improvement and emerging needs.

## Connections

Our connections customers continue to shape the range of services we offer. We’ve delivered five of the six commitments we set out in our ED1 Business Plan and we expect to deliver our final headline commitment to reduce small works end-to-end lead times by 30% by 2023.

Commitment	Status	Forecast completion
<b>6.1 Reduce end-to-end connection timescales for small works by more than 30%.</b>	<b>Behind</b>	<b>2022-23</b>

- In ED1 to date we have reduced connections end-to-end lead times for small works by an average of 18% relative to our ED1 Business Plan baseline. Whilst this improvement is tracking behind a straight-line improvement profile for the ED1 period we still expect to deliver the targeted 30% reduction by 2023.
- Improving customer satisfaction continues to be our primary objective through offering a single point of contact for all connections and our quote-on-site service. This has driven a 7.6 percentage point improvement in satisfaction with our connections services since the start of ED1. Customers are able to meet their small works technician (single point of contact) to discuss requirements and liaise with them during the preparation of their quotation and then continue this liaison post-quotation should they wish to go ahead with the delivery of the connection.



- Satisfaction levels in 2020/21 increased by 0.5 percentage points however we missed our own and Ofgem’s targets for time to quote and deliver for both licences.
- Lead times in the year were significantly impacted by COVID-19 due to restricted access to customer premises, in particular businesses where sites were closed.
- On quotations, high volumes of customers continue to prefer site visits and quotations on-site, increasing lead times but improving satisfaction. Delivery lead times have also been impacted by a small number of long-running jobs that require wayleaves or where customers have requested delayed connection dates.
- Small works connections volumes continue to increase. In 2021/22 quotation and delivery volumes for LVSSA increased by 30% and 26% respectively driven by LCTs and the telecoms fibre rollout. We are scaling our resources to respond to these increasing volumes and in 2021 injected additional contractor resource teams to clear post-COVID backlogs of work.
- In the remainder of the ED1 period we will continue to scale our delivery capacity to meet incoming volumes and focus on the delivery of works following customer acceptance of a quotation to help us deliver to customer requested timescales and meet our commitment to reduce lead times by 30% by the end of ED1.
- We will also expand on our innovative AutoDesign solution for budget quotations to all LV connections with the aim to save time and cost for customers whilst increasing the quality of our services.

Commitment	Status	Forecast completion
<b>6.2 Better payment terms – customers will not need to pay as far in advance.</b>	<b>Delivered</b>	<b>2015-16</b>

- In response to customer feedback, we implemented a payment process in 2015-16 that allows small works connections customers to pay for connections work up to 12 days before the works begin.
- We continue to review customer feedback to understand how the 12 day payment process is delivering for our customers.
- Looking ahead, we will keep our payment terms under review and engage further with customers to understand the best way forward.

## An update on our commitments – Connections

Commitment	Status	Forecast completion
<b>6.3 Provide more flexible quotations, including online self-service and faster quotes.</b>	Delivered	2019-20

- In 2016-17 we updated our online services to provide customers with more information on pricing, timescales and capacity. This, along with our guided online process, allows customers to complete much more of their connection application themselves.
- In August 2019, we implemented a new quotation management system that allows small works connections customers to receive a quotation from our staff in the field via handheld technology.
- Our fast-track connections process also makes it easier and quicker for customers to turn a budget estimate into a firm quote. In January 2020, we launched AutoDesign, a free online, self-service, low voltage design tool to help users identify the best new EV charging point connection locations. The system allows customers to quickly explore connection options and create budget estimates in minutes.
- We have also significantly improved our service alterations process for our customers, giving them the option to obtain a quote online or request a pre-quote site visit ahead of receiving a connection quote.
- We are increasing the flexibility and reducing the cost of connecting to our network in constrained areas by deploying Active Network Management (ANM). In March 2019 we deployed our first replicable ANM scheme on our network in Drifffield, East Yorkshire.
- As of March 2022 we had four ANM sites with 433MW of contracted flexibility. In the remainder of the ED1 period, we expect further connections which will take our total to 537MW.

Commitment	Status	Forecast completion
<b>6.4 Introduce a web-based system to help customers understand the capacity on our network and the likely cost of connection.</b>	Delivered	2016-17

- In 2016-17 we introduced interactive generation and demand heat maps on our website. These webpages detail what capacity is available on our network, give a description of any network constraints that would affect connections and set out our guide prices and payment periods for typical jobs.
- We continue to support customers in using these tools. As well as providing ongoing assistance, we have delivered additional user training to ensure that stakeholders are better informed about how to use our heat maps and the network information available and have an opportunity to provide feedback to help inform future developments.
- In 2021-22, we continued our routine refresh of our heat maps and contracted capacity register as part of the monthly process.
- We also enhanced the information that we include in our heat maps by publishing data on the known transmission system constraints, offering stakeholders access to more timely and accurate data in relation to the transmission system.

Commitment	Status	Forecast completion
<b>6.5 Implement a tailored service for large projects, including 'account management' where needed or requested.</b>	Delivered	2019-20

- We rolled out a single point of contact model for connections to guide customers through the application and delivery process. The process enables customers to liaise directly with a named member of our team through the lifetime of their project. The single point of contact is accountable for the delivery of all aspects of the works and is able to resolve issues and communicate progress effectively.
- We have introduced measurable engagement milestones to ensure that our customers receive proactive updates from the single point of contact throughout the quotation process.
- In addition to our single point of contact model, we have also improved our connections surgery experience to provide all customers with the opportunity to communicate with NPg in respect to business planning and project development outside of the formal application process.

## An update on our commitments – Connections

Commitment	Status	Forecast completion
<b>6.6 Provide a better service for non-contestable elements of work – regularly publishing key indicators.</b>	Delivered	2015-16

- We established our dedicated Connections Input Services team in 2015 to serve Independent Connections Providers (ICPs) and Independent Distribution Network Operators (IDNOs), alongside implementing new streamlined competition in connections (CIC) processes.
- We publish key performance metrics for our range of input services on our website to report how we are performing to our stakeholders. These key indicators provide monthly and year-to-date average timescales in relation to time taken to issue SLC15 quotations along with the average time taken to approve an ICP design. This allows ICPs to establish timeframes for responses ahead of making applications or submission.

SLC15 quotations issued (Medium & large works)	Within standard		Outside standard		Total
	Count	%	Count	%	
<b>NPg</b>	<b>1,278</b>	<b>98.23%</b>	<b>23</b>	<b>1.77%</b>	<b>1,301</b>
<b>Northeast</b>	<b>563</b>	<b>97.40%</b>	<b>15</b>	<b>2.60%</b>	<b>578</b>
<b>Yorkshire</b>	<b>715</b>	<b>98.89%</b>	<b>8</b>	<b>1.11%</b>	<b>723</b>

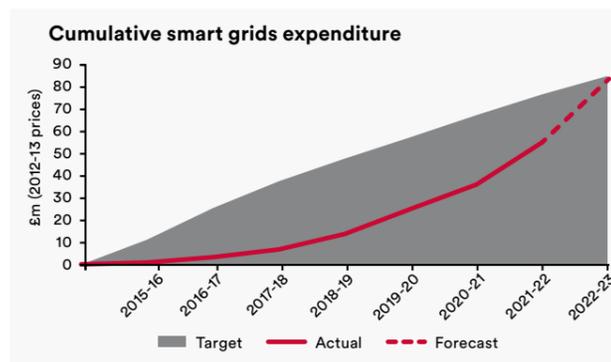
- We continue to run our monthly ICP surgeries, along with two bi-annual seminars and additional subject specific workshops engaging with our stakeholders to further develop our services in this area. New ICPs working in our licence areas are asked to attend a workshop with us to provide an overview of processes and requirements, to ensure a seamless progression for their enquiries.
- In 2021-22, 1.8% of our quotations in the year were issued outside of the guaranteed standard timescale – that's 23 of the 1,301 issued.
- As competition has increased we have seen IDNOs adopt single and three-phase small works connections to electric vehicle charging points. To better facilitate competition in this area we have revised our policy to make it no longer mandatory to install a link box for service connections, putting this decision at the discretion of the IDNO.
- Following stakeholder feedback we also agreed to modify our existing Alternative Providers Register to highlight those ICPs which are suitably accredited and authorised to carry out Self Determination of Point of Connection (PoC), Self-Design Approval and Self Connections. This provides customers with further information to support their choice of connections provider and also reassures local authorities and other similar organisations of ICP authorisations in these areas.
- Looking ahead, we're developing a wayleave portal following direct stakeholder engagement. The wayleave portal will provide an instant update as to the legal status of connection schemes. It will also facilitate more efficient signing of documents via electronic methods. We will look to run a trial with interested stakeholders and then provide this as a solution to all of our customers.

# Smart Energy

We're continuing to deliver our smart grid enabling investment programme, laying the foundation for a more flexible, active and customer-led network. At this stage the uptake in low-carbon technologies remains lower than forecast and we are navigating around delays to the national smart meter rollout programme.

Commitment	Status	Forecast completion
<b>7.1 Invest £83m in smart grid enabling technology that, as a minimum, pays for itself by 2031 – the more likely result will be a much larger saving, possibly as high as £400m-£500m.</b>	<b>Behind</b> (external factors)	<b>2022-23</b>

- Our investment in smart grid enabling infrastructure was one of our headline initiatives in our ED1 Business Plan and remains a key enabler for our transition to Distribution System Operation (DSO).
- Our programme is upgrading the control units in our substations to make the network compatible with modern digital communications along with establishing the communications network from our Control Centres to those units. This includes:
  - upgrading/replacing Remote Terminal Units (RTUs) – control points at our substations;
  - upgrading/replacing automatic voltage control points – transformer relays at all of our supply points and primary substations;
  - upgrading our telecoms communications network from Control Centres to our substations (both primary and secondary SCADA networks);
  - installing low voltage (LV) monitoring across our network.
- This investment is giving us greater ability to control and analyse how our network is operating in real time, enabling us to respond to the uptake in low-carbon technologies.
- Whilst technical challenges and the impact of COVID-19 delayed the initial stages of our smart grid programme, we are now in full rollout and the programme continues to accelerate with 2,520 units installed on the network and £23.7m invested during the year. This took our total expenditure in ED1 to date to £65.0m on smart grid enablement.
- Our programme is in widespread rollout and we expect to deliver our commitments by the end of the period.
- Key milestones on the programme so far include:
  - Delivering the replacement of transformer control relays and substation remote terminal units whilst installing LV monitoring units across the network.
  - Commencing the upgrading and where necessary replacement of HV regulators with modern IP based control equipment.
  - Accelerating the upgrade of our serial low bandwidth primary communications network with a secure and resilient IP based system. We are now replacing and upgrading all of our backhaul and last mile links to our major substation sites.
  - Starting the replacement of our secondary communications network with an IP based one with the rollout of units now underway.
  - Continuing with a series of information and operational technology projects to upgrade and replace foundational systems used to store, process and enable analytics for our DSO business functions.
  - Starting to transfer RTUs over to the new DNP3 IP based protocol as the new primary SCADA network becomes available. This unlocks the ability to communicate in more sophisticated manner necessary in smart grid operation.



Commitment	Status	Forecast completion
<b>7.2 Invest £52m in smart grid network reinforcement that pays back by 2023 through avoiding £86m of traditional reinforcement – a net saving of £34m compared with traditional reinforcement methods.</b>	<b>Behind</b> (external factors)	<b>2022-23</b>

- Requirements for reinforcement in the ED1 period to date have continued to be below forecast due to the uptake of low-carbon technologies being at the low end of expectations.
- We continue to be proactive with our smart grid investment including replacing looped services, the cable used when two properties share a single electricity supply, to mitigate potential issues as a result of future low-carbon technology (LCT) uptake. In ED1 to date we have replaced almost 18,000 looped services at a cost of almost £16.8m.
- We are committed to exploring alternatives to traditional reinforcement and have continued to explore innovative solutions to maximise the capacity of our existing assets. These include:
  - Voltage reduction:** The purpose of this programme is to create voltage headroom on our network so customers can connect. In 2021/22, we have completed 5 sites releasing a further 45MVA of generation capacity. Through ED1 we have now completed 497 sites and it is estimated that these actions have released 4,473MVA of voltage headroom to date, allowing connection of more distributed generation such as domestic solar PV to the LV network fed from each primary substation.
  - Voltage regulation:** We are using HV voltage regulators and HV transformers with on-load tap changer capability as innovative solutions to provide voltage control as an alternative to traditional reinforcement. Schemes for HV voltage regulation have now been approved with planned investment totalling over £1m.
  - Active Network Management:** We are installing technology to provide real-time information on the levels of electricity demand and generation so that we can actively monitor capacity limits on the network. We currently have 433MW of contracted flexibility operational across 4 sites with another 104MW expected to be connected by the end of the period.
- These solutions are all supported by the installation of automatic voltage control relays as part of our smart grid programme across our primary substations. This will allow greater network flexibility including the ability to meet high load conditions in winter and increased embedded generation activity through the summer months.
- In 2020-21, we began our Green Investment programme as part of a £300m national scheme, developed in collaboration with Ofgem and the Energy Networks Association, to stimulate a green recovery of the economy by accelerating vital investment in infrastructure. We will be investing over £60m in ED1 across the North East, Yorkshire and northern Lincolnshire to support green growth projects to come to fruition faster and growth of local green jobs and industries.
- Whilst most projects are in the initial phases, in Yorkshire the Epworth Primary Substation project is well underway providing a second 33kV feeder and transformer to create additional capacity to support demand as a result of forecasted economic growth in the region.
- In the Grimsby and Immingham area of Yorkshire we have made progress on the project at Netherlands Way, adding a second circuit to the proposed generation supply point to release 120MVA of demand capacity for economic growth in the region and additional security of supply for nearby generation.

# Environment

We are on track to deliver and in many cases go beyond our original environmental commitments setting stretch forecasts in a number of our key output areas.

Commitment	Status	Forecast completion
<b>9.1 Reduce oil/fluid leakage to ground by 15% by 2023.</b>	<b>On Track</b>	<b>2022-23</b>

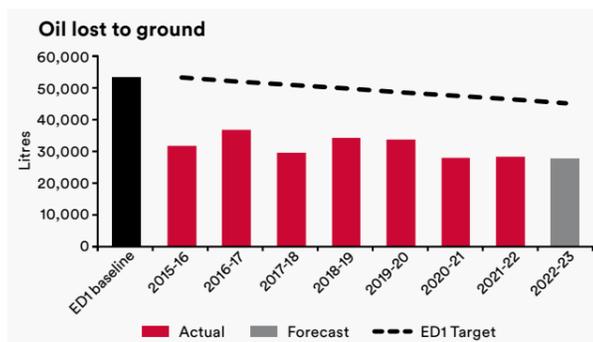
Our 2021-22 oil and fluid loss performance of 28,362, whilst reflecting a 1% increase compared to prior year, is a 47% reduction compared to our Business Plan baseline of 53,245 litres.

We continue to invest in technologies such as perfluorocarbon (PFT) leak detection. Since the start of ED1 we have invested £2.8m to have PFT injected into 48 fluid-filled cable circuits.

We continue our trials for the innovative self-healing cable additive solution aimed at improving network performance, generating cost efficiencies, and reducing the impact of cable leaks. This year saw the completion of the field trial element of the innovation project research into self-healing fluid additives. The additive was successfully introduced into an out-of-commission cable, visual proof of the self-healing properties was observed at a joint position and onsite handling experience was gained. Investigation is now underway to understand the operational compatibility of the fluid at this new concentration level.

We achieved our previous stretch forecast of 47% in the year and are forecasting to continue our strong run. Our current trajectory sees us achieve a 49% reduction by the end of the period relative to our ED1 Business Plan baseline.

**Going beyond our plan: we are forecasting to stretch our ED1 Business Plan target and reduce oil/fluid leakage to ground by ≥49%.**



Commitment	Status	Forecast completion
<b>9.2 Reduce our business carbon footprint by 10% by 2023.</b>	<b>On Track</b>	<b>2022-23</b>

We continue to make strong progress in reducing our business carbon footprint (BCF) and whilst our 2021-22 emissions of 33,498 tonnes represented a 7% increase in emissions relative to 2020-21 (due to generator use associated with storm Arwen in late 2021), relative to our Business Plan baseline of 59,700 tonnes, this is a 44% reduction in emissions overall.

In the year, we maintained our carbon footprint ISO 14064 certification, 'Gold' standard, by the Certified Emissions Measurement and Reduction Scheme (CEMARS).

2021-22 emissions from our business travel increased by nearly 6% compared to the prior year, but remain significantly lower than previous years (2021-22 business travel was 40% lower than 2019-20). We are looking to utilise the remote working tools and techniques to have an enduring positive impact on our emissions.

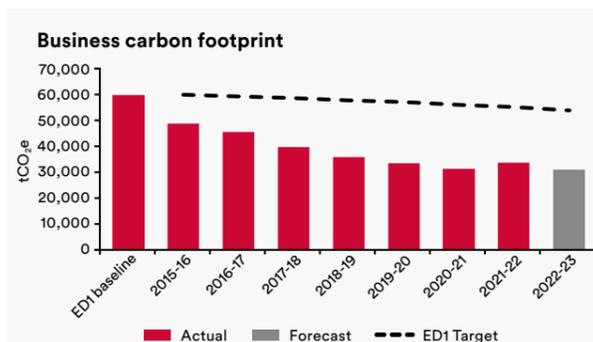
On operational transport, we continue to reduce fleet mileage assisted by our vehicle telematics systems and the strategic deployment of staff. We will see further benefits as we continue to deploy ULEV/ZEVs onto our fleet.

We are maintaining our focus on sulphur hexafluoride (SF<sub>6</sub>) gas emission reduction using thermal imaging technology to detect leaking switchgear. Our state-of-the-art infra-red cameras are able to detect very small quantities of SF<sub>6</sub> gas leaking from equipment. This has enabled us to accurately pinpoint leaks and we saw reductions in our gas loss of 33%. However, our gas loss has steadily increased again due to three specific assets that have been assigned for replacement in Q1 2022.

We are working with our service providers to reduce their fuel consumption and energy use and our SilentPower battery powered generators are now used in BAU during power cuts to meet both our customer service and environmental targets.

In December 2021 we had our science-based targets verified by the Science-Based Targets initiative for a 15-year period to 2035. Our latest forecast is set to reduce our BCF by 50% by 2023 relative to our Business Plan baseline.

**Going beyond our plan: we are forecasting to stretch our ED1 Business Plan target and reduce our BCF by ≥50%.**



Commitment	Status	Forecast completion
<b>9.3 Underground ~100km of overhead line in Areas of Outstanding Beauty (AONB).</b>	<b>On Track</b>	<b>2022-23</b>

Since the start of the ED1 period, we have removed 88.9km of overhead lines in AONBs.

Our stakeholders have made it clear to us that this is a priority commitment area. Our strategy for project assessment and delivery is designed to meet the needs of representatives from the Designated Areas. We have a jointly agreed Assessment and Stakeholder Participation Policy. Our stakeholders draw up a priority list of potential projects taking into account the characteristics of each site and the visual and environmental impact of the overhead line. This leads to each site being given a Stakeholder Rating which, alongside our own engineering wayleaves and value-for-money assessment, results in a project either progressing to authorisation or being deferred or cancelled. This methodology helps our stakeholders make informed decisions.

A detailed view of our schemes, their progress and relative stakeholder scores can be found in the environmental report.

As a result of our continuing engagement with local authorities and National Parks representatives, we have set a stretch forecast for an additional 14km by the end of 2022-23, which represents an additional £2m investment.

**Going beyond our plan: we are forecasting to stretch our ED1 Business Plan target and remove an additional 14km of overhead lines from AONBs (114km in total).**

Commitment	Status	Forecast completion
<b>9.4 Replace 134km of fluid-filled cables and use perfluorocarbon tracers (PFTs) to quickly replace leaks.</b>	<b>Delivered</b>	<b>2019-20</b>

In the period to date, we have replaced 194.4km of fluid-filled cable which is more than we originally planned in the whole period (133.6km).

The combination of fluid-filled cable replacement, faster detection (using PFT tracer technology) and repair of leaks means we are already significantly outperforming our fluid loss targets for the period and further reducing our environmental impact.

During 2021-22, we closed out the first phase of our Bradford Cable project. We have now commenced work on the second phase of works which is set to complete on time and within budget by the end of the period. The £32m capital programme will see 43km of underground oil filled cable replaced delivering benefits to over 160,000 customers.

**Going beyond our plan: we are forecasting to stretch our ED1 Business Plan target and replace an additional 90.8km of fluid-filled cable (224.4km in total).**

Commitment	Status	Forecast completion
<b>9.5 Maintain SF<sub>6</sub> losses as the volume of gas in our switchgear assets increases.</b>	<b>On Track</b>	<b>2022-23</b>

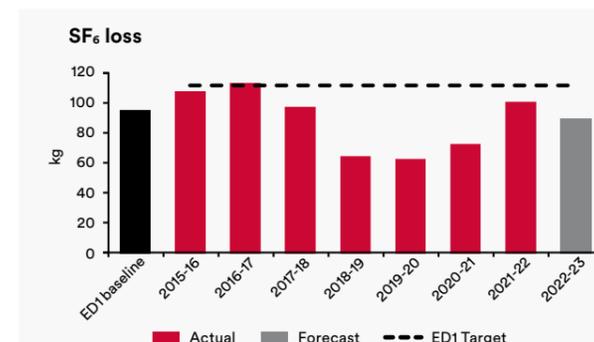
Our 2021-22 SF<sub>6</sub> losses of 102kg represented a 9% reduction compared to our Business Plan target of 112kg, albeit this was a step back compared to our best-ever performance of 63kg achieved in 2019-20.

The sustained increase in gas loss over the previous 24 months is the result of three specific switchgear units and the leaks have been identified using an SF<sub>6</sub> thermal imaging camera. As a result of the sustained leak rates we brought the replacement of these two units forward. The Haverton Incinerator switchgear was replaced in May 2022 and the replacement of the two switchgear units at Kirkstall will be replaced in Q1 2023.

There is still work required to retain focus on leak detection and repair so we are working with regional representatives to identify remedial actions on the other poorly performing assets.

Despite the 2021-22 increased levels, our investment programme to replace the poorer performing circuits and continuing to leverage technology means we are still on track to achieve our stretch forecast of 50kg.

**Going beyond our plan: we are forecasting to stretch our ED1 Business Plan target and reduce SF<sub>6</sub> losses to ≥50kg by the end of ED1.**



## An update on our commitments – Environment

Commitment	Status	Forecast completion
<b>9.6 Deliver faster and higher-quality street works reinstatement when we dig up the street.</b>	On Track	2022-23

- We achieved a 91% success rate in 2022-23 for our annual street works reinstatement quality. We've exceeded our ED1 Business Plan target of 90% in every year of the period to date and aim to carry on that trend as we move into ED2.
- We continue to be involved in the development of Street Manager and have an active presence in industry working groups shaping the future outlook of the Streetworks industry, with the introduction of performance-based inspections and changes to the calculation of inspection units from April 2023.
- Moving into ED2 we'll maintain the standard of reinstatement by engaging with our team regularly, identifying trends to spot improvement opportunities through site inspections and targeted training for the wider business.

Commitment	Status	Forecast completion
<b>9.7 Make sure reduction of electrical losses is explicitly factored into investment decisions for a wider range of assets.</b>	Delivered	2018-19

- We have changed our policies around how we design and build network assets to explicitly factor losses into our investment decisions.
- Over ED1, we have continued to increase our understanding of electrical losses across our network and how it is impacted by the connection of low-carbon technology via a variety of projects described in our losses strategy (<https://northernpowergrid.com/losses>). We've also trained more staff to understand the principles and we have shared our methodology with other DNOs.
- More detail on how we manage losses can be found in our [environment and innovation report](#).

Commitment	Status	Forecast completion
<b>9.8 Continue to operate a full revenue protection service.</b>	Withdrawn	2015-16

- In 2015 we informed our stakeholders that we intended to cease providing a revenue protection service for energy suppliers following the decision from the key service provider in our region to withdraw from this activity. This meant it was no longer practical for us to provide this optional service cost-effectively for suppliers and as we received no objections, we stopped providing the service in April 2016.
- We are required under our licence to investigate and resolve relevant electricity theft (theft in conveyance). The above service provider also undertook this activity on our behalf until they withdrew their services and, since they withdrew, we have trained frontline staff who now carry out investigation of electricity theft cases.

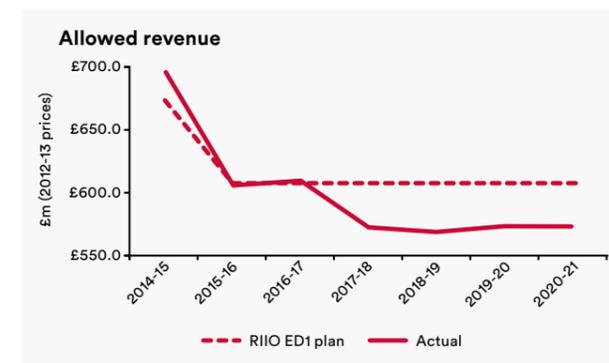
## An update on our commitments – Finance

# Finance

Our headline commitment in ED1 was to deliver more for less for our customers – we delivered a 14% price reduction at the start of the period and we are forecasting to exceed our output targets. We have also created 1,000 new job opportunities in the period.

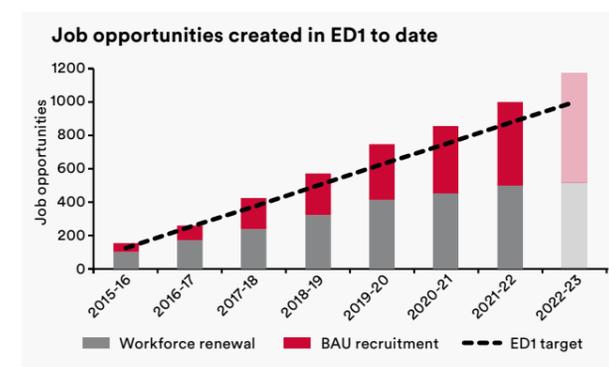
Commitment	Status	Forecast completion
<b>10.1 We will deliver an immediate 10% price reduction at the start of the period.</b>	Delivered	2015-16

- We delivered a 14% price reduction to domestic customers in April 2015 (the start of the ED1 period).
- The underlying base revenues that we are allowed to earn remain flat in real terms (i.e. excluding the effects of price inflation) but our prices move during the period according to the way the regulatory price control mechanism works and changes in charging methodologies for the industry.
- The impact of the 14% price reduction and the other factors mentioned above is set out in the graph showing our allowed revenue.



Commitment	Status	Forecast completion
<b>10.2 We expect to create 1,000 job opportunities in the organisation during the ED1 period.</b>	Ahead	2022-23

- We have created 999 job opportunities in our region since the start of ED1, including 500 new recruits via our workforce renewal programme (WFR). We have exceeded our expectation to create 1,000 job opportunities by the end of the period.
- In 2021-22 we created 144 job opportunities of which 46 were WFR recruits – all of which were apprentice and technical trainee roles in the operations part of our business.
- In the year, we finalised our recruitment drive which began in 2019-20 for six new Regional Customer Service Managers (CSMs) to work alongside the Operations Managers in each of our regions. Our CSMs now drive the delivery of locally tailored customer service improvement plans alongside General Managers in our regions.



- Our regional operating model means we are able to adapt our operations to meet the differing needs and demands of the region we cover. We are developing our workforce to better reflect the region we serve and have updated our recruitment practices to appeal to a broader range of people, with local activities in each of the areas to target under-represented groups. This approach will continue and grow as we aim to appeal to a more diverse range of potential candidates to apply for the new job opportunities available with us.
- We are committed to narrowing the gender pay gap and are doing this by actively seeking to attract more females into engineering and senior roles. It will take time but we are targeting year-on-year progress and will continue to take positive actions to attract and retain a diverse mix of talented people to our company.

# Contact us

We believe that our customers and stakeholders are the best judges of our performance. We always want to hear your views and opinions on the services we provide and your ideas for what we could be doing. If you would like to comment, you can contact us in a number of ways:

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## By email

[yourpowergrid@northernpowergrid](mailto:yourpowergrid@northernpowergrid)

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## On Twitter

### @northpowergrid

(for power cut information and advice)

### @powergridnews

(for information about the company and the work we do in communities)

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## Online at:

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